Keep the bowels thoroughly open.

Keep the alimentary canal as aseptic as possible.

Give good nourishing food—that which the patient will readily assimilate.

Give plenty of water both by the mouth and rectum.

Use the best intestinal antiseptic known.

Never give opium.

Never give phenacetin or acetanilid.

Give strychnia as indicated.

If this plan is followed you will rarely have a death from typhoid fever.

1300 W. Fourth St.

DIET IN TYPHOID FEVER.

Read by title in the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY FREDERICK C. SHATTUCK, M.D.

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BOSTON, MASS.

When typhoid fever kills it does so either by perforation or exhaustion, the proportion of the former being estimated at 5 to 10 per cent. The main factors in producing the exhaustion which causes the death of at least nine-tenths of the fatal cases are toxemia, continued fever, diarrhea and vomiting and intestinal hemorrhage. The heart is ordinarily the best index of the presence and degree of exhaustion, and the most frequent serious pulmonary complication, hypostasis, in its various forms, degrees and consequences is the direct outgrowth of the cardiac weakness. Moreover typhoid fever is not short and sharp like pneumonia, but of long course, and usually attended with decided, often with very great wasting of the muscular and fatty tissues.

Most of us are agreed that we are not as yet acquainted with any therapeutic measures which will either abort or very materially shorten the course of the disease. We are, I think, unanimous in believing that husbanding the strength from the start through skilful nursing, the judicious use of water externally and internally, and the supervision of a wise attendant on the watch for and prepared to meet such indications as may arise, materially modifies the course of the disease and lessens its mortality. If what I have assumed to be facts be really facts, the question of diet must be a very important one in the management of typhoid fever. It is through the food which is assimilated, not through that which is merely put into the stomach, that we seek to limit the tissue waste while the process is active, and also try to land the patient on the low shore of convalescence with as much of his property as may be; for the recovery of his property is a necessary preliminary to the attainment of the high table-land of full health.

Under the old doctrines as to inflammation fever was an unfailing indication for depletion; directly by venesection, pukes, sweats and purges; indirectly by starvation. Indiscriminate direct depletion is now a thing of the past, and since the time of Todd the fact has gradually been more and more clearly recognized that the febrile state is often an indication for more, rather than less, nourishment, with selection as to quality rather than diminution as to quantity. In the shorter essential fevers a few days' starvation can not do much harm, and may even be of great service with a certain class of patients. But suppurative fever, for instance, whether of tubercular or other origin, especially if chronic, we feed to the largest limit; and we do this because we treat the condition and not the disease, individualizing our cases. Since our knowledge of gastric chemistry has been enriched by the adaptation of the soft catheter to another hollow viscus at the opposite extremity of the abdomen, a more complete explanation has been afforded for the fact which we knew by practical experience before, that gastric digestion is often weakened in the febrile state. But the same practical experience teaches us that it is not always so, or very materially so, and when theory and practice conflict the former must prevail. Have we not fully escaped from the domination of the old doctrine as to the lowering treatment of inflammation, or are there valid reasons why we should be less bold in feeding our typhoid patients than our chronic febrile consumptives? Three such reasons deserve special consideration. In the first place, typhoid is far more frequently a self-limited disease than is phthisis; but the fact of self-limitation does not seem to me to warrant us in underfeeding, for the less the patient loses the less does he require to regain. In the second place, typhoid has constant intestinal lesions which may bleed or perforate and which may be accompanied by a general catarrhal state of the intestinal tract. I may perhaps add here that diarrhea is not nearly as constant a symptom in typhoid fever as the books lead students to believe. In at least 50 per cent. of my hospital cases no diarrhea was present at any time. We must therefore have reference to the local intestinal lesions as well as to the general state. In a disease of such long course, it is impossible to prevent accidents by putting the bowels in splints, even if it were desirable to do so. More or less peristalsis must go on, and waste matter must pass over the ulcerated surfaces; and how deep or extensive the ulcerated surface may be in any particular case no symptom or group of symptoms enable us to measure. Hence, it seems rational, quite apart from the fever, to withhold from the diet any articles the residue of which is liable to irritate either the mucous membrane in general or the ulcerated portion in particular. This would seem a fair explanation for the popularity of milk as a diet for typhoid, containing as it does a large proportion of water and every principle necessary to nutrition so combined as to make relatively small demands on the digestion of most persons, and leaving a residue which, though notoriously large, is not mechanically irritating. The objection to milk is that it is repugnant to a few persons and becomes either repugnant or monotonous to a considerable number sooner or later. It is not necessary here to specify the many expedients which may and often must be resorted to to overcome this objection, and in some cases to render it digestible whether palatable or not. Milk is likely to maintain a very important, perhaps leading place in the diet of typhoid as well as of other diseases and conditions. For a number of years I adhered as strictly as possible to an exclusively milk diet in typhoid fever until at least a week had elapsed from the date of the first normal evening temperature. I closed my ears to the clamors of adults, and my eyes and heart to the tears of children, as I now believe unnecessarily. Thirdly, it was only comparatively recently the general opinion of the profession that relapse is or may be due to errors in diet. I well remember the time when a fresh access of fever led my teachers and me to carefully inquire into the kindness of officious friends. It was often proved that forbidden fruit actually or metaphorically had been brought in by a visitor, and this was an entirely satisfactory explanation. When proof could not be had the fact of relapse was strong presumptive evidence of sin. We know better now, and while we recognize that errors in diet may produce fever, as may fatigue or excitement in convalescence from any severe disease, we do not believe that they can start up a fresh invasion of bacilli from within. One of the things which set me thinking on this question of the diet in typhoid was the favorable course run by several acute febrile cases for whom I ordered a full diet because they were weak; believing at the time of so doing that typhoid could be excluded, but being forced to the conclusion later that only typhoid fever could explain the whole course of the disease. These patients did perfectly well, were happier and convalesced more rapidly than my recognized typhoid cases fed exclusively on milk. For five years now, I have been enlarging the diet of my typhoid cases and have seen no reason to regret this course, but on the contrary found cause for satisfaction.

During the twelve years, 1886 to 1897 (both inclusive) 380 cases of typhoid fever have come under my personal care in the Massachusetts General Hospital. From 1886 to 1893, 233 cases were treated under a milk diet with a mortality of 10 per cent. From 1892 to 1897, 147 cases have been treated under a much more extended diet with a mortality of 8.1 per cent. I know well the liability to reach false conclusions in reasoning from too small figures in a disease like typhoid fever. And it is also true that water has been used more efficiently of late than in former years. But I can see nothing in my figures to contravene my observation that an enlarged diet has not been injurious. I would not be understood as advocating an indiscriminate diet. My plea is simply for treating the patient rather than the disease; for feeding him with reference to his digestive power rather than solely or mainly with reference to his fever; for the view that the danger of accidents from the local intestinal ulceration is not increased by allowing him to partake of articles which leave no irritating residue, and which cautious trial shows are digested without disturbance or discomfort. At one end of the scale are the cases with such irritability or weakness of the stomach as to lead to the unfortunate term gastric fever, or those with pronounced diarrhea and undigested food in the stools; at the other end are those more numerous cases with clean tongue and a desire for food. Between the two is every gradation. The life of the former may depend on the skill and ingenuity of the doctor, assisted by the intelligent devotion of the nurse. The comfort and the duration of disability of all others may be materially modified for good by careful study and wise individualization of our cases. A long list of permissible articles from which selection can be made for different cases, and for the same case at different times under varying circumstances can be given. That which I append makes no claim to completeness, but is meant merely to be suggestive and illustrative.

TYPHOID DIET.

1. Milk hot or cold, with or without salt, diluted with lime water, soda water, apollinaris, vichy; peptogenic and peptonized milk; cream and water (*i.e.*, less albumin), milk with white of egg, slip, buttermilk, koumyss, matzoon, milk whey, milk with tea, coffee, cocoa.

2. Soups: beef, veal, chicken, tomato, potato, oyster, mutton, pea, bean, squash; carefully strained and thickened with rice (powdered), arrowroot, flour, milk or cream, egg, barley.

3. Horlick's food, Mellins' food, malted milk, carnipeptone, bovinine, somatose.

4. Beef juice.

5. Gruels: strained cornmeal, crackers, flour, barley-water, toast-water, albumin, water with lemon-juice.

6. Ice-cream.

7. Eggs, soft boiled or raw, egg-nog.

8. Finely minced lean meat, scraped beef. The soft part of raw oysters. Soft crackers with milk or broth, Soft puddings without raisins. Soft toast without crust. Blanc mange, wine jelly, apple sauce and macaroni.

CAN TYPHOID FEVER BE ABORTED—THE ANSWER.

Read in the Section on Practice of Medicine, at the Forty eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897

BY J. E. WOODBRIDGE, M.D.
CLEVELAND, OHIO

There are departments in medicine of which it may be truly said that "reasoning is deceptive;" in which actual experience gives the only light by which our footsteps may be guided; in which the clinical experience of a single observer, who has been wisely taught and has wisely followed the teaching, is of greater value as evidence of the justness of a conclusion, than is the subtlest reasoning of the most astute logician. This is eminently true of the subject which is presented for your consideration today.

The question which forms the title of this paper can be correctly and forcefully answered only by those who can speak from bedside experience.

The subject has already been fully and ably discussed, every imaginable argument has been adduced to establish a negative, but the force of most of these has already been broken by the silent footfalls of advancing. science.

The effect of the antitoxins of diphtheria, the bubonic plague and other diseases, and the discovery of Laveran, that ague is a specific infection in which every drop of blood is invaded by a living organism, coupled with the well known fact that a single dose of one of the least harmful of drugs will not only abort an attack of malaria, but will effectually disinfect the blood circulating in every part of the body, from the tip of the finger to the ball of the toe, emphatically negatives all the arguments that have been advanced to prove that the course of the specific infections can not be interrupted, and especially that typhoid fever will run its course in defiance of all medication; yet these dogmatisms have been quoted, repeated, reiterated and applauded, as if they contained the very essence of all the wisdom of all the ages, past, present and future. They are *not true*, but the declaration that typhoid is a curable malady has been for years and is yet nearly always greeted with such "acrimonious and vituperative dissent" that it should not surprise us if the bravest men were to hesitate before reporting cases of "aborted typhoid fever," well knowing that such reports would expose them to the ridicule, invective and brutal sarcasms of those who, lacking their knowledge of the power of antiseptic medicine, receive with derision every allusion to the curative treatment of the specific infections.

No wonder then that physicians who cure these diseases are afraid to publish their reports; no wonder that some physicians who promised to send me the clinical histories of their cases have never done so; no wonder that some of my friends, who kindly sent valuable statistics, with permission to use their names in this report, afterward withdrew their consent. The wonder is, that under the circumstances any physician should have had the courage of his convictions and should have dared to allow me to use the data which are here presented. It was, therefore, with extreme diffidence that I wrote to a few physicians who had previously written to me for specific information about this method of managing typhoid fever, asking them for reports of their cases for publication.

But the medical profession it seems is equal to any emergency and there is no demand that can be made upon it in the name of suffering humanity, which it does not immediately supply, as the generous and noble responses that are embodied in this report clearly prove; and despite the fact that the ordinary difficulties which beset the gathering of statistics on any new method of treatment have been enormously augmented for the abortive treatment of typhoid fever by the sharp criticism to which it has been subjected, I present herewith the statistics of 6,911 cases of typhoid fever that have been treated by the method I have advised, with quotations from the reports of a few of those physicians who have not only had the intelligence to institute scientific treatment and with it to abort the disease, but have also had the heroism to brave the innuendoes and criticisms of the molders of medical thought, and have supplied the data which must unequivocally place this heretofore most terrible sickness among the curable diseases. In signing these reports they have braved dangers as real as those which confront the soldier on the battlefield, and in speaking out in advocacy of the abortive treatment of typhoid fever they have jeopardized their professional careers, but they have exhibited the true nobility of their characters.

At the last meeting of this ASSOCIATION, the method of managing typhoid fever, which is dealt with in these reports, being under discussion, certain arguments were advanced with the manifest object of detracting from the value of the treatment by showing that the typhoid fever of this country and during recent years, is not the same disease that prevailed here twenty or thirty years ago or that is today so much dreaded in foreign lands. These arguments must have sounded strange to the ears of scientists who regard the bacillus of Eberth as the cause of the disease and who would naturally expect a given cause to produce a given effect under like circumstances. These arguments, aside from being unscientific, are in conflict with well known facts. For example, from 1864 to 1869 there occurred in the Boston City Hospital 152 cases of undoubted typhoid fever, 21, or 13.81 per cent. of which died, while the duration of the illness of those that recovered was 24.25 days. In St. Bartholomew's Hospital, London, 1860 to 1864, there were 244 cases of typhoid fever treated, with 27 deaths, or 10.06 per cent., while in the same hospital during the five years preceding the opening of the discussion of this subject in this Society (1893), 406 cases were treated, with 54 deaths, a death rate of 13.2 per cent. In the Buffalo General Hospital during the years 1892-3-4 (the only report to which I have access at present), 271 cases were treated to a finish with 47 deaths or 17.34 per cent. In the St. Louis City Hospital, during the years 1890 to 1893, there were treated 353 cases with 73 deaths, or a death rate of 20.68 per cent. During the years 1889 and 1890, there were treated in the Providence Hospital, Washington, 72 cases, of which 23 died, a death rate of 31.94 per cent. "Murchison places the death rate from this disease at 17.45 per cent., which is perhaps none too high for this city (Washington) during the time mentioned (July 1 to Oct. 31, 1895)." (Dr. Kober in Report of Health Office District of Columbia, 1895.) It is well known that a few other hospitals have reported lower death rates in a few instances and it is frankly admitted that these numbers are too small to eliminate possible errors, or to constitute a safe basis upon which to found exact conclusions, but so too are those from which are obtained the marvelously low percentages so vociferously acclaimed by a few enthusiastic advocates of cold water. They are large enough, however, for the purpose for which they are introduced—not to antagonize any particular method of managing the disease, but to prove that typhoid fever in this closing decade of the nineteenth century has lost none of its old-time virulence and intractibility; that it is still man's most insidious and relentless foe, running as tedious and obstinate a course to as certain death today as it did forty or fifty years ago.

The grave character of typhoid fever being proven we are confronted by several important questions: Can the disease be aborted? Can its course be interrupted? Can its death rate be lowered? Can its grave symptoms be ameliorated? Can relapses be prevented? Can complications be averted? In other words, is typhoid fever amenable to medical treatment? For answer I submit the following reports and in making the estimation of the value of the statistics, I beg you to remember that the physicians who have presented them were applying a method which was not only new to them, but which embodied practices that so far contravened all accepted theories, that many hesitated and did not dare, all at once, to throw away the old and fully adopt the new plans.

FRANCIS M. GREEN, M.D., Lexington, Ky., May, 1897:—I have treated in all thirty cases and without a single death. I aborted the disease in several cases, the temperature reaching normal by the seventh to ninth day. In the JOURNAL some time since I alluded to the ignorant and unjust criticism of the method. It is unfair in its enemies to cry out against our diagnosis without having first tried the treatment in cases which they themselves have pronounced typhoid fever. It is sufficient that the treatment will prove successful in a large majority of cases when commenced early.

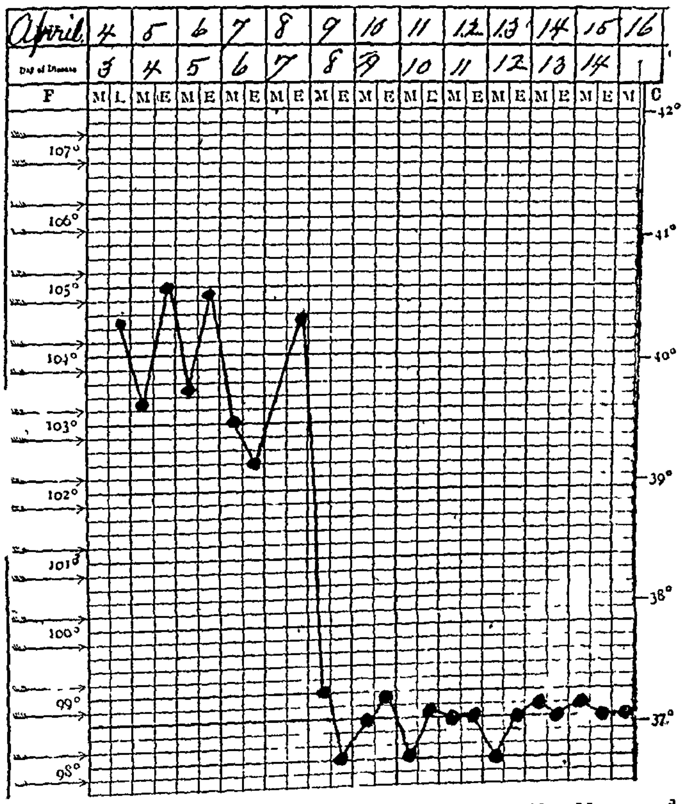
WILLIAM M. WRIGHT, M.D., Huntington, Tenn., May, 1897:—I approach a case of typhoid fever now with more confidence than ever before, and I attribute it to your method of treatment. To say that I am highly pleased at being able to make favorable mention of your method to physicians with whom I come in contact but puts it lightly. I tell them it is now the *sine qua non*. I am an unqualified advocate of and enthusiastic believer in the virtue of this method.

WALTER N. SHERMAN, M.D., Merced, Cal., May, 1897:—I also use your tablets with splendid results in many other diseases in which I think intestinal antiseptics are indicated.

SAMUEL W. HOVER, M.D., Fayette, Ohio, May, 1897:—I am sorry I can not give you a fuller report of my cases, but if I had any number of cases of typhoid fever I should use your treatment on every one. My cases have all done so much better under your treatment that I have practically all the field in this neighborhood and for all ailments. My worst case was an old lady aged 71 years and she had a very bad attack with all characteristic symptoms of the disease. No one thought she could live. I broke the fever in nine days and she made a rapid recovery. Six cases.

CARL BONNING, M.D., Detroit, Mich.:—I treated only two patients suffering from typhoid fever by your method. The first was an old lady nearly 60 years old, who was treated according to your method from the beginning. This was a mild case of true typhoid fever which ran its usual course of twenty-one days, with good recovery. The second case was a boy 14 years old, treated by your method from the first day. The symptoms became worse from day to day, temperature rising constantly and going up to 105 degrees F.; evacuations very frequent. On the ninth day a severe hemorrhage of the bowels set in, when I stopped your treatment at once, as I could not help but think that the treatment was the cause of his early and severe hemorrhage. The boy finally recovered under different treatment, though he was confined to his bed for six weeks more. Since then I have not given your treatment another trial.

HENRY CLAY DALTON, M.D., St. Louis, Mo., May, 1897:—I have treated eleven cases by the Woodbridge method, in fact all cases that I have had since I have commenced the treatment, because I certainly would not now treat that disease by any other method. All the patients recovered. None of the cases had any complications or sequelæ. With the exception of one case the tendency of the fever was to steadily abate. In the exception referred to the temperature became higher for two days after the commencement of the treatment, in fact the temperature increased two or three degrees. At the end of the second or third day it fell to about 102 degrees and in less than a week was entirely gone. In none of my cases was there delirium or tympanites. Dr. Simon Pollak of this city, at my suggestion, treated his son after your method. He was delighted with the treatment. I feel that you have a grand treatment of the disease and that it is the duty of every physician to use it. Certainly up to the present time there is no remedy which approaches it in efficiency. My experience is somewhat limited, but in the cases in which I have used it patients have gotten along most comfortably and the disease has been cut short. Eleven cases: no deaths.



Dr. Wm. H. Arthur, Fort Myer, Va. Patient John L., Fort Myer, aged 15 years; admitted to hospital April 4, 1896; diagnosis, typhoid fever. Previous history: Patient treated for intermittent fever for three days. April 4 and 5 delirium continued, quinin stopped, resisted all treatment. April 6, modified Woodbridge treatment commenced. Patient slept all night. April 7, no delirium. April 8, guaiacol added. April 12, all treatment stopped, liquid diet. April 14, ordinary diet resumed. Modified Woodbridge treatment consisted in multiplying dosage and dividing intervals by four. Patient's sleep never disturbed, but treatment resumed immediately upon awakening. Guaiacol carbonate was not on hand at first. It was procured and added on April 8. Persistent delirium of a very obstinate and exhausting kind was unaffected by chloral. Disappeared as soon as evacuations of bowels became free and frequent.

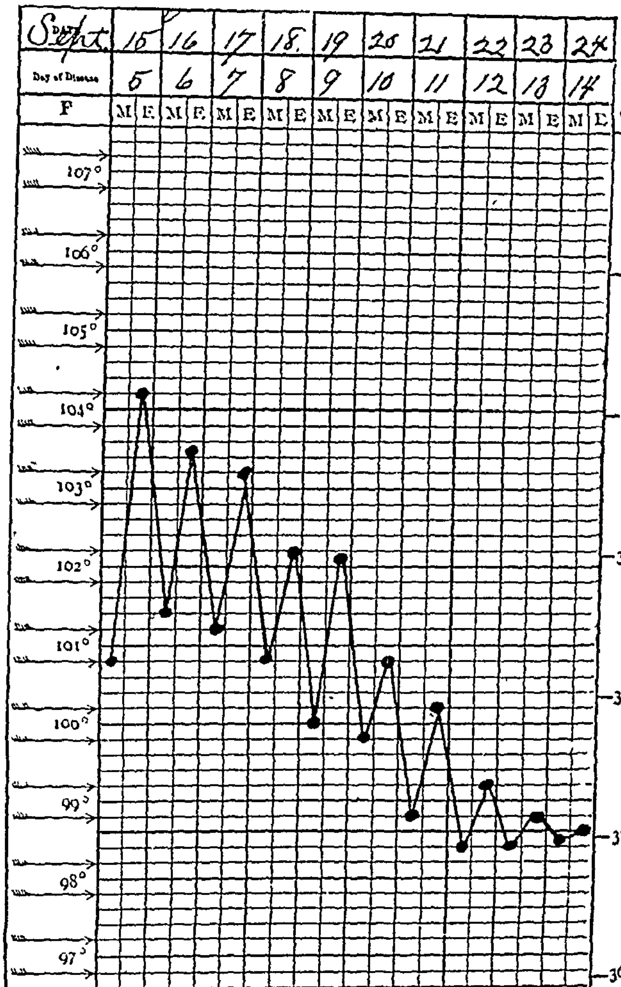
J. W. R., M.D., Missouri, May, 1897:—I think there is nothing like "Woodbridge treatment for typhoid fever." I have had the best results in every instance, with no deaths.

CHARLES S. JAMES, M.D., Centerville, Iowa, May, 1897:—I have been using the Woodbridge treatment for a considerable length of time with very satisfactory results.

BENJAMIN MOSBY SMITH, M.D., Davis, W. Va.:—I have the first case to lose since I adopted your treatment two years ago. The great trouble is physicians do not use the treatment as they should or as directed. I am with you heart and soul and feel certain it is the only sure treatment we have now.

EDWIN O. BOARDMAN, M.D., Overton, Neb., May, 1897:—I have treated thirty-six cases by your method. The first ten cases were not so successfully treated as were the later ones, because of two facts: 1, the medicines were not properly prepared; 2, they were not properly given. Since then I have used the tablets prepared by P. D. & Co., without a single death, my two deaths occurring among the first ten. One of these was complicated with an old heart lesion—a woman 45 years old; the other a boy of 8, died of purpura hemorrhagica ten days after the subsidence of the fever.

FRANK C. MYERS, M.D., Kalamazoo, Mich., May, 1897:—I have been very much pleased with your treatment and have used it faithfully for two or three years, in fact I was the first to use it in this city. I have read two or three papers in its favor at our Kalamazoo Academy of Medicine.



Dr. D. F. Manning, Marshall, Mo. J. N., aged 45. Diagnosis, typhoid fever.

ROBERT J. HILL, M.D., St. Louis, Mo., May, 1897:—I have so thoroughly adopted your plan of treating typhoid fever and typhoid conditions that, judging from my past experiences, I have no more typhoid. I do not allow the disease to go so far but that when I meet a case which I think from the past history might run into it I immediately go for Woodbridge. I have no deaths and no protracted cases. I have placed my genuine cases at fifteen. I have no doubt the number would run much higher, but as I said before, all cases of a suspicious character are at once put on that treatment. I have seen much benefit from your plan in cases of septicemia and even in fermentative dyspepsia.

BYRON I. PRESTON, M.D., Rochester, N. Y., May, 1897:—I regret that my first cases were not properly recorded but they were apparently aborted—five of them—inside of ten days

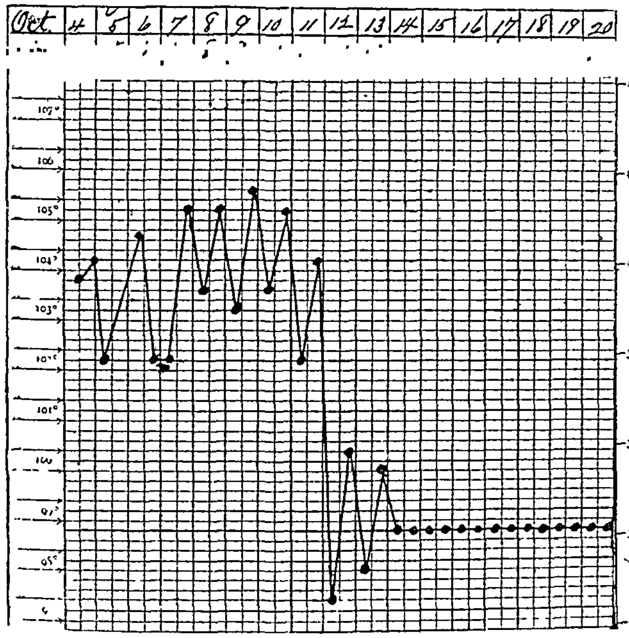
They all had nose bleed, ileac tenderness, tympanites, diarrhea and the usual temperature of typhoid fever at first.

George M. Atwood, M.D., Haverhill, Mass. :—I never saw patients with typhoid have so few unpleasant symptoms as these had after once getting down to business with the bowel.

William A. Jarnagin, M.D., Atlanta, Ga., May, 1897 :—I am perfectly satisfied with the rationale of the Woodbridge plan. Unless my experience is very different from what it has been heretofore, I will adhere to the treatment in the future. I believe this treatment is the best—it certainly appeals to common sense.

Joseph A. Daniel, M.D., Davenport, Iowa, May, 1897 :—Should I be unfortunate enough to contract typhoid fever I should want to be treated by your method.

Donald Macrea, M.D., Council Bluffs, Iowa, June, 1807 :—I learned the value of the Woodbridge treatment of typhoid fever soon after reading your first paper before the American Medical Association. Since then I have used it in all cases of typhoid, indeed in all cases of continued fever, both in hospital and private practice. I do not know how many cases I have used the treatment in nor have I any charts—I am not methodical enough for that—but I must have used it hundreds of times. I not only depend on the Woodbridge treatment myself, but I have spoken so strongly in its favor before medical societies, holding out such bright and sanguine hopes of recovery, that it is very generally used in these parts. I have never had a death since using the treatment. The duration of the disease does not seem to have been particularly shortened but the course is modified to such a degree that instead of wearing anxiety and constantly doubtful prognosis, my visits seem to be almost unnecessary and the case smoothly runs along. The only objectionable feature in the treatment is that the patient becomes tired of the bed and of being half sick.



Dr. W. R. Kelly, Watonga, Oklahoma. Goldie S., aged 11, female, admitted Oct. 4, 1895; diagnosis, typhoid fever. October 4, began treatment on fourth day of disease. Temperature below normal October 12, up to 100 on 12th, normal on 14th. Gave sponge baths and phenacetin to control excessive temperature.

Isaac A. McSwain, M.D., Paris, Tenn., May, 1897 :—The method suggested and urged by you has contributed greatly toward the limitation and alleviation of typhoid fever, and while I have seldom been able to use the exact formula of your prescriptions, yet your pointed arguments in favor of the antiseptic plan have been convincing and have caused great changes in the management of this dreaded disease. I have also used your No. 3 alone, and have been gratified with the results.

George W. Long, M.D., Graham, N. C., May, 1897 :—I have also tried the method in several cases of malarial fever with very satisfactory results (following up, of course, with quinin, etc.). At first I was much prejudiced and very slow to make the venture. Since my limited experience I feel emboldened to try the treatment further.

Henry G. Crump, M.D., Seddon, Ala., May, 1897 :—I have given your treatment a test in some cases of typhoid fever, and as far as my experience goes I think it will do all you claim.

W. H. Nixon, M.D., Killeen, Texas, May, 1897.—My uniform success has turned me from a "doubting Thomas" to a true believer. Let the physician stop and think and give the treatment a fair trial and, reasoning from my own experience I think he will be more than pleased with the result.

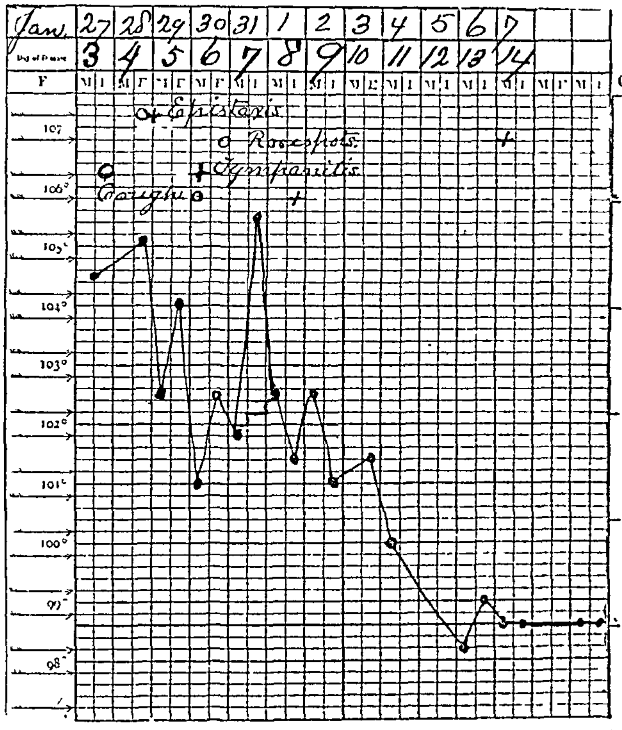
T. M. L., M.D., Virginia, May, 1897 :—I must say that I am thoroughly convinced of the efficiency of your treatment and expect to continue its use until I find some other that is better.

Matthias Bortz, M.D., Cleveland, Ohio, May, 1897 :—I have been using your system, antiseptic and eliminative, for several years, during which time I have lost no patient.

Henry W. Latham, Latham, Mo., May, 1897 :—I have been using "Woodbridge treatment" almost exclusively during the past four years; the longer and the more faithfully I apply it, the better I like it. I would be glad, and I am sure that it would be a great blessing to humanity and an honor to yourself if you would compile your ideas and experiences of the nature and treatment of typhoid fever in book form. For the principle of intestinal antisepsis is neither understood nor appreciated by one hundredth part of the profession, and after an experience of twenty-five years I admit that I groped in the dark, with no definite idea of the treatment of that terrible fever, until I got it from your writings.

Olive E. Worcester, M.D., Conant, Fla., June, 1897 :—I used the "Woodbridge treatment" of course, . . . excellent recovery.

Alfred Woodhull, M.D., Denver, Colo., May, 1897 :—One serious case came under my knowledge last year in which, partly by my suggestion, the treatment was attempted. The beneficial effects hoped for did not immediately follow and after a somewhat prolonged trial it was abandoned. The case ultimately recovered, although the illness was very grave and prolonged.



Dr. Wm. A. Morriam, Struthers, Ohio. John McE., Struthers, Ohio, aged 14; admitted January 27, 1897. Reaction of serum on Eberth bacilli positive.

R. E. Sevier, M.D., Liberty, Mo., May, 1897 :— Not one case in which I had a fair chance died.

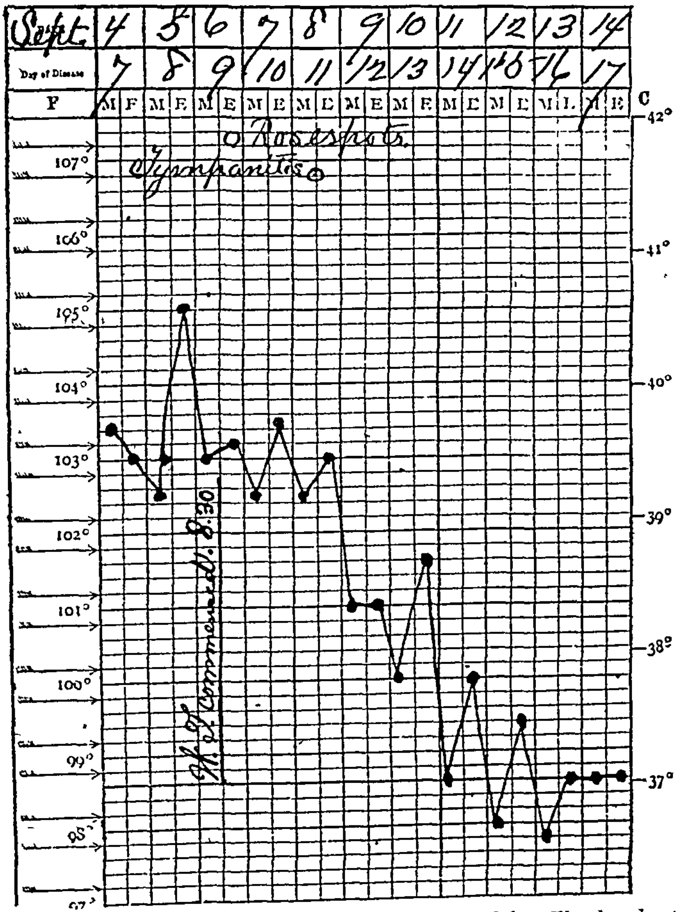
D. Y. Stem, M.D., Slidel, Texas, May 1897 :—I was gratified with the results obtained. All the literature that I had received to this date failed to outline your treatment as recommended in your recent work on typhoid fever; so, at first, I feared to give up all of the older methods and rely strictly on yours. Had I followed your instructions in full I believe I would have shortened the disease in all these cases. While your treatment is adverse to all taught in the standard works that have been examined by me, I feel now that it is the ideal treatment and that it will be a boon to suffering humanity. I wish to congratulate you on the marked success you have had in the treatment of typhoid fever and to praise the untiring energy you have manifested in trying to thwart a disease so much to be dreaded.

Richard S. Martin, M.D., Stuart, Va., May, 1897 :—I shall continue to use it in all of my cases, as I am highly pleased with the results. I am confident that it is far superior to any other known treatment.

William C. Humphries, M.D., Acworth, Ga., May, 1897:—I am a strong advocate of the "Woodbridge treatment" of typhoid fever. I am sure the mortality would be *nil* if the cases were seen in time and the treatment begun early and used persistently. I think it is intestinal antisepsis *par excellence*. I am a thorough convert to the method.

Arthur U. Williams, M.D., Hot Springs, Ark., May, 1897:—I have also used this treatment in diseases not recommended by you—malarial cases where the patient seemed to be drifting into malarial fever—general malaise, etc. Last fall my wife had all the premonitory symptoms of typhoid fever; nothing seemed to do her any good. I gave her your tablets and in a week she was on the way to recovery, and soon was all right. Many similar cases have occurred in my practice and I have been delighted with the results.

Joseph H. Green, M.D., Decatur, Ga., May, 1897:—I have been treating fevers in general by your method since last June. Several of the cases were seen for the first time in the second and third weeks of the disease, and while they ran on for two or three weeks longer, yet their symptoms were very much ameliorated and they were made comfortable and all terminated in a happy recovery.



Dr. John E. Wood, Maysville, Ohio. Patient, Walter Wood; admitted September 4, discharged September 14. Diagnosis, typhoid fever.

William P. Pierce, M.D., Hoopestown, Ill., May, 1897:—In the fall of 1895 I was called by the attending physician to see a young man, 20 years of age, dying of typhoid fever. I had been hearing for several days that his death was expected at any time and that the case was deemed hopeless. I found the patient unconscious, cyanotic, his heart beats 150, pulse at the wrist not to be detected, skin cold, and bathed in a clammy sweat, teeth loaded with sordes, low muttering delirium, restlessness and extreme jactitation, stools passing unnoticed into the bed, bowels tympanitic. The patient could not swallow. The room was filled with a sickening, cadaverous odor. We put one tablet of Woodbridge No. 1 in his mouth every fifteen minutes. He was soon able to swallow and took the tablets every fifteen minutes all night. He continued to improve—the Woodbridge method was fully carried out with almost marvelous effect, the patient slowly but regularly convalesced and in two weeks was discharged.

Ray W. Green, M.D., Worcester, Mass., June, 1897:—My cases are hardly worth reporting as, in the majority of cases, the treatment was not begun early. While I have not seen any cases aborted by your treatment, I am confident that the course of the disease was modified favorably, and the convalescence rapid.

Vilas E. Lawrence, M.D., Ottawa, Kan., June, 1897:—The disease has lost much of its dread to me. My patients begin to improve in one or two days after beginning treatment and all the symptoms die away except the fever, which gradually disappears. Most of my patients wanted more milk than I thought best to allow them. I discovered that the secret lay in giving medicine energetically and keeping the bowels well open all the time.

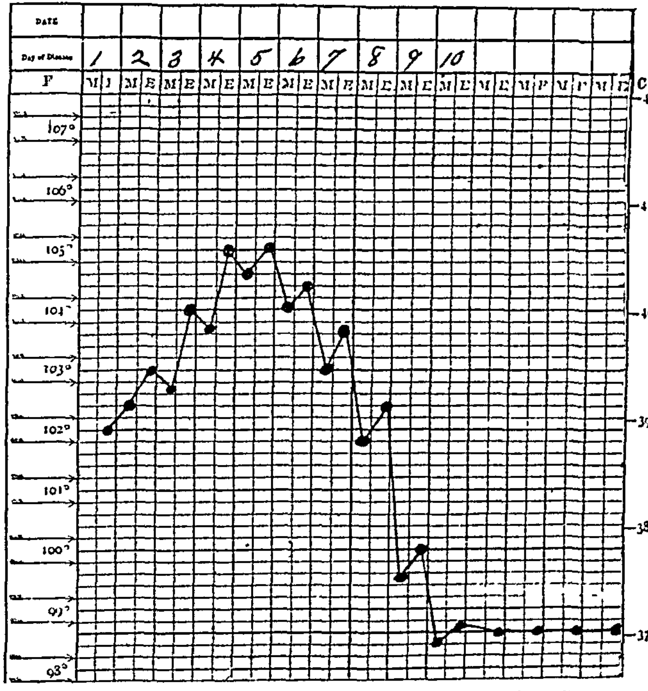
F. Marion Kent, M.D., Spring Valley, June, 1897:—I first used your method of treatment in a number of cases three years ago. My results were much better than formerly, but I did not succeed in aborting but a few of the cases. One death occurred. Since then I have been using your treatment and have had very good results—no death in three years. My results in the first cases may have been due to impurity of drugs or improper administration of the same.

Wilbert B. Clark, M.D., St. Louis, Mich., June, 1897:—One of my patients was in a family where there were two others sick with the same disease, and treated by other physicians, and both of these terminated fatally.

Granville Macgowen, M.D., Los Angeles, Cal., June, 1897:—I have treated a few cases by your method and have been pleased with the results. None of the cases died and none relapsed.

Ephraim J. McCollum, M.D., Tiffin, Ohio:—If any other doctor has had better success than I have reported, I should like to hear from him. I have been called into families where other physicians have suspected typhoid—that shows the faith of our community in the Woodbridge treatment and in those whom they know have been successful in the use of the same.

Clyde W. Crumline, M.D., Lone Pine, Pa., June, 1897:—I feel we owe a great debt of gratitude to you. My individual experience is limited, but I followed your directions faithfully. Not a dry tongue, no tympany, no "head symptoms," and in fact not a thing that I did not wish to see after the first twenty-four hours of treatment. There was no question about the correctness of diagnosis.



Dr. John F. McGarvey, Loraine, Ohio. Patient, Walter Stang, aged 18 months. Admitted March 2. Recovered. Woodbridge treatment. This was a typical case and all his friends said he would die. I said he would live.

Perley P. Comey, M.D., Clinton, Mass., May, 1897:—I have used your treatment in every case and feel perfectly satisfied with it. It is a sure thing and I advise it in all cases.

William S. Smith, M.D., St. Clair, Minn., June, 1897:—I do not hesitate to say that this treatment is by far the best yet devised for treating typhoid fever. In my hands it has yielded better results than the enthusiasts of other methods have claimed for their favorites.

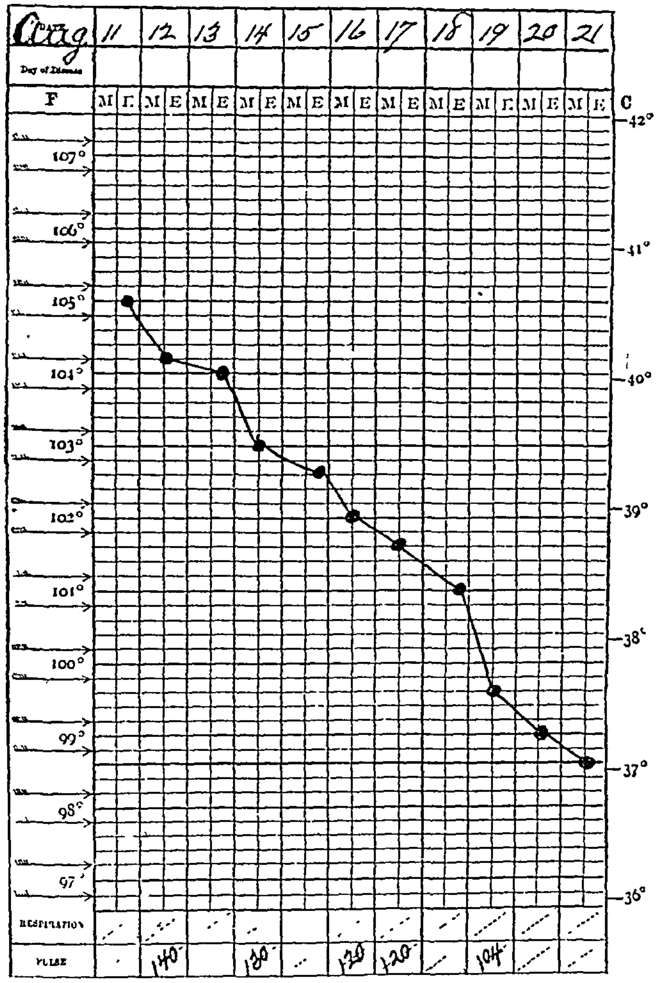
Edward L. Baker, M.D., Indianola, Iowa, May, 1897:—While I have not aborted cases, the comfort from the absence of delirium has been marked and recovery after intestinal hemorrhage has taken place—before, such cases have died in my hands.

Walter W. L. Overfield, M.D., Forreston, Ill., May, 1897:—Prior to November, 1896, I treated my typhoid patients by the older methods, but I am now convinced that the treatment advised by you is far superior to any heretofore in use.

T. W. S., M.D., Virginia, May, 1897:—Although I varied the method slightly, I consider it the only treatment to use.

Lorenzo D. Ray, M.D., Blakesburg, Iowa, May, 1897:—I remember one case, a very severe one, of a man who drank to excess. The symptoms were grave; the prognosis of consulting physicians was sure death. After consultation I began your treatment, improvement began inside of eighteen hours and his recovery was uneventful. He was married, 58 years of age a hard worker and a harder drinker. This treatment has worked exceedingly well for me in all cases especially of men who are inveterate drinkers.

Matthew K. Elmer, M.D., Bridgeton, N. J., May, 1897:—In one case it cut the disease short, but in the others, while I thought it made the cases lighter, the cerebral symptoms less severe and the patients easier in every way, and they ran a very mild course, the duration of illness was about the same as usual. However, it is a great satisfaction to have these clear minds and mild symptoms.



Dr. J. P. Matthews, Carlinville, Ill. Admitted August 11, 1895.

James A. Lifferty, M.D., Concord, N. C.:—I am well pleased with the treatment.

Milton C. Connor, M.D., Middletown, N. Y., May, 1897:—I have used the treatment, with my own modification, in every case that has come under my care for the last three years. Some cases relapsed from stopping the treatment too soon.

J. B. Taylor, M.D., Broadway, Ohio, May, 1897:—I believe the Woodbridge treatment is the best we have for typhoid fever. Hereafter I shall adhere strictly to your plan. All of my cases recovered, the average duration of illness being about seventeen days. I am *perfectly satisfied* that I was not energetic enough in the beginning. One point in particular I noticed, that while giving the treatment the tongue and teeth remained clean, the first being moist and the latter free from sordes; and there is also less distension of the bowels.

Columbus N. Udell, M.D., Blakesburg, Iowa, May, 1897:—This treatment is all right.

Stewart Robinson, M.D., Alleghany, Pa., May, 1897:—I had no relapse under this method—one case was tedious but finally made a complete recovery.

Joseph O. Yost, M.D., Youngstown, Ohio, May, 1897:—Deaths? No, indeed! I would feel guilty of an unpardonable sin if I failed to use the "Woodbridge treatment" in typhoid fever or in fact in any intestinal trouble of bacterial origin.

Warren C. Eustis, M.D., Owatonna, Minn., May, 1897:—I had one relapse but a return to your treatment prevented complications and in two weeks the patient was again convalescent.

Lowell M. Gates, Scranton, Pa., May, 1897:—I have faith in the method but think it might be improved. I do not like to give medicine every fifteen minutes, so have given two every hour. If double the strength, it would not require so many tablets. The principle of intestinal antisepsis, combined with elimination of the septic material in the intestinal tract is doubtless the correct one in the treatment of typhoid fever. It has the advantage over the Brand method in being more reasonable. To treat by the Brand method alone is as unscientific as to treat the fever of an abscess by the same method without opening and washing out with an antiseptic solution.

Joseph E. Bundy, M.D., Cissna Park, Ill., May, 1897:—We had an epidemic of rather a malignant type and I began treating typhoid in the usual way and lost two out of eight patients. Not satisfied with this I began with your antiseptic treatment and did not lose another case out of twenty. In these cases *all of the symptoms were pronounced, and in those in which* there was hemorrhage it was slight. I am satisfied that under your treatment most cases can be saved if seen in time.

Aloysius G. Blincoe, M.D., Bardstown, Ky., May, 1897:—I have never before seen eight successive cases of typhoid fever do so well.

C. W. Foster, M.D., Woodfords, Maine, May, 1897: I have used your treatment with most satisfactory results, and shall use it again if I have occasion.

George W. Hall, M.D., Saint Louis, Mo., May, 1897. We were much pleased with the effect of the remedies used. I believe that your treatment, modified to suit the requirements of individual cases, will be the treatment of the future in typhoid fever, and I feel that we owe you many thanks for directing the profession to the efficiency of "intestinal disinfection" in this disease. If we except the use of turpentine by Wood, and the use of nitrate of silver by Dr. J. K. Mitchell, to you belongs the honor of directing the attention of physicians to the intestinal canal as the place to which the main treatment should be directed.

C. Richter, M.D., Ashland, Wis.:—Most of my patients were in St. Joseph's Hospital, Ashland, Wis., and the charts are in the possession of the Sisters there. I have treated thirty cases and had two deaths. One of these had been treated by a druggist for two weeks while ambulatory drastic purgatives were given followed by salts; when the man fell into my hands he was in a *precarious condition. The outraged intestinal* mucous membranes responded by copious watery discharges, later by hemorrhages. There was an enormous tympanites and consequently and partly dependent on this, a weak heart's action. The Woodbridge treatment did not improve his condition and another hemorrhage ended the case fatally.

The second fatal case was of a nervous temperament. His wife and parents of a like disposition, proved a decided stumbling block to any rational treatment. Dr. G. W. Harrison, who treated the case, falling ill, I attended the gentleman. I remember that I predicted to Dr. Harrison a fatal termination of the case. His pulse was fast—120 to 125. His nervousness and restlessness were excessive, his general physique was anything but robust. I saw him about the second week of the disease. In his case I have the strongest reason to believe that the treatment was not properly carried out, from the mistaken kindness of wife and parents, who positively refused to awaken him to give the medicines. His life ebbed away by hemorrhages in the third week. Yet in his case, I noticed some of the symptoms—or rather the absence of the symptoms usually met with in typhoid fever under this treatment and of which in a general way I shall speak later. I consider both of these cases for obvious reasons as not properly to be classed under the head of those patients in whom I exhibited the Woodbridge treatment; however, I desire to be unbiased in the matter and consider it my duty to mention these cases and something of their history to you. Outside of these cases I have had no death while using the Woodbridge treatment in typhoid fever. My observations while treating typhoid fever patients with the Woodbridge treatment show that the disease has run a much shorter course than usual *in typhoid fever.* In several cases, fever stopped on the fifth and sixth day. Tympanites was entirely absent in all cases, after commencing. The stools, usually two in number during twenty four hours, while soft, were not diarrheic nor very offensive. There never was a diarrhea with the characteristic pea soup stools, but the

> discharges were rather of a pultaceous nature. There was entire absence of distressing nervous symptoms—no severe headaches, no jactitation, no complications, no excessive thirst. In fact I base my recommendation of this treatment more upon its beneficial influence in abating these symptoms, than in particularly aborting or cutting short the attack, although it certainly has done so in several of my cases. My patients appear to me never to be very sick while under this treatment. The general clinical aspect of the disease was entirely changed and I say this after having seen and treated hundreds of cases of typhoid fever.

These are a few brief quotations from the reports of 193 physicians who have treated (since their previous report, or since they commenced the use of the treatment) 2,078 cases, with forty-five deaths. All of these reports have been received since I presented my paper to the Ohio State Medical Society on May 21, 1897, which gave the statistics of 5,449 cases and 105 deaths, all that had been reported to that date.

The statistics now show 7,827 cases treated with 150 deaths, a death rate of 1.91 per cent. This includes every death known to have occurred under the treatment, or any modification of it. Several deaths in which the treatment was known not to have been properly applied, a large number in which the treatment was not commenced until after the patient was moribund or practically so, and eleven in which the patient was so near the end when the treatment was commenced that death actually occurred within from eighteen to forty-eight hours, and a few cases in which the death was not due to typhoid fever or its sequelæ, are included. In only seven of the fatal cases do the reports show that proper treatment was instituted on or before the eighth day of the disease.

The average duration of illness in the 4,935 of the cases which recovered and in which it was given, was 12.7 days. Of the cases that recovered, 101 had intestinal hemorrhage. Ninety-five relapses are reported. Forty-seven were pregnant women, of whom two miscarried and died, six miscarried and recovered, and thirty-nine carried their children to full term, two giving birth to twins. In every instance in which the condition of the child is mentioned it is described as "fine," or "healthy," or "fine and healthy." Forty of the cases were complicated with pneumonia and recovered.

In 85 of the fatal cases the cause of death is given, 12 being due to intestinal hemorrhage, 14 to perforation, 10 to pneumonia. Six of the deaths are said to have been due to meningitis, 3 to consumption, 3 to Bright's disease, 2 to intussusception, etc. The stage of the disease at which the treatment was instituted is given in 69 of the fatal cases, in 10 of which it was from the first to the eighth day, in 10 from the eighth to the tenth day, in 14 from the tenth to the fourteenth day, in 16 from the fourteenth to the sixteenth day, and in 19 from the sixteenth day to the end of the third week. In 66 of the cases the stage of the disease at which the treatment was commenced is not stated.

These are the statistics and these brief quotations, together with the more than one hundred pages of closely typewritten excerpts from earlier reports presented to the Ohio State Medical Society, on May 21, constitute the verdict of the only jurors who are competent to render judgment, viz.: those who can speak from bedside experience. Among all these hundreds of reports, there appear but twelve adverse critics, not one of whom could possibly have been in possession of any accurate knowledge of the subject, not one of whom had written to me for advice, nor called me in consultation, nor read the one published article in which I have given detailed directions for the management of typhoid fever. At least seven of the twelve, by their own admission, and one other certainly, did not use the treatment as advised, and the remaining five spoke from an experience limited to the treatment of fifteen cases, an average of three cases to each observer. This is an experience altogether too insignificant to justify an adverse criticism.

What are the salient features of this mass of reports of physicians who have broken away from the ideas of the past? These reports show that those who followed the directions given in my book, "Typhoid Fever and its Abortive Treatment," most closely, had the best results and have become the most enthusiastic advocates of the method and, vice versa, those who diverged most widely from the prescribed course met with failures. They show that many dangerous modifications have been made and that some of the deaths are due to these alterations. They show that rapid recoveries have followed its use when first applied at all the different stages of the disease, and even after all hope had been abandoned by the attending physicians who had used other methods, and in several instances after the supervention of alarming intestinal hemorrhage, they show rapid recoveries during the most careless and injudicious use of the most subversive counterfeits of the original prescriptions. They show the administration of such infinitesimally small doses as would make the most orthodox homeopath blush and of doses the size of which would make the rashest heroic of the past tremble.

Despite these encumbrances, the method of treatment has passed through the ordeal of its first years of trial by both its friends and its enemies, who have treated 7,827 cases with 150 deaths, or a death-rate of less than 2 per cent. and a duration of illness of a trifle over twelve days. Under its benign influence the severity of the disease is greatly ameliorated, the symptoms minified, all grave complications averted and dangerous sequelæ prevented. The tongue is quickly rendered moist, tympanites promptly relieved, excrements lose their offensive odor, delirium is rare and the "typhoid state" unknown. The appetite soon returns and the patient expresses a desire to get up and eat solid food, which he may do if he has been properly treated from a sufficiently early stage so that ulceration of Peyer's glands has been prevented. Tedious convalescence is avoided, the patient generally passing rapidly from the fastigium of the disease to vigorous and robust health. These are results which have never before been obtained in hospital or private practice, in so large a number of cases, by so many physicians. They are results which were never before deemed possible. They have been obtained in most instances, without the use of the cold bath, medicinal antipyretics, or alcoholic stimulants, all of which are generally unnecessary. They prove by incontrovertible evidence that typhoid fever can be aborted. They teach that it is amenable to curative treatment in all of its stages and they go far toward proving that death or protracted illness are wholly unnecessary consequences of the disease

In conclusion I wish to say that I am deeply grateful to the physicians who have so courteously and courageously responded to my letters of inquiry and in so doing have made it possible for me to submit this report.

637 Prospect Street.

TRICHINOSIS IN THE UNITED STATES; WITH THE REPORT OF A CASE.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY FREDERICK A. PACKARD, M.D.
PHILADELPHIA.

Feb. 5, 1897, an Italian was admitted to my ward at the Philadelphia Hospital, complaining greatly of pains in the thighs and legs. Owing partly to his natural mental obtuseness, partly to his nationality, the history that could be obtained even with the aid of an interpreter, was by no means satisfactory. On this account many points in his history are vague, while some of the facts in his case could not be determined.

He gave his age as 28 years, his occupation that of a farm hand. He could give us but little information in regard to the locality in which he had last worked, but said that it was in New Jersey. After three months of enforced idleness (from lack of work) he started to work on a farm on February 1. The work being too laborious for him he left the farm, although he seems not to have felt ill in any way. On the third of the month (two days before admission) he had a decided chill, with some vomiting but no diarrhea. On the day of admission the face had begun to swell. As to the dates recorded there may be some doubt, although repeated questioning only seemed to confirm the statements made above.

On examination it was found that he was a rather strongly built man. There was quite marked edema of the eyelids and the surrounding skin, especially above the brows. The swelling was quite sharply marginated above and over the malar bone, the skin being quite red and rather shiny. The pupils were equal and natural. The pulse was of good force, full volume and rapid. The tongue was slightly coated and rather dry. Examination of the heart and lungs showed nothing abnormal. The abdomen was rather scaphoid, showed no tender area or gurgling and there was no eruption. The areas of hepatic and splenic dulness were normal.

The joints were free from swelling, redness or heat. There was no visible change in the painful parts but the least pressure upon the legs or thighs at once caused complaint of pain. This tenderness was diffuse, in that it did not correspond to nerve trunks, blood vessels or bone, but was decidedly more marked toward the ends than over the belly of the muscular masses. The temperature on admission was 101.4 degrees, the pulse 94, respirations 20.

Sodium salicylate, gr. x, every three hours, and also a sponge bath if the temperature reached 103 degrees was prescribed. The patient passed a sleepless night, and on the next day complained rather more bitterly of muscular pain in the thighs and legs and also in the arms. Examination of the urine showed that it was yellow in color, of acid reaction, specific gravity 1025 and contained no albumin, but in the sediment there were found a few granular casts and leucocytes. He complained much of thirst and dryness of the mouth.

A daily record of the events of the case would be rather devoid of interest and it will suffice if the main facts of the clinical course are noted. The pain in the muscles of the thighs and calves continued without intermission until March 2, almost a month from the time of onset, although it is questionable whether they were very severe during the latter part of this time, inasmuch as they suddenly departed on that date, after a small incision of the calf. Insomnia was a marked feature for the first eleven days of his stay at the hospital. There was no vomiting after admission. The bowels moved three times on the day after admission, twice on the 9th and five times on the 10th of the month; but were simply brown, watery movements without distinctive character.

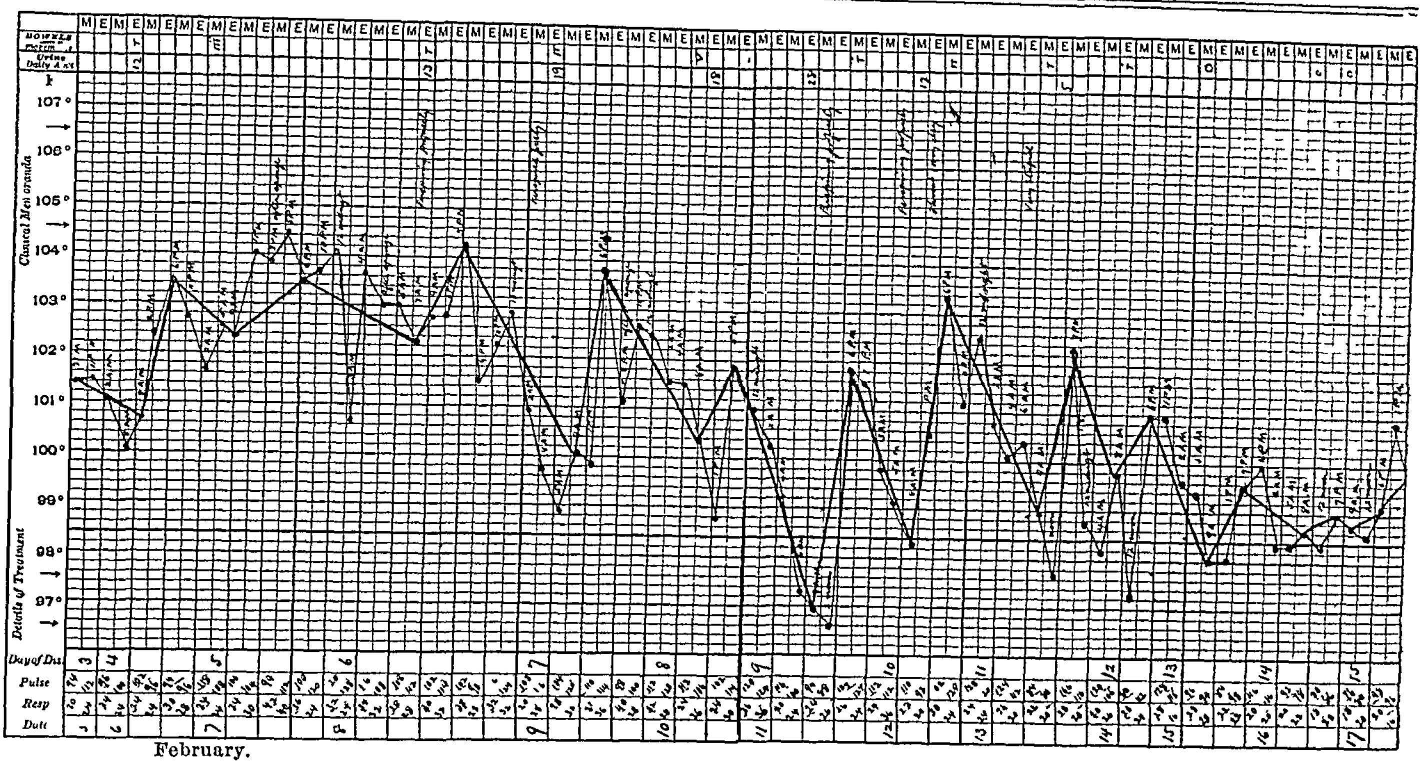
The edema of the face subsided after four or five days and the skin at once presented its normal appearance. There was no swelling, ecchymosis or redness of the conjunctiva at any time.

On February 9, the sixth day of his illness, the fourth day after admission, some small red spots were found on the abdomen, which were caused to disappear by pressure and were called "suspicious." These persisted but a day or two and were not succeeded by others. There was slight cough on and for a few days after February 16, with scanty, glairy white expectoration. This was examined on the day of appearance and a few tubercle bacilli were found. As the diagnosis of trichinosis had been made with quite positive certainty before that date and as there were no physical signs of lung involvement, subsequent careful examinations were made, always without result. and it was concluded that the presence of bacilli in the first examination must have been due to accidental contamination.

The urine was scanty, at times only measuring from twelve to nineteen ounces in twenty-four hours; the specific gravity was invariably high, ranging from 1024 to 1027. No albumin was ever found, but in two examinations there were found granular casts; on one occasion on ordinary sedimentation without the aid of the centrifuge. No estimations of urea, uric acid, etc., were made. Profuse sweating was present on four days (from the tenth to the fourteenth day of his illness).

The temperature, as will be seen by the accompanying chart, pursued a remitting course from the time of admission until March 9. For the first two days it progressively increased until it reached 101.4 degrees, then suddenly fell to 100.6 degrees, only to soon rise to over 103 degrees. On the ninth of the month (the sixth of the disease) he had but little fever for the greater part of the day, then the temperature quickly ascended to 103.8 degrees, to fall irregularly almost to the normal point on the next afternoon. On February 11 it suddenly descended to 96.6 degrees with no apparent cause other than profuse sweating, and from that date became extremely irregular until February 16. From that time onward it pursued an erratic course of slight elevation above the normal until it finally settled to the normal on March 9.

The pulse was accelerated during the whole time of fever but was not out of proportion to the elevation of temperature. At the latter part of the febrile period it became rather soft and compressible. The respirations were abnormally numerous from the day of his admission until several days after his temperature had remained at the normal point. As will be pointed out later, this was one of the most potent factors in arriving at the diagnosis. On February 23 the feet and legs were found to be very edematous, white in color and pitting deeply on pressure. This persisted until his discharge from the hospital on March 25.



The blood was examined March 10. The result showing 4,230,000 red cells per c.mm., hemoglobin 74 per cent., 8,000 leucocytes per c.mm. After reading T. R. Brown's "Studies on Trichinosis," in the *Johns Hopkins Hospital Bulletin* for April, 1897, I much regretted that repeated examinations with differential estimation of the leucocytes were not made. The estimation of the relative proportion of eosinophiles would have been especially interesting in view of Brown's finding a percentage of these corpuscles as high as 68.2 per cent., with corresponding decrease in the polymorphonuclear neutrophiles to 6.6 per cent. Brown's discovery of great leucocytosis (30,000 per c.mm.) was certainly not present in our solitary examination on the thirty-fifth day of the disease.[1]

Dr. C. A. Oliver kindly made an examination of the ocular conditions and furnished me with the following report: "Vision and accommodative power normal. Pupils 3.5 mm.; irides equally and freely movable to the light, convergence and accommodation, marked hyperphoria for near and far, eye ground normal with the exception of a fine striated hemorrhage partially overlying the inferior temporal vein just beyond its primary bifurcation in the left eye. Field of vision normal. *Summary:* No gross ocular changes except a slight disturbance in extra-ocular muscle equilibrium in the vertical meridian, and a fine isolated venous extravasation in the superficial layers of the left retina." The voice was at no time husky or altered beyond the changes produced by the dryness of the mouth. Laryngoscopic examination was negative. Hearing was at no time impaired.

On February 25 I lectured on this case in the clinic, giving the following reasons for my diagnosis: There were but six possible diagnoses: typhoid fever, rheumatism, influenza, non-discoverable tuberculosis, myositis from cause other than the trichina spiralis and trichinosis. Typhoid fever could be excluded by the atypical temperature curve, by the facial expression, the appearance of the tongue, the absence of tympanites, the lack of splenic enlargement, the character of the stools and the absence of the ordinary prodromal symptoms of that disease. The few "suspicious" spots on the abdomen were not atypical of typhoid and were not succeeded by other skin lesions. No form of rheumatism would give us such symptoms as we had in this case, except the so-called "muscular rheumatism," which is usually accompanied by but slight elevation of temperature, is seldom distributed in the manner here present, is seldom accompanied by pain of such acute character and would in no way account for any of the symptoms here present except the muscular pains. Influenza could with rather more difficulty be excluded, but was ruled out by the long continuance of the pain and temperature and by the extreme muscular tenderness present, while the occurrence of many of the symptoms could hardly be accounted for by even this protean malady. Non-discoverable tuberculosis should only be diagnosticated after careful exclusion of every other possible cause for the symptoms, and in this case there was no good reason for suspecting its presence, while it would only account for the temperature elevation and would not explain the peculiar pains. No cause for a non-trichinous myositis could be found. In favor of trichinosis were the muscular pain and tenderness, chiefly near the tendinous insertions of the muscles, the history of vomiting at the outset, the atypical and irregular temperature curve, the insomnia, the thirst, the sweating, the rapidity of respiration, but above all by the early swelling of the upper face and the late edema of the feet. Two points militated against the diagnosis—the absence of early diarrhea, the vague history of the eating of raw pork and the absence of other known cases of infection. The absence of diarrhea showed but little, inasmuch as it is by no means constantly present in trichinosis. Careful inquiry showed the occasional eating of bologna sausage as the only probable source of infection, while the fact that the patient immediately left the place where he probably contracted the disease and his ignorance as to his fellow laborers rendered futile any attempt to discover the existence of other

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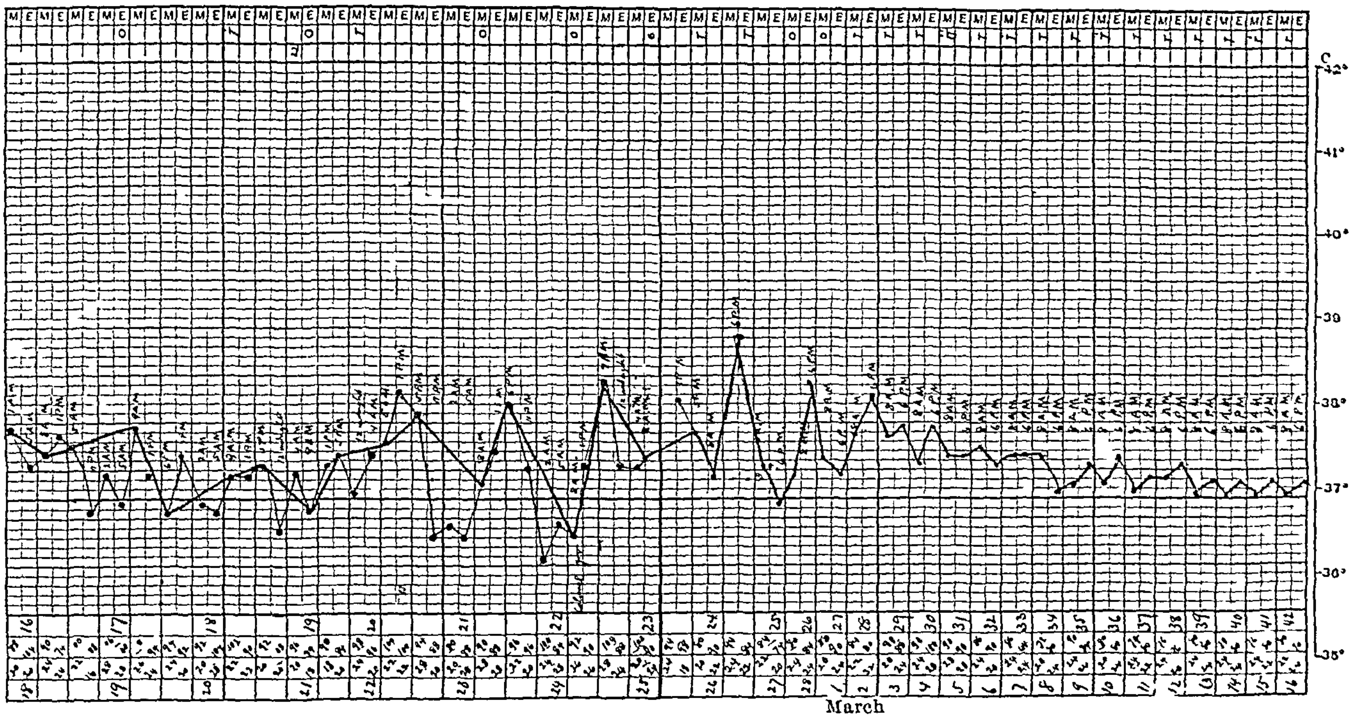
[1] Cabot (A Guide to the Clinical Examination of the Blood, 1897, p. 102) says that a case has lately been observed in Dr. Osler's clinic at Johns Hopkins Hospital with a leucocytosis of 25,000, and 61 per cent. of eosinophiles. It is possibly the case reported by Brown and referred to above.



cases. The two points that made me feel most certain of my diagnosis were the occurrence of frontal edema and the otherwise unaccountable rapidity of respiration, the latter being readily explained by the predilection of trichinæ for the diaphragm.

On March 2 the patient consented to the removal of a piece of muscle from the left gastrocnemius. A small piece was excised and showed a very large number of living, non-encapsulated embryonal trichinæ scattered among the muscle fibers. The operation greatly relieved his pain, so that there was no difficulty in gaining his consent to a second exploration in the gastrocnemius of the right leg on March 17. This specimen showed a great number of embryos with beginning capsule formation.

Some of this muscle fiber was fed to two white rats for experimental purposes, and it was my desire to present to this meeting some results of feeding experiments, but unfortunately I have not been enabled to complete my study of this portion of the subject in time to give my conclusions at present. Through the kindness of Dr. D. E. Salmon of the Bureau of Animal Industry I obtained a large supply of trichinous meat, which I have fed to white rats and guinea pigs in order to determine some of the still undecided questions in regard to the path of migration of the embryos and to the finer changes in the infected muscle fibers, but the investigation has required more time than I have been able to devote to it and I shall have to report my results in a later communication

This is the fourth case in which I have made the diagnosis of trichinosis during life, but the first in which I have been able to persuade the patient to allow me to make the one crucial test in sporadic cases—the excision and examination of a piece of muscle. That many cases of infection by trichinosis must occur annually in this country can, I think, not be doubted. I regret that it was not in my power to further follow up the source of infection of my patient. When last seen my patient was steadily gaining flesh and had returned to work.

In the Twentieth Annual Report of the State Board of Health of Massachusetts, published in 1889, there is an interesting paper by Prof. E. L. Mark, of Harvard University, upon "Trichina in Swine." Between the years 1883 and 1888 he examined 3,061 hogs raised near Boston. Of these 394 or 12.86 per cent.were trichinous. Of 3,298 hogs raised in Massachusetts, 436 or 13.22 per cent. showed trichinæ on examination. Of the 234 examined hogs slaughtered for State institutions, 42 or 17.95 per cent. were trichinous. The pork intended for export or interstate trade (see 8th and 9th Annual Report of the Bureau of Animal Industry, 1891) is inspected, and if found free from trichina by the inspectors of the Department of Agriculture, is labeled as inspected and passed. For the year ending June 30, 1882, 1,267,329 hogs were examined. Of these, 25,899 were trichinous, 2.013 per cent. As the trade in pork within the States does not receive official inspection it may be that the figures given by Prof. Mark for Massachusetts are not very much, if at all, above the average of other States. If so, there must be frequent infections. Reports of individual cases, such as is the present contribution, are of but little value as compared with the accounts of groups of cases, yet I can not think that the disease is frequently diagnosticated when so little mention of it is found in the journals. Possibly the observers of the disease have not thought the subject sufficiently interesting to make it worth their while to publish their isolated cases. I hope that their opinion is not correct.

In order to obtain some idea of the prevalence of trichinosis in the United States and Canada I have tabulated the cases reported in the various journals, in so far as they are accessible to me. A tabulated list of these I have appended to this paper. The results may be summarized as follows:

Between the years 1861 and the present time there have been reported in the United States and Canada 357 cases of trichinosis. Of these, 243 recovered, 80 died, while in 17 the result is not stated. The mortality, therefore, of the 323 cases where the result is definitely stated, was 24.76+ per cent. The total above given is probably far to small, inasmuch as a large number of the reporters state that many cases

ANALYSIS OF CASES OF TRICHINOSIS OCCURRING IN THE UNITED STATES AND CANADA.

No.	Year.	Reporter.	State.	Place of Publication.	Total.	Recovered.	Died.	Remarks.
1	1864	Krombein	New York	Buffalo Med. and Surg. Jour., June, 1864, p. 430	7	5	2	The five marked as recoveries were still dangerously ill at time of report.
2	1866	T. S. Bardwell	....	Med. and Surg. Reporter, June 14, 1866				The same as those of (3) H. Ristine. Inserted owing to slight precedence of date of publication.
3	..	H. Ristine	Iowa	N. Y. Med. Record, July 16, 1866	9	4	5	Same cases reported by E. M. Smith, Chicago Med. Jour., Aug, 1866; Jos. H. Wilson. Med. Rep., St. Louis, 1866, and T. S. Bardwell (2).
4	..	B. H. Trust	Dist. of Col.	Savannah Jour. of Med. Nov. 1866, p. 373	1		1	Confirmed by autopsy.
5	..	Herman Kiefer	Michigan	Detroit Rev. of Med. and Phar., Dec. 1866, p. 10	1		1	Confirmed at autopsy.
6	1867	D. V. Dean	Missouri	Humboldt Med. Arch., Dec., 1867, p. 215	1		1	Found at autopsy.
7	..	Edmond Souchon	Louisiana	New Orleans Med. and Surg. Jour., May, 1867, p. 777	1		1	Found in a dissection. Body of a probable foreigner.
8	1868	E. C. Seguin	New York	N. Y. Med. Jour., May, 1868, p. 116	1	1		Diagnosis confirmed by excision of mus.
9	.	J. Wiesel	W. Virginia	Trans. of Med. Soc. State of W. Va., 1868, p. 303	5	5		Trichinæ found in ham.
10	1869	Albert H. Buck	New York	N. Y. Med. Rec., March 1, 1869, p. 7	8	6	2	
11	..	J. Stockton Hough	Pennsylvania	Am. Jour. of Med. Sc., April, 1869, p. 565	2	2		Discovered at autopsy.
12	..	Wm. E. Bessey	Canada	Canada Med. Jour., 1869, v, p. 544	9	9		
13	..	E. W. Boyles	Illinois	Chicago Med. Jour., 1869, xxvi, No. 1, p, 322.	3	2	1	
14	..	E. R. Hun	New York	Trans. N. Y. State Med. Soc., 1869, p. 157	2	1.	1	Diagnosis confirmed by harpoon in one.
15	1870	J. Stockton Hough	Pennsylvania	Am. Jour. Med. Sc., Jan., 1870, p. 282	2		2	Note upon them very brief. Probably discovered on autopsy or dissection.
16	..	Unsigned article	....	Chicago Med. Jour., Feb., 1870, p. 65	4	3	1	Confirmed by autopsy.
17	..	C. B. Reed	Illinois	Chicago Med. Jour., March, 1870, p. 129	5	3	2	Confirmed by autopsy.
18	..	F. Flandrau	New York	Trans. of Med. Soc. State of N. Y., 1870, p. 245	12	6	6	Diagnosis confirmed by finding trichinæ in ham and at autopsy.
19	1871	George Derby	Massachusetts	Rep. of State Board of Health of Massachusetts, 1871, p. 48	11	8	3	
20	1872	John C. Dalton	New York	Trans. N. Y. Academy of Medicine, 1872, Vol. iii, p. 1	6	5	1	Of the five recoveries three were probably in danger on the date of the report. The first case was examined by the coroner as suspicion of poisoning existed. Ham examined with positive result.
21	1873	E. J. Beal	Texas	The Med. Arch. (St. Louis) 1873, viii, p. 587	9			Result not given definitely.
22	1874	F. Hohly	Ohio	Trans. of Ohio Med. Soc., 1874, p. 303	2	2		Confirmed by excision of pieces of mus.
23	..	R. M. Bertolet	Pennsylvania	Trans. Path. Sec. of Philadelphia, 1874–5, v, p. 251	?		1	Report states that a family was affected. The specimen had been removed from fatal case and sent for examination.
24	1875	M. Northrup	Michigan	Rep. of State Bd. of Health, Mich., 1875, p. 32	5	3	2	
25	..	George Sutton	Indiana	Trans. Ind. State Med. Soc., 1875, cix	10	7	3	
26	..	E. C. Hadra	Texas	Trans. Texas State Med. Asso., 1875, p. 184	5	3	2	Trichinæ found in ham, also at autopsy.
27	1878	J. H. M. Peebles	Pennsylvania	Med. and Surg. Rep., June 22, 1878, p. 497	7	7		
28	..	J. G. Richardson	Pennsylvania	Phila. Med. Times, Aug. 31, 1878, p. 568	1	1		Found in dissecting room. Death from accident. Embryos calcified. Apparently a German.
29	..	David Mitchell	Michigan	Fifth Annual Report, State Board of Health of Michigan, 1878, p. lxxii	5	5		Examination of pork showed trichinæ
30	..	N. Williams	California	Trans. of State Med. Soc., of Cal. 1878, p. 103	10	6	4	
31	1879	N. Loughran	New York	Am. Med. Bi-Weekly, April 12, 1879, p. 169	5	3	2	Muscle examined in some. Diagnosis confirmed by postmortem in others.
32	..	Wm. Maddren	New York	Proc. Med. Soc., County of Kings, 1879, p. 118	5	3	2	Postmortem confirmed and muscles examined during life.
		[illegible]	Indiana	Am. Practitioner, 1879, Vol. xx, p. 135	5	2	3	Diagnosis confirmed postmortem.
		[illegible]	Michigan	Detroit Lancet, 1880–1, n. s. iv, p. 436	5	3	2	Confirmed at autopsy.
		[illegible]y	Pennsylvania	College and Clin. Rec., Nov. 15, 1880, p. 172	4	4		
		[illegible]	Pennsylvania	Med. News and Abstract, March, 1881, p. 131.	1	1		Diagnosis confirmed by section of mus.
37	..	[illegible]ger,	Illinois	Chicago Med. Rev., May 5, 1881, p. 208	2	2		Proven by harpoon in one.
38	..	Wm. Commons	Indiana	Trans. Ind. State Med. Soc., 1881, p. 54	2		2	
39	.	J. H. Alexander	Indiana	Trans. Ind. State Med. Soc., 1881, p. 50	2	1	1	Trichinæ found in muscle at autopsy.
40	1882	C. W. Woodridge	Massachusetts	Boston Med. and Surg. Jour., March 30, 1882, p. 299	2	2		Probably correct diagnoses; muscles negative on excision.
41	1884	S. B. Welch and McCaskey	Pennsylvania	Trans. Med. Soc. Penn., 1884, Vol. xvi, p. 518	14	10	4	Trichinæ found at autopsy.
42		A. B. Cates	Minnesota	Northwestern Lancet, Jan. 15, 1885, p. 117	13	10	3	Trichinæ found in ham.
43	..	J. D. Whitley	Illinois	St. Louis Med. and Surg. Jour., 1885, xlviii, p. 376	4	3	1	
44	..	J. M. Wyland	Iowa	Rep. of State Board of Health of Iowa, 1885, p. 71	6	4	2	
45	..	J. Savage Delavan	New York	Fifth Annual Report State Board of Health of New York, 1885, p. 112	12	11	1	Trichinæ found in muscles at autopsy.
46	1887	A. C. Kinney	Oregon	Pacific Med. and Sur. Jour., May, 1887, p. 281	15	14	1	Meat examined with positive result.
	..	G. W. Furey	Pennsylvania	Medical and Surgical Reporter, Nov. 5, 1887.	12	9	3	Fatal cases not seen by reporter. Occurred in three groups.
47	1888	W. L. Burrage and A. M. Sumner	Massachusetts	Boston Med. and Sur. Jour., Sept. 13, 1888, p. 249	1	10	1	Diagnosis confirmed at autopsy.
48	..	J. H. Wills	New Jersey	Trans. Med. Society of N. J., 1888, p. 108	11		1	Seven of the cases whfoh recovered not definitely reported.
49	1889	Frank Ferguson	New York	Proceedings of N. Y. Pathological Society 1889, p. 77	1	1		Unknown as to result. Brought for tumor in lumbar region. Portion of tumor showed trichinæ. Probably recovered.
50	1891	Alemby Jump	California	Pacific Medical Journal, April, 1891, p. 216	4	3	1	
51	..	John H. Barry	New York	New York Med. Record, June 13, 1891, p. 677.	2		2	Diagnosis confirmed by autopsy.
52	..	A. Seibert	New York	New Yorker Med. Monatschft., Aug. 15, 1891	8			Result not stated. Occurrence merely mentioned.
53	..	W. Hutchinson Merrill	New York	N. Y. Medical Journal, Sept. 19, 1891, p. 320	1	1		
54	1892	C. W. Macdonald	Massachusetts	Boston Medical and Surgical Journal, June 2, 1892, p. 551	15	11	1	
55	..	M. H. Alexander	Mississippi	Memphis Journal of the Medical Sciences, October, 1892, p. 225	19	18	1	
56	..	Drew	Massachusetts	Massachusetts Medical Society Trans., 1892, and Rep. State Board of Health of Massachusetts, 1892-93, No. 34, xxxvi.	21+	18+	3	Total number affected estimated at 50.
57	1895	Edgar Garceau	Massachusetts	Boston Med. and Sur. Jour. Nov. 21, 1895	1+		1	Many others ill, but number not given.
58	1897	T. R. Brown	Maryland	Johns Hopkins Hospital Bulletin April, 1897, p. 79	1	1		Diagnosis confirmed by removal of muscle.
59	..	F. A. Packard	Pennsylvania	....	1	1		Diagnosis confirmed by removal of muscle.
					310+	113+	80	
				Result not stated	17			
				Total	323			

occurred where medical aid was not sought. By the second table it will be seen that cases of the disease have occurred in seventeen States, in the District of Columbia and in Canada. The State from which the the largest number of cases has been reported is New York, which also heads the list in regard to the number of reports. On the other hand the largest definitely estimated epidemic occurred in Massachusetts. The greatest number of cases reported in one year occurred in 1892, when there is seen to have been more than fifty-one cases. The reason for this can not be given and there is no evidence of any growing frequency of the disease before or after that year. There occurred in that year three outbreaks of considerable size, two in Massachusetts (15 and 21+) and one in Mississippi (19).

Occurrence by States.	Total.	Number of reports.	Largest number at one time.
New York	80	11	12
Massachusetts	56+	6	21+
Pennsylvania	45+	9	14
Mississippi	20	2	19
Indiana	19	4	10
Michigan	16	4	5
Iowa	15	2	9
Oregon	15	1	15
Illinois	14	4	5
Texas	14	2	9
California	14	2	10
Minnesota	13	1	13
New Jersey	11	1	11
*Canada	9	1	9
West Virginia	5	1	5
Ohio	2	1	2
Louisiana	1	1	1
Maryland	1	1	1
District of Columbia	1	1	1

*Canada was inserted for comparison with the various States.

Year.	Number of cases.	Year.	Number of cases.
1864	7	1880	9
1866	11	1881	7
1867	2	1882	2
1868	6	1884	14
1869	24	1885	35
1870	23	1887	27
1871	11	1888	12
1872	6	1889	1
1873	9	1891	15
1874	3	1892	51+
1875	20	1895	1
1878	23	1897	2
1879	15		

In conclusion, I report this isolated case in order to again draw attention to a disease that I believe may be of greater present importance than is usually thought, and also to draw particular attention to a symptom that did much to guide me to a correct diagnosis—the great rapidity of respiration without other evident cause. I mention this symptom especially for the reason that, while many state that symptom was present in their cases, I do not believe that sufficient importance has been attached to rapid respiration as a prominent symptom of this affection. Finally I would urge the importance of certainly excluding trichinosis before making the much abused diagnosis of muscular rheumatism.

A REPORT OF TWO CASES OF MYXEDEMA WITH REMARKS ON AN ANOMALOUS TYPE.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY J. M. ANDERS, M.D., LL.D.
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Myxedema is a general disorder of metabolism, dependent upon diminished or lost thyroid function. Among various morbid processes affecting the gland and which have been observed to give rise to myxedema are the following: atrophy, atrophy associated with calcareous degeneration, atrophy with enlargement of the pituitary body, actinomycosis, syphilitic degeneration of the organ, and the presence of neoplasms. It is to be recollected, however, that disease of the thyroid is not followed by cachexia strumipriva, provided even a small portion of the gland remains functional. The truth of this dictum was shown by the postmortem findings in the case contributed by Sieveking,[1] in which sarcoma had invaded the thyroid. This fact is also fully confirmed by the results of experimental extirpation of the thyroid in animals: total removal of the gland is regularly followed by myxedema (except functional accessory thyroids be present), while if even one-tenth of it is allowed to remain, the animal escapes the disease.

Of intense interest are recorded cases in which myxedema is either associated with or occurs in persons who have previously suffered from exophthalmic goiter. Baldwin[2] reports four cases belonging to this category. The first occured in a boy of ten, four years after Graves' disease; the second affected a girl of fourteen, two years after the exophthalmic goiter was cured; the third, a girl of fifteen first showed signs of myxedema five years after improvement from Grave's disease; and the fourth, a woman of forty-four, four years later.[3] It is an almost universally accepted belief that exophthalmic goiter is dependent upon excessive thyroid secretion the direct antithesis of myxedema. Like cachexia strumipriva, exophthalmic goiter is held by the weight of authority to be caused primarily by thyroid changes that bring about "thyroidation." Accepting this view it is quite conceivable that morbid processes first causing over-stimulation of the gland, may, in their future progress, lead to abnormally feeble or an entire absence of glandular secretion, and thus the former condition may predispose to the latter. The tendency to myxedema may be observed in several members of the same family, but I believe this to be rare.

The complex symptom-group of typical cases of myxedema is at present writing well known, and the literature bearing on this aspect of the subject is so extensive as to be much beyond the compass of this article. The following cases are reported: 1. For the reason that one of them manifested certain features of unusual significance. 2. To confirm the well-deserved professional favor gained by thyroid extract in the therapy of this disease. 3. To discuss a few of the main questions which have been raised in connection with the subject of treatment; and lastly, to direct attention to an anomalous or a rudimentary type that yields easily to sheep's thyroid.

Case 1.—M. R., age 50, female, fell ill about fifteen years ago, showing symptoms that were of slow and gradual development, becoming eventually typical of this affection. When I first saw the patient, the neck and supraclavicular regions were observed to be bloated; also the face, giving rise to a peculiar physiognomy. The features were bulky and expressionless, the face broadened, and the lineaments were practically obliterated; the lips were greatly thickened and the tongue markedly swollen. The general bulk of the body was obviously increased. The pressing finger showed an absence of pitting, even over the face, where stiff edema was most marked. A circumscribed red patch was noticeable on the cheek. The skin, particularly the backs of the hands, was dry, rough, somewhat scaly and inelastic; the nails were quite brittle, the hair was coarse and constantly shed.

The mental symptoms were not striking, except that thought and speech were slow, and the tone of the voice, was characteristically leathery. Hallucinations and impairment of memory were not observed. Occipital headaches and neuralgic pains were frequently complained of, as was also muscular weakness. The temperature was slightly subnormal (98 degrees), but cold hands and feet were not experienced.

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[1] Gould's Year-book of Medicine and Surgery, [illegible], p. [illegible].
[2] Centralbl. f. innere Med., January, [illegible].
[3] Gould's Year-book of Medicine and Surgery, [illegible].

There was slight though decisive albuminuria, and this symptom I learned had been present for four or five years at least, with hyaline and granular tube-casts at intervals.

On account of the presence of persistent albuminuria, her former physicians, two in number, had diagnosticated chronic nephritis. Temporary albuminuria with casts, is frequently met with in this disease, but the persistent characteristic features of chronic Bright's are not seen. After treatment with extract of thyroid for six weeks, the urine presented no abnormalities; neither has albumin or casts reappeared since then (as shown by repeated testing). Believing herself to be a sufferer from renal affection, and being possessed of superior intelligence, I was unable for a long time to induce the patient to make a trial of thyroid extract.

The interesting features were limited to the urinary phenomena. The relation of mere albuminuria or actual nephritis to myxedema is not definitely known. On the other had, it should be pointed out that the symptoms of Bright's have been observed to appear after the accomplishment of a cure by thyroid feeding, in cases in which no urinary phenomena had been present during the course of myxedema.

Case 2.—Mrs. Rebecca Coates, aged 50, a patient under the care of Dr. A. E. Roussel at the dispensary service of the Howard Hospital.[4] Mother died of phthisis, father killed in an accident. Patient has been in the best of health until three years ago, when menstruation ceased. Has had several attacks of rheumatism, and recently, the body in general has been getting more and more bulky. The face at present is puffy and edematous-looking, but does not pit on pressure. The skin is rough and dry and the lips blue. The hair is dry and falling out. The nails are clubbed and brittle. Her expression is heavy and stupid; the speech is slow and hesitating and the voice rough. The memory is impaired and she frequently suffers from headaches. Mental aberrations occur frequently, she talks incoherently and believes she sees objects. There is a certain stiffness and clumsiness in the gait. The respiration is slow. Her temperature is 98 degrees and she complains of feeling cold. She is easily fatigued, complains of a *bitter taste in* the mouth, has a poor appetite, and her bowels are irregular. The urine is normal (specific gravity 1020, *no* sugar, albumin nor casts present).

Treatment was commenced on March 20; the patient was asked to lead a quiet life and was put on the extract of thyroid, grs. iii, three times a day. On March 23 the patient returned and stated that since taking the remedy, she suffered greatly from pain in the stomach and bowels, and at night from aggravated nervous symptoms, such as mental wandering and the apparent sight of different objects. The dose of the remedy was then reduced to 1 gr., three times a day, and on March 27 the patient came back complaining that the medicine still disagreed with her and produced profuse sweats.

On April 1, the dessicated thyroid powder was ordered, grs. 3, three times a day. On April 6, the dose, which had been well-borne in the meanwhile, was increased to grs. 5, thrice daily. On April 10, she presented herself again and reported that she had been troubled with copious sweats, and had noticed that her weight (found to be 168 pounds at this time), was decreasing. On April 13, the thyroid gland powder was increased to 7 grs., three times a day, and on April 17, she complained of severe pains pains in the limb particularly the legs, and a burning sensation in the stomach. After the use of small doses of hydrochloric acid, internally and of chloroform liniment, locally for the *leg* pains, relief came. The patient did not return for eleven days (May 1), or about six weeks from the date of the commencement of the treatment. At this time the bloating of the hands and face had largely disappeared; the voice was less harsh and leathery in tone, and her weight 160 pounds. On April 18 she presented herself again apparently in excellent health, and expressing herself as being free from gastric or other symptoms. Her weight was now 143 pounds, a loss of 25 pounds while under treatment with thyroid gland powder.

As the result of wide experience, to which a mite has been contributed by many *different clinicians*, the specific virtues of sheep's thyroid in the treatment of pure myxedema have been conclusively established. It is also the unanimous opinion of writers, that certain precautions must be taken during the administration of this remedy. The commencing dose must be small, since many individuals are remarkably susceptible to the action of this agent. Thus in case No. 1, not more than one grain daily of the thyroid gland powder could be tolerated at first. The dose was very gradually increased, until at the end of the fourth week, five grains daily were well borne, and the myxedematous condition rapidly disappeared under this small dose. This patient took three doses of 3 grains each on the same day, and after the last, symptoms of hyperthyroidation developed. There were *intense* headache and syncope, *with a feeling* of powerlessness in the legs. Rest in bed for a short period, and the use of cardiac tonics soon caused these symptoms to disappear. Subsequently, I combined with each dose of thyroid extract, gr. 1-36 of strychnin sulph., and after that no toxic effects were observed. There can be no question but that the evidences of cardiac failure constitute a really serious defect, and perhaps, the only one in the thyroid treatment. Murray[5], who first used thyroid extract in the treatment of myxedema, lost two of his early cases from cardiac failure, brought on by over-exertion. This observer strongly recommends rest in bed for a time after treatment has been instituted, with a view to avoiding cardiac and arterial strain. This may be necessary in long-standing cases, *and in those in which "cardiac or vascular degeneration"* are present. Ordinarily, the administration of *strychnin* will be found to avert any dangerous degree of cardiac failure, and this should not be omitted until a cure is effected. Only the gentlest exercise is permissible during the same period.

Case No. 2 manifested toxic symptoms (gastro-intestinal pains, profound sweats, etc.,) from the administration of small doses (gr. 1, t. i. d.) of the glycerin extract of thyroid. It is worthy of repetition that the desiccated thyroid gland could be taken by this patient in doses three times as large as the glycerin extract, and *without* unpleasant or toxic effects.

Not all of the symptoms that follow the administration of thyroid are due to over-dosing. As pointed out by Murray, an increase in the pulse-rate amounting to ten or twenty beats per minute simply indicates that the dose is quite large enough. In case No. 1, a most intense itching over different parts of the skin-surface occurred at intervals, and caused intolerable distress; a diminution in the size of the dose did not seem to influence the course of this symptom. The phenomena to be watched for and to be regarded as adequate reasons for stopping the remedy, are numerous, and are not sufficiently emphasized in our text-books. They are tachycardia (over 100 beats per minute), elevation of the temperature (amounting to one or more degrees), syncope, vertigo, suffusion of the face, profound prostration, intense headache, profuse sweats and gastro-intestinal disturbance. Granting that exophthalmic goiter is attributable to hyperthyroidation, if during the administration of thyroid glands symptoms of this disease, such as slight tachycardia, fine tremor, exophthalmos, heat and sweat, insomnia, restlessness, polyuria, glycosuria, or albuminuria and the like appear, the dose should be reduced, but the remedy need not be discontinued. It is well understood, that after total disappearance of the myxedematous infiltration, the treatment may have to be continued off and on, if not continually; this is due to the fact that the thyroid is no longer functional, being as a rule atrophied.

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[4] The notes of this case have been kindly prepared by Dr. Mishkin.

[5] British Medical Journal, April 13, 1891.

Examples of what may be regarded as an anomalous type, that do not seem to progress to the fully developed disease with its characteristic clinical picture, are, I am certain, not infrequent. They are not to be regarded as instances of cretinism, since they develop after the age of 15 years, and few of the characteristic symptoms of myxedema are present. The face is rather flat, the skin somewhat swollen, dry, firm and inelastic. The features also lack mobility, but are not so coarse or bulky as in true myxedema. The physiognomy is dull, uninteresting and phlegmatic. There is a slight increase in the general bulk of the body, but the lips, nose and tongue are chiefly implicated. The lower jaw may be prognathic. The gait is somewhat uncertain, owing to trivial disturbance of coördination. There is some alteration of the voice with a tendency to occasional nasal explosions during speech. Thought is somewhat slow and the memory lags. Other mental phenomena are irritability of temper and an unnatural degree of suspiciousness though not so pronounced as in typical cases. Such patients are often apathetic or even melancholic and if constipation or gastric disturbance be present, a supposed chronic dyspepsia is liable to be mistaken for this complaint. There is also danger of confounding these cases with neurasthenia. Even in the presence of the above symptom-group it is not possible to make an absolete diagnosis, but the therapeutic test (improvement under thyroid feeding), if properly made, clears the doubt with reasonable certainty. I have recently observed the disappearance of a grouping of symptoms such as I have described in two cases as the result of the administration of sheep's thyroid. One of these patients had been treated for nervous dyspepsia and constipation for a long period of time.

THE TREATMENT OF EXOPHTHALMIC GOITER AND OTHER VASOMOTOR ATAXIAS WITH PREPARATIONS OF THE THYMUS GLAND AND OF THE ADRENALS.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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I desire to make a brief report of a number of cases of exophthalmic goiter, and of conditions more or less closely resembling exophthalmic goiter, treated by means of extract of the thymus gland and of the suprarenal capsule. It is not my purpose in this paper to discuss at length the vexed questions of the etiology and pathology of Graves' disease, and of those conditions to which I have in a previous paper given the name of vasomotor ataxia. Nevertheless, some slight allusion to these subjects is necessary to make myself fully understood. I hold that there are almost innumerable varieties of disturbances of the cardio-vascular balance, ranging from the merest departure from the normal, to the most pronounced case of Graves' disease on the one hand, and of Raynaud's disease upon the other. The principal clinical phenomena of these conditions are disturbances of the heart's action, and central or peripheral phenomena indicative of abnormal contraction or dilatation of the vessels. The essential element is incoördination or ataxia of the circulatory mechanism, and among more or less prominent secondary symptoms are murmurs in the heart and vessels; blood losses which may range from severe pulmonary, uterine or renal hemorrhages, to slight epitaxis, hematemesis or hemoptysis, or perhaps merely petechiæ upon the skin, or the presence of blood cells revealed only to microscopic search in the urine; headache or vertigo; syncope with flushed or with pale face; local heat and redness of ears or face, usually unilateral; numbness and tingling of the extremities; discoloration of the hands and feet; subjective pulsations and "flashes" of heat and cold; excessive sweating, polyuria, and the like. These phenomena in their milder or in their severer forms are more common in women and are often associated with disturbances of menstruation; the familiar symptoms of the "change of life" belong in this category.

Among other associations having an etiologic suggestiveness are abnormity of the thyroid gland, gastric and intestinal disturbances, gout and lithemia, rheumatism and rheumatoid arthritis, hay fever, neurasthenia, hysteria and cutaneous pigmentation. The phenomena may be intermittent and capable of artificial reproduction, and we thus find as their principal exciting causes, toxins (both autogenetic and heterogenetic), temperature changes, and emotional disturbances. In most cases, of whatever origin, a distinct temperature relation can be made out, the patient feeling better or worse in summer or winter, respectively.

As a whole the phenomena are merely exaggerations, in duration and degree, of the effects of the same kinds of exciting influences upon normal individuals, or to put it another way, the same phenomena which in the cases under consideration are interpreted as evidences of disease, may occur transiently in normal individuals under similar exciting causes of greater magnitude. Thus severe cold may cause in a healthy person phenomena much like those which, excited by a minor cause, we call Raynaud's disease; and intense heat, anger, fright, sexual excitement, produce many of the phenomena we find among the symptoms of Graves' disease. Familiar illustrations of the minor varieties are the attacks of urticaria, which in some individuals result from the ingestion of foods that most persons can take with impunity, and the eruptions and edemas that mark so-called idiosyncrasies to drugs. Here, too, we find an interesting connection with angio-neurotic edema, which in some of my cases can be produced at will, in certain localities, by moderate trauma, for example as a slap on the lips; and in this as in other phases of the general subject the influence of family and of heredity is marked. In some cases the phenomena of irregular and excessive dilatation, in others those of irregular and excessive contraction of vessels predominate; in all some phenomena of both kinds are found; in all there are paroxysmal exacerbations: in some normality apparently prevailed during the interval. Whether the group of affections thus included would or would not form in rigorous nosologic classification and order, whatever the exact mechanism of the symptoms or the immediate exciting influence, the fundamental cause is apparently a constitutional vice of nutitrition, an instability in the nervous centers governing the cardio-vascular balance; and we are led to direct our therapeutic measures accordingly.

Confining our attention now to those cases which present phenomena chiefly referable to vascular dilatation, we find that the most severe of these have for their usual concomitants, enlargement of the thyroid gland and protrusion of the eye-balls. In nearly every case tremor is associated with the tachycardia, exophthalmus and goiter, which Graves and Basedow described as the triad, characterizing the affection to which their names have been given; and in all of the cases which I have studied since 1892, I have found dermographism, factitious urticaria, and the peculiar crescentic markings upon the nails, to which I called attention in my first paper on this subject.

The statistics of treatment in exophthalmic goiter are confusing to the student. Some cases recover without treatment, some fail to recover under any treatment, and many cases of recovery or great improvement are reported from the most varied forms of treatment. In order to be made valuable the recorded statistics need close analysis as to many facts, some of which are not commonly observed. We should include not only heredity, age, sex and apparent exciting causes, but the physical and mental temperament of the individual, and such other relations of morbidity and susceptibility to therapeutic measures, as may be needed to give a complete picture. Let statistics be what they may, few among those who have had large experience with Graves' disease will be content to trust to spontaneous recovery, or will fail to draw a conclusion of cause and effect between the treatment instituted and the results following.

It has been my fortune to have had a comparatively large number of cases of exophthalmic goiter under observation, and I have seen recovery and partial recovery from various methods of treatment, which have, however, agreed in that they were devoted to the removal of excretion and intestinal antisepsis, of toxins that might be circulating in the blood; to the soothing of the excited nervous system by rest; and to the restoration of cardio-vascular tone by appropriate medication or other remedial influence, *i. e.*, galvanism or the application of cold.

In common with many other observers, I was led to the use of thyroid extract experimentally, when that substance was first introduced into practical medicine by British observers, and contrary to the experience of most others, and to my own experience in other cases, one of my patients so improved that he refused to remain longer in the hospital. He was under treatment from January to March, 1893.

Dr. David Owen of Manchester, published the report of a case in which wonderful improvement followed the supposed ingestion of thyroid gland; but further investigation showed that the butcher had been supplying his patient not with thyroid gland but with thymus. In my case the preparation was furnished by Messrs Parke, Davis & Co., while they were still experimenting as to methods, and before they had placed it on the market, and they assured me that no such mistake had occurred. Patton's partial recovery, therefore, remains unexplained.

I should also mention in this connection, the good effect of thyroid extract in a case of marked vasomotor ataxia, characterized by right or left hemicrania, with temporary numbness and paresis of the opposite arm, and great pallor of the face, occurring at first spontaneously, but now only after certain indiscretions in meat or drink, in a man whose mother had had exophthalmic goiter. The continuous administration of a small dose of thyroid extract will ensure complete absence of attacks; a large dose will cause headache and vertigo, with opposite symptoms, namely flushing and warmth of the face; while nitroglycerin or amyl nitrite is required in the paroxysm. As a rule thyroid extract benefits that group of patients who feel best during the summer, and injures those whose worst symptoms occur in warm weather.

From Owen's experience with thymus; from almost universal experience that thyroid is harmful to patients with Graves' disease, exaggerating the symptoms; from the fact that tachycardia and vascular unbalance, even to fatal issue, may be produced from incautious use of thyroid in myxedema; from the frequent persistence of the thymus in akromegaly, indicating some yet unexplained reciprocal relation between this gland and the thyroid, I was led to the deliberate administration of thymus to patients with exophthalmic goiter and minor degrees of vasomotor ataxia.

I have so treated twelve cases of pronounced Graves' disease. I present a few cases in which the improvement has been remarkably great. In Mrs. B. (May 5, 1896) the goiter has almost entirely disappeared, the exophthalmus is scarcely perceptiple, the heart is quiet, concomitant rheumatoid arthritis has much improved, pain being almost gone, and the nervousness and trembling, which was her principal complaint, is entirely gone. (See case of Mrs. McD.)

In Mrs. McE. (Aug. 7, 1895) the goiter has been reduced about two-thirds, the Addisonian color has been much lightened, the nervousness and sleeplessness has disappeared. In a third case, Miss L., a patient referred by my friend and colleague Dr. S. D. Risley, the improvement is equally great but less striking; inasmuch as the goiter never was very large nor the exophthalmus prominent. Tachycardia and nervousness have disappeared and general nutrition has been greatly benefited. In a fourth case, Mrs. McD., quite severe, which I saw in consultation with Dr. Albert M. Eaton of this city, there were many interesting diagnostic and etiologic points. After an operation for ovarian cyst, followed by sepsis, the patient complained of severe cardiac pain and dyspnea, and there was observed excessive rapidity of pulse. At the time I saw her she had been confined to her bed for some months: goiter and exophthalmus were evident. Thymus extract was presented and the patient was so far reduced after treatment that she was able to follow her accustomed duties. A relapse suddenly followed and it was found that the druggist had given thyroid instead of thymus. I may add that Mrs. E. experienced a similar relapse from the same cause, the goiter enlarging and becoming quite hard and tense like a cyst.

Upon return to thymus there was renewed improvement. Although the dose given has been throughout too small, the patient refusing to take the quantity prescribed, Dr. Eaton tells me that the goiter is almost gone, the dyspnea entirely gone, the heart quiet and regular except on unusual exertion, and the patient able to go shopping.

In two other cases of genuine Graves' disease, and in some twenty or thirty cases of minor varieties of vasomotor ataxia, of the relaxing variety, I have seen equally good results. Dr. Hector Mackenzie recently reported twenty cases of exophthalmic goiter treated with thymus without benefit.

More recently, the physiologic experiments showing that in the adrenal secretion there exists a natural raiser of blood pressure, probably active by constriction of the vessels; together with the fact that Addisonian pigmentation occurs in some cases of Graves' disease; and that exceptional cases are met with in which exophthalmic goiter and Addison's disease are alternate diagnoses, suggested the use of adrenal extract in the treatment of this affection. Since I instituted it, at the Philadelphia Polyclinic, I have seen publications of similar observations elsewhere. Two patients disappeared from observation before any conclusion could be drawn, except that they could take remedy without ill effect. I therefore reverted to an old patient who would remain under observation. I refer to Mrs. B., whom I have already shown as an example of the good results of thymus treatment. She had been absent from the clinic for six months, during which time she had been without medicine. She returned complaining of a recent return of nervousness and of pain in the finger joints. We placed her under treatment with adrenal extract, which she is still taking, and, she thinks, with equally good effect in maintaining and even increasing her improvement. The case lacks conclusiveness because of the great gain previously made under thymus treatment.

In the case of Mrs. McD. before reported, suprarenal dosing failed to give good results, but increased the headache and apparently caused increased excretion of uric acid (brick dust sediment appearing), bloody sputum and vertigo. I present two other patients, Mr. S. and Mrs. M., both of which have been treated only with suprarenal extract. They were never marked cases as to goiter or exophthalmus. Mrs. M. (Jan. 8, 1897), had a decided tremor which has been much reduced, while the cardio-vascular and neurotic phenomena have greatly improved in both.

Miss K. is a marked case. Her improvement is chiefly as to nervous and vascular phenomena and general nutrition. The pulse is quieter, the breathlessness relieved. She says that the goiter is smaller and we are all sure that the exophthalmus is much less, but unfortunately accurate measurement was not made when she first appeared.

Mr. H. is a patient presented for the sake of fairness; he appeared at the clinic the same day as Mrs. K., and was just as marked a case. We presented adrenals and he disappeared until this week; has much improved, but has been for the most part without treatment.

Miss F. is presented to show the effect of a different remedy—picrotoxin. Her improvement is equally great.

From the clinical observations, including sphygmographic tracings made on the various cases I have thus far studied, I conclude that thymus extract will in many cases of exophthalmic goiter, improve nutrition, mitigate nervous disturbances, reduce exophthalmus, greatly reduce goiter, and moderately quiet the heart and restore vascular tone, completely accomplishing this in milder cases; while adrenal extract seems to have greater influence upon the circulation and less effect upon the thyroid and ocular symptoms. We are making studies upon the blood and secretions, which are not sufficiently advanced for publication. I do not believe that either of these remedies or any other remedy removes the fundamental, constitutional, idiosyncratic instability of the toxic mechanism of the circulation; but I do believe that they are competent in the one case—thymus—chiefly by an antitoxic action, to counteract the exciting influences, and in the other case—adrenal—chiefly by opposing action upon the circulation to neutralize the effect of those influences. *Probably both share both these actions in some degree, and I should expect the best results to follow their combined administration.*

THE IMPORTANCE OF THE HABIT OF PROGNOSIS IN THE DEVELOPMENT OF THE INDIVIDUAL PHYSICIAN.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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It is the duty of a physician to himself and to his patients, not only to be well informed, but it is also to look out for new methods that tend to the best possible training for his work. Habits, good and bad, are the relentless masters of our lives and actions. Powerful as they are for evil they are equally potent for good if seized upon, developed and directed. Habits of mind and thought are just as much habits as those pertaining to the physical nature.

Now there is a particular attitude in approaching a medical case that would seem, more than almost any other, to lead to sound judgments and judicious management, the attitude that takes account of not only present conditions, but discounts them by the probable future. It not only considers what the course of disease will be, if treated, but its course if untreated or treated in a different way. This we may call the habit of prognosis, and upon it must be based all thoroughly judicious and honest therapeutics.

Medicine is a science and at the same time an art. Indeed it is a combination of many sciences and many arts. Thus there is the science of pathology, the science of chemistry, the art of treatment, the art of feeding, the science of diagnosis and the art of prognosis. The power of prognosis is at the same time an acquirement and a gift. Like all other faculties it is improved by exercise and increased by cultivation. Its basis, though largely personal experience, is equally found in a knowledge of medical literature. Thus the experience of a long lifetime may not afford as good a basis for prognosis in a particular case as an hour intelligently spent in a medical library. The faculty is best cultivated by the exercise of the habit of forming, with care and study, the most definite possible prognosis in every case that comes under observation, and then faithfully promulgating it to those who have a right to such an opinion. The first step in prognosis is accurate diagnosis, not the mere naming of disease so that it may fall within the list of diseases such as are found in the index of a text-book of medicine, but the placing of a case in a particular group of a particular variety of the disease. Then, by recalling from personal experience and searching literature, as many parallel cases as possible are summoned as witnesses; then the mathematical theory of chances and probabilities is brought to bear and the conclusion is reached. It seems strange, at first sight, that in art so varied as medicine, mathematics should have any possible bearing, and yet in the almost parallel science of life insurance, mathematics has found one of its most useful applications. The life insurance company can not say with certainty that a certain man of 40 years of age will live so many years, but it can say with very close certainty of a particular group of ten thousand men, that so many will be alive and so many will be dead in ten years. It is the same way with the prognosis of particular classes of disease. If we can assemble, from personal experience and experience as recorded in literature, a group of one hundred of whom ninety have survived a year, we can give a prognosis in the particular case, all attending circumstances being carefully considered, that the chances of survival for a year are nine out of the ten; in the same way is the prognosis of the time of recovery in particular cases. If we have summoned to our aid, truthfully, a group of parallel cases, and have intelligently discounted particular surrounding circumstances, we can give a prognosis as to the time of recovery which will be correct six times out of seven; seven times out of eight; eight times out of nine, or nine times out of ten, according to the breadth of our knowledge, and the accuracy of our observation.

The value of the constant habit of prognosis can not but be very great to the individual physician. It will give him encouragement and hope in many a desperate case, and save him from undue disappointment when the inevitable laws of nature have run their relentless course. He who has mastered the art of prognosis stands, as it were, on the summit of a mountain where he can see beyond his fellows who have not climbed up the steep and laborious path. Observe the calm philosophy of this man, who with his eye ever on the future, neither urges rash measures nor advocates undue delay, and who is not carried away by the promises of false prophets. He is not deceived by the bright coloring given to the landscape, by the passing meteor, into the belief that the force of all nature has been permanently changed.

The ideal opportunity for the study of therapeutics would be by the treatment of exactly parallel cases by several methods, and their comparison at the same time with cases untreated and pursuing the natural course of the disease. These conditions are only found in rare instances and in large hospitals. Usually, if cases are treated by various methods, it is at different times and the mind pictures of older cases are dim and indistinct. The untreated case is hardly to be found. It is in supplying the place of untreated cases that the development of the habit of prognosis finds its most important place. By careful analysis of the case in hand, by summoning to one's use the records of previous cases accurately observed, by discounting the treatment of one by the treatment of another, and observing the course and outcome under various conditions, one may construct an *ideal case similar to the* one in hand, but with its history continued into the future. This ideal case supplies a prognosis by which to be guided in the selection of therapeutic measures, the judgment of their efficacy and the expectation as to cure.

Prognosis is often enough modified by the wealth or poverty of the patient, by his character, by his hopefulness or depression, and by a thousand other things that arise in the individual case, but the discussion of more exact methods of prognosis must find a place elsewhere. What would be emphasized is this, that every physician should form the habit of constructing a well-founded judgment as to the future course of any case of which he seriously undertakes the care. With this judgment he should constantly compare the course of this case while under treatment, and honestly acknowlege the futility of useless therapeutics as well as the modifying influence of really valuable measures.

The remark is often made that prognosis is not worth while, that it does not influence the outcome of the case, that a wrong prognosis is apt to bring disrepute, and that it is better to treat the case from day to day, and leave *the result with Providence.* This is the reasoning of those who take a superficial, and as it were, a symptomatic view of disease; is the reasoning begotten of intellectual laziness, timidity, and self-conceit. How much more moral courage does the physician exhibit, who throwing his whole intellectual acumen into a case, carefully studies all the circumstances, carefully summons to his aid his own experience, and that of others, and then having given the results of his very best work, is willing to stake his reputation on the result. Even from a lower standpoint, that of professional reputation and success, this in the long run pays best. The greatest physicians in all times have made errors, but the consultants, the men whose counsel is sought in time of great danger, have been men of strong characteristics, who were able and willing to form an opinion and to stand faithfully by that opinion when formed. The mistakes of such men are apt to be condoned while their successes become a glory to their profession, which obscure practitioners are proud to promulgate.

REPORT ON THE TREATMENT OF PULMONARY TUBERCULOSIS.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4.

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This report covers in most of the cases a period of about eight months, in some of the cases a period of nearly two years.

The various remedies, upon the use of which the report is made, are Edson's aseptolin, Paquin's tubercle antitoxin and Vaughan's nuclein. In all cases where the stomach does not rebel, cod liver oil was also used. Alcoholic stimulants have not been used, except as temporarily called for. Locally, inhalations, sprays and insufflations consisting of iodoform in ether and in powder, menthol in albolene, essence of peppermint and a mixture of acetanilid, carbolic acid and glycerite of tar according to the formula of Dr. R. P. Lincoln of New York City, have been used. In all cases reported the tubercle bacillus was found in the sputum.

Following is the detailed statement of cases treated by aseptolin (which is a solution containing 3 per cent. of absolute phenol and 0.01 per cent. of pilocarpin-phenyl-hydroxid). This is in no sense an antitoxin but is designed, according to Dr. Edson's statement, "to greatly reinforce the natural antiseptic power of the blood."

Case 1.—D. N., male, age 47, nativity United States.

May 4, 1896. Previous history.—Has been running down for nearly a year; coughing and raising considerable; vomiting frequently; having irregular chills followed by high fever and night sweats; weight at this date 119 pounds. Tubercular infiltration of right upper lobe; aseptolin treatment begun.

May 21. Since the treatment began patient feels better, appetite has improved, no chills or vomiting, temperature has not gone above 100 F., no night sweats, weight 121 pounds. Pulmonary condition unchanged. Supply of aseptolin gave out and treatment was omitted until June 19 when general and local conditions were not different from previous record. Weight 124 pounds.

July 16. During last month there have occurred two hemoptyses and treatment was omitted for five to seven days each time. The upper lobe of right lung shows distinct sign of softening, and cough and expectoration have greatly increased in amount, but temperature has not gone above 98.5; there have been no chills, sweats or vomiting and the weight is 129 pounds.

August 13. No change in patient's condition except that he has lost appetite, feels weak and dispirited and physical examination reveals extension of the area of softening. Weight 131 pounds.

August 23. Profuse hemorrhage; weak and discouraged; weight 130½ pounds.

October 2. Since last record patient has had two more hemorrhages, not so severe. and none since September 4; feels a little stronger and in better spirits. Temperature has reached 100 several times. Pulmonary condition not materially changed. Weight 131 pounds.

October 20. During last three weeks patient has felt worse, there has been increase in cough and expectoration and there has been vomiting (caused generally by the iodoform spray). Physical examination reveals infiltration in *left* upper lobe and distinct cavity in right upper lobe. Weight 129 pounds.

December 1. Patient's general condition has improved somewhat, vomiting has stopped, cough is not so distressing, but temperature has ranged rather above 100, reaching 101 several times. Physical examination shows steady advance of the tubercular process in both lungs. Weight 129¼ pounds. Patient complained bitterly of the pain of the injections and treatment was stopped.

Case 2.—H. K., male, aged 37, nativity United States. Aseptolin.

July 15, 1896. Previous history.—For eighteen months there has been progressively increasing anemia, and malaise, marked anorexia, night sweats and occasional hemoptyses, considerable dyspnea, lack of sleep and depression of spirits. There was consolidation of upper left lobe and some infiltration throughout the rest of the left lung. The temperature frequently reached 101 and sometimes fell as low as 97. The respirations ranged in the neighborhood of 30 and the pulse from 80 to 100. The weight record of this case for the first three months was lost. Cough was very troublesome, almost continuous, and there was a large amount of sputum raised.

August 13. During the last month there has been great improvement in all respects; appetite better; sleeps well; cough and expectoration decreased; dyspnea continues; no night sweats since July 18. Temperature has not gone above 99.2.

September 12. Condition has remained about the same.

October 13. Improvement continues in all respects, except that cough and expectoration have increased and there is evidence, on physical examination, of infiltration at right apex in addition to that existing in left lung which has not changed. Weight 130 pounds.

November 10. Improvement continues. Weight 134½ pounds.

December 8. Improvement continues. Weight 138 pounds; cough and sputum diminishing.

January 12, 1897. Continued improvement in all respects. Weight 142 pounds. Aseptolin stopped on account of pain of injections.

February 2. Not quite so well. Weight 139½ pounds.

Case 3.—F. S., male, age 31, nativity United States. Aseptolin.

May 4, 1896. Previous history.—For six months gradual failure in strength and health, anorexia, anemia, marked cough, profuse expectoration, afternoon fever, profuse night sweats. Tubercular infiltration of upper and middle lobes of right lung. Weight 92 pounds. Aseptolin begun.

May 21. Appetite improved, temperature lower (100.8 highest), no night sweats. Cough still severe and sputum still profuse. Marked dyspnea. Weight 92 pounds. Aseptolin omitted until

June 19. During this month improvement continued and cough became less troublesome. Pulmonary condition not changed. Weight 98 pounds.

August 23. During last month there has been falling off of appetite and disappearance of previous sense of improvement. Cough and expectoration have again increased and the dyspnea is more marked. There has been an extension of the diseased process downward to the lower lobe of right lung. Weight 100 pounds.

September 2. Aseptolin omitted on account of soreness of abdomen. Temperature has again increased and patient feels weak and dispirited, suffers greatly from dyspnea and complains of pain in left chest. Weight 101 pounds.

October 2. Aseptolin resumed. Patient's general condition not materially changed except that soreness in abdominal walls is less. There is evidence of infiltration of entire right lung and of left apex. Weight 98 pounds.

November 8. Patient has gradually and steadily failed in all respects, general and local. There is infiltration of entire right lung and cavity in left upper lobe surrounded by zone of breaking down lung. Weight 91 pounds. Aseptolin stopped.

Case 4.—T. D., male, native of Ireland. Aseptolin.

May 2, 1896. Sickness dates back six years. During this time there have been periods of long quiescence with occasional outbursts of cough, fever, etc. These have gradually increased in frequency. Patient is anemic and has no appetite, feels very weak, suffers from great dyspnea. There is evidence of consolidation of upper left lobe, and scattered areas of broncho-pneumonia through rest of left lung and slight bronchitis in upper right. Coughs a great deal with not very much sputum. Temperature not above 100, pulse 100, respiration about 30, weight 130 pounds.

May 21. During the last three weeks temperature has not gone above 99, and night sweats have ceased. Otherwise, no change in patient's condition. Weight 128 pounds. Aseptolin omitted until

June 19. During last month no change in patient's condition. Weight 126½ pounds.

July 24. Some general improvement, sleeps well, appetite good, no sweats, cough and expectoration less. Dyspnea marked. Weight 126 pounds.

August 13. General condition not changed. Weight 122½ pounds.

October 13. During last two months there has been no material change in general condition, but the disease in lungs has progressed so that there is now cavity in upper left lobe and infiltration in lower left, with bronchitis in right lung. Weight 123 pounds. Aseptolin stopped on account of pain of injection.

December 8. No change in general condition nor in pulmonary condition. Weight 119 pounds.

Case 5.—H. G., male, age 54, nativity United States. Aseptolin.

May 3, 1896. Previous history.—For a year patient has had cough, with slight expectoration, frequent asthmatic attacks, very slight fever occasionally, no night sweats. Has poor appetite, is anemic, sleeps poorly, feels weak and debilitated. Has general bronchitis and emphysema and infiltration of right upper lobe and left apex. Temperature ranges from 96.5 to 98.5, pulse 60 to 90, and respiration 20 to 30. Weight 115 pounds. Aseptolin begun.

May 21. No change in condition except that he coughs and raises a great deal now. Weight 149 pounds. Aseptolin omitted until

June 19. No change. Weight 150 pounds.

July 24. During last month sleeps well; appetite not so good, does not feel as well.

August 23. No change except that cough and expectoration are increasing. Dyspnea somewhat relieved by quebracho. Weight 144½ pounds.

September 1. No change. Weight 146 pounds. Aseptolin stopped on account of soreness of abdomen.

October 6. During the last month patient has felt better, appetite improved, dyspnea not so marked, but cough and expectoration continue to increase. Weight 143½ pounds. Aseptolin resumed

November 17. During last six weeks patient has become worse in all respects. The local conditions have not improved. The cough continues severe and the expectoration very profuse. Temperature has reached 100 on several occasions, and once fell to 96. Weight 138 pounds. Aseptolin stopped. On December 1 weight had fallen to 135½ pounds.

February 2. Patient has improved in all respects during last two months. Weight 139½ pounds.

Case 6—J. M., male, age 50, English parentage. Aseptolin.

August 1. Previous history.—Has had cough and occasional diarrhea for one year. In December, 1895, had very severe cough. Since then has lost forty pounds in weight, coughs considerable, sputum thick and tenacious and considerable in quantity. Temperature does not go above 100. During last two weeks has suffered from night sweats. The left apex and the right upper lobe are infiltrated. Weight 150 pounds. Aseptolin begun.

August 23. Pulse stronger, no night sweats, but appetite is poor and he is kept awake by coughing. Has developed slight laryngitis. Weight 154½ pounds.

September 12. During last three weeks has had some diarrhea; laryngitis has improved. Developed albuminuria with markedly diminished urine. Aseptolin stopped. Weight 152 pounds.

October 9. After the first diminution in the amount of urine secreted, there came a marked increase in amount of urine, and although the albuminuria remained, the polyuria became extreme; during last two months of his life patient passed from 2000 to 5000 c.c. of urine in twenty-four hours, containing from 20 to 50 gm. of urea, *though of low sp. gr.*, and containing albumin in abundance, and some casts. Weight 157 pounds. December 19, he died, having been comatose for twenty-four hours before death. During last two weeks of his life he had two attacks of severe gastritis and developed corneal ulcers in both eyes. His weight two weeks before death was 136½ pounds. No autopsy.

Case 7.—R. B., male, age 35, nativity United States. Aseptolin.

August 12, 1896.—Previous history.—For six or seven months has suffered from cough and expectoration, chills, fever and night sweats. Loss of appetite, loss of weight, great weakness, marked dyspnea, respirations have ranged between 30 and 40, pulse 80 to 120 and temperature 97 to 102 degrees. There is infiltration of left apex, infiltration and softening in upper lobe of right lung with bronchitis in middle right lobe. Cough and expectoration slight. Weight 100 pounds. Aseptolin begun.

September 12. No material change except that night sweats have ceased and temperature is ranging nearly a degree lower at its maximum, cough and expectoration increasing.

October 13. During last month there has been a steady decline in all respects, except that the temperature has ranged lower and the night sweats have not returned. Patient has been troubled greatly with sleeplessness and nightmare. The diseased processes in the lungs have progressed quite rapidly and the cough and expectoration increased in a marked degree. Weight 91 pounds. October 16, patient died.

In addition to these seven tabulated cases, two other
cases were treated with aseptolin although they were
rapidly advancing in tubercular destruction of the
lungs. In neither case was any benefit observed from
the treatment, either locally or generally. The treat-
ment was stopped after two months. Both cases
died. Except in the cases that died the treatment
was continued from four to six months. Of the
nine cases treated, in seven the night sweats ceased
entirely and the temperature range was lower during
treatment than before the treatment was begun; in
one (case No. 2), there was a gain in weight, and im-
provement in all general symptoms, appetite increased,
sweats ceased, temperature fell to normal or half
degree above, but the local conditions as revealed by
physical examination did not change though the
cough and expectoration were much lessened; in one
other (case No. 1), there was gain in weight for four
months. sweats ceased, appetite improved, temperature
did not range above 100 degrees F. but the local
changes in the lungs progressed, cough and expector-
ation increased, there were several hemorrhages and
during last two months patient began to lose in weight,
appetite failed and temperature began to range higher.
In all of the other cases there was progressive loss
in weight, marked progress in the local disease, and no
improvement in any symptoms except in the cessa-
tion of the night sweats and the somewhat lower range
of temperature.

Of the nine cases treated four died, two from two to three months after treatment had been stopped, one during treatment and one, I think, because of the treatment. This case (No. 6), deserves especial mention. In this case as in all others, careful examination of the twenty-four hours' excretion of urine was made before treatment was begun. The kidneys were in normal condition. (The urine in all cases was examined every day.) Treatment in this case was begun August 1. On September 12 albuminuria and almost complete suppression of urine occurred. Treatment was immediately stopped. Patient had gained four and one-half pounds during first three weeks of treatment and lost two and one-half during last three weeks. During the month following the stopping of treatment he gained five pounds, although the albuminuria persisted and gradually increased. About October 1, three weeks after aseptolin had been stopped, in addition to the albuminuria he developed a marked polyuria which lasted until his death, which occurred December 19. The amount of urine voided daily during the last two months of his life was from 2000 to 5000 c.c., containing from 20 to 50 gm. of urea and a large amount of albumin and hyaline, granular and epithelial casts in abundance. During the last two weeks of life he was confined to bed, had three attacks of severe gastritis and developed corneal ulcers in both eyes. He died in a state of coma. Autopsy was not secured.

In no case can I report a cure. In judging of the value of aseptolin in these cases we must bear in mind the fact, that the treatment was begun in the early summer and continued through the summer and somewhat into autumn and early winter; that the improvement in those cases in which improvement was noted, took place during the summer, while the weather was such as permitted out-of-door life, but that when the weather grew more inclement and out-of-door life was interfered with, the improvement did not continue. The one thing that impressed me as of value in the use of aseptolin was that in all cases the night sweats were promptly stopped and did *not* recur. In most cases also, the range of temperature was lowered. As these same results can be obtained by other measures which do not carry with them the possibility of producing an albuminuria and even a nephritis and death, I question whether the use of so dangerous a remedy is justifiable.

The next series of cases I have to report is a series of cases treated with Paquin's tubercle antitoxin.

Case 1.—D. M. was Case 1 of aseptolin series. Aseptolin treatment had been stopped two weeks and patient gained in appetite, ability to sleep, and slightly in weight. Temperature ranged from 98 to 100.5 degrees, pulse 80 to 100, respiration 20 to 28. Weight 130½ pounds.

December 12, 1896. Tubercle antitoxin begun; there is infiltration in upper left, cavity in upper right.

January 4, 1897. Patient feels very badly, has steadily gone
downward since treatment was begun, great pain was produced
by the injection; they were followed by a marked dermatitis
and by swelling of left axillary glands, headache, gastric pain,
anorexia, diarrhea, pain and stiffness in limbs. Temperature
ranged during this month from 97 to 102.5 degrees, pulse 80 to
110, respiration 22 to 28. Infiltration in upper left remained
inactive but there was marked increase in softening about cav-
ity in upper right. Cough and sputum greatly increased.
Weight 129½ pounds. Treatment stopped.
January 27. Headache and ache in bones have disappeared,
sleeps well and feels better. Weight 126½ pounds.
Case 2.—F. S. This case had also been an aseptolin (case
No. 3), and had not improved since aseptolin stopped.
December 14, 1896, had held his own in weight in spite of three
small hemorrhages. Temperature has varied between 98 and
100, pulse between 88 and 100, respiration 20 to 24, cough and

sputum have diminished, appetite is good, sleeps well, no night sweats, weight 91½ pounds. Infiltration of left apex and of right upper lobe with bronchitis in right middle lobe. Tubercle antitoxin begun.

January 4, 1897. During the last month patient has failed in all respects; shortly after serum treatment was begun, he began vomiting severely, and has had one severe hemorrhage. Cough and sputum have both increased. Injection set up dermatitis and caused swelling of axillary glands; the infiltration has proceeded downward from left apex into entire upper left lobe, softening has begun in upper right and infiltration has progressed into middle right. Temperature has ranged from 97 to 101.4 degrees; pulse 80 to 120, respiration 28 to 40, weight 88¾ pounds. Patient is distinctly worse in all respects. Treatment stopped.

Case 3.—T. D. This case also has been on aseptolin (case No. 4), and had not improved. Aseptolin stopped October 13. Since then patient has lost three pounds in weight but has held his own in other respects. Appetite is fair, sleeps well, feels pretty well, coughs and raises considerable. Temperature 98 to 100 degrees, pulse 70 to 100, respiration 20 to 30. There is infiltration in upper left and in middle right, and cavity in upper right. Tubercle antitoxin begun Dec. 14, 1896,

January 5, 1897. During last month patient has lost ground in all points; feels very badly, appetite gone, sleeps poorly, severe and continuous headache, dermatitis marked, cough and expectoration markedly increased; condition of the left lung remains the same, but there has been marked increase in the softening about cavity in right lung. Temperature 97 to 100 degrees, pulse 80 to 110, respiration 20 to 30. Treatment stopped.

February 2. Patient continued to lose weight for three weeks after treatment stopped. Since then has gained a little. Headache ceased; feels, sleeps and eats better. Cough not changed.

Case 4.—M. R., male, age 34, native of Ireland. Tubercle antitoxin. Jan. 8, 1897. Previous history.—Negative until in July 1896, when he began to have a slight cough, loss in weight and strength, and suffer from pain in side and chest. Is anemic and has had occasional night sweats. Temperature has ranged from 99 to 101 degrees, pulse 100 to 110, respiration 20 to 30. There is infiltration of left upper lobe as far down as the level of the second rib in front, and as far as the spine of the scapula behind. Considerable cough and expectoration. Weight 120 pounds. Antitoxin treatment begun.

February 2. Patient felt better for first two weeks, and gained two pounds in weight which he lost in the third week, but gained one back in next week. The pain in his chest disappeared in first two weeks, but returned with greater severity during last three weeks; he also developed pain in his left hip and his stomach. During last three weeks has vomited nearly every day, his appetite has failed and the cough and expectoration have increased. His temperature has ranged from 98 to 102 degrees, pulse 90 to 120, respiration 22 to 34; he has had three severe night sweats. Softening has developed in left upper lobe and there has been some extension of disease downward. There has been no dermatitis or swelling of lymph gands. Weight 121 pounds. Treatment stopped.

Case 5.—P. R., male age 54, native of Ireland. Tubercle antitoxin. Previous history: Pneumonia five years ago; cough for two years: hemorrhage one year ago. In September 1896, had another hemorrhage and began to run down in weight and strength. Entered hospital Oct. 14, 1896. Fair appetite, sleep poor, night sweats, occasional diarrhea. Temperature 97.5 to 98.8 degrees, pulse 90 to 100, respiration 24 to 32. Cough and expectoration considerable, sputum often blood tinged. Scattered areas of broncho-pneumonia in both lungs, together with considerable emphysema; cavity in upper right lobe. Weight 125 pounds.

December 12, 1896. Under hygienic measures, good diet and creasote, patient has gained nine pounds in weight, hemorrhages have ceased, night sweats less severe and less frequent. Temperature 98 to 98.5 degrees, pulse 90 to 100, respiration 24 to 30 Areas of broncho-pneumonia have materially diminished, otherwise pulmonary condition is the same. Weight 134 pounds. Tubercle antitoxin begun.

January 4, 1897. From the time injections were begun patient began to feel badly, aching and numbness in limbs and back, headache, bones ache with return of night sweats in great severity, cough and sputum increased greatly in amount and hemorrhages again began. Temperature 97 to 100 degrees, pulse 80 to 120, respiration 24 to 36. Areas of broncho-pneumonia again increased and there developed considerable softening about cavity. Weight 129 pounds. Treatment stopped.

From this time on patient continued to grow worse in all respects; hemorrhages continued, sweats, fever and broncho-pneumonia increased and softening extended; patient finally died March 1, 1897.

I have three other cases treated with tubercle antitoxin to report. One Miss B., age 17, American of German descent. This case I first saw in September, 1896. She at that time was having high fever in the afternoon, night sweats, severe cough, considerable expectoration, poor appetite and occasional diarrhea. She was not weighed. I put her upon Vaughan's 1 per cent. solution of yeast nuclein. She did well upon it, appetite improving, cough diminishing and sweats becoming much less frequent and fever also subsiding to a marked degree. The local condition, which at first showed cavity in right upper lobe, infiltration in rest of right lung and in left upper lobe improved to a considerable degree, the lower lobe of right clearing up almost entirely, the cavity in upper right remaining, but apparently not extending, the infiltration in upper left remaining about the same.

In spite of this improvement I foolishly changed to the antitoxin in December, beginning the injections on December 10. The injections of tubercle antitoxin were very painful, a marked dermatitis occurred and swelling of the axillary lymph nodes. Her general health suffered greatly. The afternoon fever returned, the sweats again became marked, appetite diminished and after about three weeks' treatment the girl declined further treatment by injection of any kind, even declining to go back to the use of nuclein. The local condition took a new start in progress of disease, the cavity on the right side enlarged, the left upper lobe also began to break down and areas of broncho-pneumonia showed themselves in lower lobes of both lungs.

The cases so far reported were undoubtedly cases of mixed infection and it may well be said that good results from a specific antitoxin should not be looked for in such cases. The next two cases were apparently pure tuberculosis. The first, David D., a young man 20 years of age, tubercular family history in grandparent and aunt, consulted me first Dec. 13, 1896, on account of cough. Physical examination of the chest revealed nothing, but chest tending to pigeon shape and poor development. Examination of throat showed enlarged tonsils, especially the right one, and a reddening of the vocal bands with some edema of false cords. He was referred to a throat specialist who treated the laryngeal condition and a diseased nasal condition without much relief to cough. Patient also began to vomit considerably at this time after severe attacks of coughing. Almost no expectoration, the little that was brought up being mostly glairy mucus not containing tubercule bacilli. On December 31 I amputated the right tonsil. For nearly a week after this the cough was much better. It then began again. His voice became quite hoarse and at times he could only speak in a whisper. Examination of the larynx on Jan. 26, 1897, revealed tubercular infiltration of the larynx—ulceration of the free margin and superior surfaces of both vocal bands over the anterior halves of the membranous portions—swelling of the arytenoids prevents complete closure of glottis; about this same time physical examination revealed some infiltration of right apex but no softening. Not until a week later were tubercle bacilli found in the sputum, which remained very scanty. On January 26 began injection of Paquin's tubercle antitoxin, and gave them daily for thirty-two days, patient growing steadily worse and the injections producing such severe pain, lasting for from four to eight hours, that the patient dreaded the coming of another day. The local condition of the lung did not improve, on the contrary, began to show distinct signs of breaking down. Patient gained three pounds for two weeks and then lost nearly three. On February 26 the injections were stopped, certainly having done no good and possibly having been productive of harm.

The last case of those treated with tubercule antitoxin was a man from whom a tubercular testicle had been removed two months before. This case presented no evidence of pulmonary tuberculosis, but presented enormously enlarged lymph nodes in the groins and extending into the pelvis and some distance into the abdominal cavity. He was put on the serum injections on Dec. 12, 1896. He suffered no inconvenience from them and gained in weight and strength. The injections were continued until April 22, 1897, when he left the hospital much improved in general health, apparently not injured by the injections, though at one time they had to be omitted on account of soreness produced, but were begun again in a week. There was, however no change observed in the size or contour of the glands already involved, but on the other hand there was no further extension and involvement of other glands or organs.

The conclusions to which I have come in regard to Paquin's tubercle antitoxin are that in cases of phthisis that are at all advanced it is of no value, and that in the one case of almost pure tuberculosis of larynx and upper lobe in which I used it, it was worse than useless, not having stayed the disease and having produced great physical suffering; that in the case of gland tuberculosis it has apparently done no harm and may yet be of value; that in all cases, with the exception of the last, the pain produced by the injection and the unpleasant after-results in the way of dermatitis and glandular swellings would almost, if indeed not entirely, prohibit its use.

The next series of cases to which I wish to call your attention gives brighter outlook as regards results from treatment.

In 1894 Dr. Victor C. Vaughan of Ann Arbor sent some of the early production of his yeast nuclein to Dr. Chas. G. Stockton of Buffalo, with whom I have the honor to be associated in one of our hospitals. Since that time Dr. Stockton and I have used nuclein on a number of cases of tuberculosis and other infectious diseases. I have yet failed to see a case in which it did not do good. I have seen many in which it has not effected a cure. I have seen some in which it has effected a cure. In all there has been at least temporary improvement.

Case 1.—The case of Miss C. I have already mentioned as showing marked improvement under the 1 per cent. nuclein. She had advanced as far as 3 c.c. at a dose, when, to my great regret, I changed to the tubercle antitoxin and she afterward refused treatment.

Case 2.—Mrs. W. F. H., age 57; nativity, United States. Nuclein. Tubercular family history; has coughed more or less for twelve or fifteen years. First came under observation in June, 1894. Suffering with gastric distress after eating; this has troubled her for the last eight years. Case is emaciated and has marked enteroptosis. The study of stomach contents shows slight diminution of hydrochloric acid, impaired motion and impaired absorption, large amount of lactic acid. Infiltration with some softening of upper lobe of left lung. Considerable cough and expectoration in the morning, slight at other time of day. Temperature ranges from 97 to 100 degrees, pulse 100 to 120, respiration 24 to 30. She was on cod liver oil, creosote and inhalation of menthol until June 15, 1895. Her weight fell during this year from 111 to 98 pounds. The diseased condition in the lungs also progressed so that when put upon nuclein,

June 11, 1895, her physical condition was poor, her appetite very small, sleep poor, gastric distress marked, occasional diarrhea, marked enemia and emaciation. There was infiltration of the upper right lobe and of the entire left lung with softening in the upper lobe. Weight 98 pounds.

August 2, 1895. She felt better and held her own in weight. A small cavity had developed in upper right lobe. The 1 per cent. nuclein was gradually increased in dose until by October, 1895, she was taking 6 c.c. hypodermically daily. She continued at that dose until May 1, 1897, then changed to 5 per cent. solution nuclein, begining with 1.5 c.c. and gradually increasing dose until May 20, 1897, when she was taking 4 c.c. She continued that dose. During these two years she has changed very little in her physical condition, except that the gastric indigestion has been to a great extent overcome. The sleep has improved, the cough has remained about the same, the strength of patient has not increased, the night sweats very seldom occur. Her pulmonary condition has varied, occasionally a little outburst of broncho-pneumonia occurring, but on the whole there has been a slight improvement. Since the beginning of the 5 per cent. nuclein this improvement has become marked.

May 20, 1897, physical examination showed that the cavity in upper right had disappeared though there remained some condensation of tissue there. There was small cavity in upper left with some infiltration about it. The cough diminished, the sputum was about the same in amount but less purulent in character, still containing tubercle bacilli. Temperature 97 to 99 degrees, pulse 100, respiration 22 to 26.

Case 3.—Elizabeth McD., age 42, American. Nuclein. First came under observation Nov. 11, 1895. History of pneumonia two years before and pleurisy one year before; since then loss of weight and strength, with cough and considerable expectoration. The records of this case, except the first and last physical examinations, have been lost. The first one, which was made Nov. 11, 1895, when nuclein was begun, showed slight infiltration in upper left, broncho-pneumonia areas in lower right, cavity surrounded by area of softening in upper right. Nuclein, 1 per cent. solution, was begun at 1 c.c. and gradually increased to 4 c.c., in February, 1896. She remained at this dose until she passed from under observation on Aug. 15, 1896, when her general condition was markedly improved; she had gained several pounds in weight, her appetite was good and bowels regular, she slept well, she coughed only occasionally and the last two examinations of sputum (which was very slight in amount) failed to show the presence of tubercle bacilli; physical examination showed that the signs of cavity and softening had entirely disappeared, leaving only the evidence of slight condensation in right apex: the signs of disease in lower right and left lung had entirely disappeared. Pulse 74, temperature 98 degrees, respiration 18.

This case I consider has recovered, though there remains slight condensation in upper right.

Case 4.—John D., age 21, nativity United States. Nuclein. This case came under observation Nov. 14, 1895, with a history of frequently occurring "colds" during the previous two years, and of a severe one in October, 1895, which has remained. Patient is losing in weight, sleeps poorly, has occasional night sweats, becomes slightly cyanosed upon exertion. There is considerable cough and expectoration. There is infiltration in upper right, infiltration and slight softening in upper left, bronchitis in lower left. Temperature 98 to 105 degrees, pulse 85 to 120, respiration 20 to 34. Injections of 1 per cent. nuclein begun Nov. 14, 1895. Weight 105 pounds.

December 17, 1895. During last month patient has shown no change in his general condition, except a slight improvement in appetite; the temperature 98 to 102.5 degrees, pulse 72 to 110, respiration 20 to 30. Cough and expectoration slightly increased. Area of infiltration and softening in left slightly increased.

January 16, 1896. Nuclein 4 c.c. Slight general improvement during past month, appetite and sleep improved, no night sweats, cough and sputum not materially changed. Temperature 98 to 101 degrees, pulse 80 to 120, respiration 20 to 30. Bronchitis has disappeared from lower left. Area of infiltration in upper left has diminished, but there is distinct, though small, cavity in upper left, but evidences of further softening are lacking.

February 17. During last month there has been very marked improvement in general health. Temperature 97 to 99.5 degrees, pulse 76 to 110, respiration 20 to 26, cough and sputum diminishing, cavity in left distinctly smaller, no softening about it. ished, no bronchitis, areas of infiltration in both lungs dimin-

March 17. Nuclein has reached 6 c.c. Patient's weight has increased to 122 pounds. Temperature 97 to 99 degrees, pulse 70 to 90, respiration 18 to 22.

April 17. Continued improvement in every respect. Good appetite, sleeps well, normal temperature, pulse and respiration. Improvement in left lung particularly marked. Infiltration in upper right still pronounced. Weight 130 pounds. Patient went to Colorado, but returned in late autumn feeling so well that he has neglected treatment all winter and spring.

May 20, 1897. Patient feeling very well, appetite good, no fever or sweats. Temperature 98 degrees, pulse 70 to 80, respiration 18. Evidences of disease have entirely disappeared from left lung, which seems in normal condition. Slight condensation of upper right with evidence of small cavity posteriorly at junction of suprascapular and interscapular regions. Cough much less, some days none, but sputum still contains the tubercle bacilli.

Case 5.—Christina S., age 17, German parentage. Nuclein. History of measles in early childhood, hip disease when 14 years of age, recurrence of disease at 16 years of age. For four months, during which she was under observation, before nuclein was begun, she felt badly, was losing in weight, appetite poor, bowels quite irregular, tending to constipation with occasional diarrhea.

Physical examination revealed bronchitis in right upper lobe. Infiltration and slight softening in left upper especially noticeable anteriorly in the infraclavicular and mammary regions, cough troublesome, expectoration about 150 c.c. in twenty-four hours. Pulse 80 to 110, temperature 97 to 102.5 degrees, respiration 25 to 35.

September 1, 1896. Nuclein begun. Weight 98 pounds.

September 13. During last two weeks there has been a slight change for better, both in the local signs and in the general symptoms. Pulse 70 to 96, temperature 97.5 to 98.5 degrees, respiration 24 to 26.

September 25. During the last ten days an acute pneumonic process has attacked upper left lobe, pulse reaching 120 in frequency, temperature 104 degrees, respiration 28 to 34.

After the subsidence of the pneumonia, the case made steady improvement in all respects; appetite good, bowels regular, color returning to face and patient enjoying a feeling of good health to which she had been a stranger for several years. Her pulse has ranged about 80, her temperature from 97 to 98.5 degrees, her respiration from 20 to 24.

May 10, 1897. Her right lung has cleared up entirely, the evidence of softening in the left lung has subsided and there remains only slight condensation in the upper lobe. The sputum has almost entirely gone, not more than 8 c.c. in twenty-four hours, containing only six or eight tubercle bacilli, in examination of eight slides, after precipitation of the sputum by means of the centrifuge. Patient has menstruated this week for the first time in a year.

Case 6.—David D., male, age 20, native of United States. Nuclein.

This case is the case of laryngeal and upper right lung tuberculosis that was given Paquin's antitoxin from January 29 to Feb. 26, 1897, and did so very poorly. Weight 123 pounds. Temperature 96 to 102.5 degrees, pulse 110 to 120, respiration 26 to 30. April 30 I began injections of 5 per cent. nuclein. At this time the patient's condition was one of anemia, anorexia, severe cough, frequent vomiting, poor sleep, great depression of spirits.

May 20, 1897.—During last month there has been gradual improvement in all respects; sleeps better, does not vomit so frequently, appetite better, acknowledges (for the first time in four months) that he is feeling better. Larynx shows slight improvement, signs of softening in right lung are disappearing, though condensation remains. Sputum somewhat less in quantity and a little more easily raised. Pulse ranges from 100 to 110, temperature 96 to 100 degrees, respiration 24 to 28.

May 22, 1897. Today noticed the first unpleasant effect from injection of nuclein. Immediately after the injection, which had been gradually increased to 4 c.c., patient said he felt badly, there was great difficulty in breathing and a feeling of nausea followed by a tremendous determination of blood to head and shoulders, giving them a dusky red hue. This lasted about five minutes and then gradually subsided. About one hour later it was followed by a chill which terminated in vomiting, and then the patient felt better but weak. There was left on the shoulders and upper chest a slight purplish mottling. Injection was omitted the following day. For the next four days injections were given, and twice a slight recurrence of the feeling was produced; on the fifth day the attack was similar to but more severe than the first. During the period before the flushing, patient became pulseless, face became pinched and drawn and without color, breathing shallow, infrequent and difficult. Death seemed imminent. The mottling which followed the flushing this time showed itself to be intradermal minute hemorrhages. Two days later I gave a smaller dose with a slight recurrence of the symptoms. The patient was evidently so terrified that the dread of the injection precluded the possible benefit and I have since begun giving the 5 per cent. solution by mouth, on an empty stomach, beginning with 2 c.c. and daily and gradually increasing to 4 c.c., t.i.d.

I should like to mention one other case that has been on treatment for two weeks only, but has made so great improvement as to surprise the patient, all her friends and myself:

Case 7.—Martha McD., aged 24, native of United States. bookkeeper. Nuclein. Came under my observation May 11. Father died of heart disease; mother of "tumor"; one sister of consumption.

Patient had measles and whooping cough when 8 to 10 years of age. Began menstruating when 14 years of age. When 18 years old had severe cough lasting two months; has coughed occasionally since. Three weeks ago caught a severe cold by change of clothing. Cough has constantly increased since that time. She has a tubercular aspect and weighs 112 pounds; pulse 104, soft and quick; temperature 99 degrees, respiration 24; she sleeps well and her digestive apparatus is in good condition; heart and blood vessels are sound; blood shows slight anemia. Nose is normal, but there is muco-pus in naso-pharynx; larynx normal; particles of broncho pneumonic infiltration throughout left lung, especially in upper lobe; sputum raised mostly in morning is muco-purulent in character, in chunks, contains tubercle bacilli, streptococci and diplococci lanceolati; amount raised in twenty-four hours 50 to 100 c.c. Treatment: Cod-liver oil and strychnin, t.i.d., and cough mixture of fl. ext. pruni virg., 1 c.c.; syr. scillæ comp., 1 c.c.; syr. lactucarii, 2 c.c.; every two to four hours. Nuclein, 5 per cent. sol., hypodermically; began with 0.30 gm. and increased dose gradually until she is now taking 2 c.c. daily.

May 27. She is feeling well, coughs only in the morning and thinks most of expectoration comes from naso-pharynx. Amount in twenty-four hours 15 c.c., is very tenacious, contains a few diplococci and a few streptococci, no tubercle bacilli. There are, however, still a few râles over upper lobe of left lung.

She has held her own in weight for the last two weeks, whereas before that she had been steadily losing.

Other cases that I have put upon nuclein have not been under observation long enough to justify any report. The following conclusions, however, I think are justified. Nuclein does no harm if injections are not too rapidly increased; the injections are not painful; one case recovered although there was a cavity in the right lung when treatment with nuclein was begun. The chronic case that has been on treatment for two years, receiving a hypodermic dose every day, bears witness to the value of the remedy. Signs of cavity have disappeared from one lung and become much less marked and and more limited in the other, the evidences of softening having also disappeared.

In one case beside the one that recovered, the bacilli have disappeared from sputum, which have become almost none. In another case I have no doubt that recovery might have been reported if the young man would stick to treatment, but he feels so well that he neglects himself, though the bacilli are still present and there remains signs of small cavity.

In closing this report I want to lay great stress upon the importance of properly conducted exercises in the treatment of pulmonary tuberculosis. Exercises designed to develop the chest muscles and increase the lung capacity; specific directions as to the character and amount of exercise and the time of day when the exercise should be taken are necessary. Whatever specific medication we may use, without exercise and fresh air our efforts will come to naught. The treatment of special symptoms deserves a few words:

Cough.—This symptom is generally best relieved by attention to the upper air passages, keeping them clean and free from secretion and by inhalations, mentha in some of its forms having been, in my experience, productive of the best results. The constant inhalation of essence of peppermint through a perforated zinc mask, as suggested by Carasso of Genoa, is especially valuable. When internal medication is needed to give further relief, the cough being irritating and the sputum difficult to raise, a combination of the fl. ext. pruni virg., syr. scillæ comp. aa 1 c.c., and syr. lactucarii q. s. ad 8 c.c. at a dose, given once in three to four hours has done best; chloroform water alone or combined with a little dilute hydrocyanic acid is very useful. Opium and its derivatives should be avoided entirely, excepting in advanced cases where they are the only remedies that give the patient any relief; of the various anodyne preparations, codeia and chlor-anodyne are the two that I have found most useful.

Dyspnea.—Not a very common symptom in phthisis, is sometimes very troublesome. For its relief, when not dependent upon the cardiac weakness, the fl. ext. quebracho I have found invaluable.

Pain in the chest is best relieved by strapping the chest or, if this fails, by hypodermic injection of morphin.

Hemoptysis.—Morphin hypodermically, rest in bed, dry cupping of chest, followed for several weeks by the internal use of the infusion of bugle-weed (*Lycopus Virginicus*).

Fever.—Best controlled by the nuclein administration. Sponging with alcohol and water is often of great value. Regular bathing should be a part of the routine treatment of every case.

Sweating.—This generally disappears during the treatment with nuclein. Sometimes, however, it requires special treatment. Atropin and aromatic sulphuric acid still remain at the head of the list of drugs useful in controlling this distressing symptom.

The *dyspeptic* symptoms require special study in each case and no general rule can be laid down for their treatment. Sometimes recourse to a diet of nothing but koumyss for two or three weeks will give the needed rest to the stomach and later allow a gradual return to a mixed diet. In all cases frequent examinations of the blood should be made in order to determine whether we are gaining on the anemia that is present to a greater or less degree in them all. Red bone marrow is the best agent to combat the anemia.

REMOTE EFFECTS OF BONE TRAUMA.

Read at the Third Annual Meeting of the American Academy of Railway Surgeons, held at Chicago, Ill., Sept. 23, 24 and 25, 1896.

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Some experiences during the past few years has suggested the subject of this paper, and I have in consequence examined a considerable range of medical literature for the purpose of obtaining data upon which to base certain propositions. The result is somewhat disappointing for the reason that writers, even those standing highest as authorities, have written but little in reference to the remote consequences of bone injury, especially in relation to such cases as may become the subject of controversy. Exception must be made of the writings of those who before the discovery of the special cause of tuberculosis regarded certain classes of joint disease and certain cases of osteomyelitis as the result of injury more or less remote, recognized or assumed

The effects of injuries upon the future condition of bone tissue are so varying in their nature that it would be quite impossible to predicate the future possibilities in any case of trauma in an empiric manner based upon experience alone, but rather, in the first place, on well-known pathologic facts. The apparent relation of cause and effect in medicine are, as is well known, so often misleading that a most critical application of facts, derived from a close study of pathology, becomes necessary to protect the surgeon from falling into serious error. So many writers on medical, as well as on other subjects, have fallen into the habit of loose and indefinite statement, that it is not difficult to find that the highest authority may be used in the support of propositions, often no doubt, quite in discordance with the author's real views.

It is true that unusual difficulties lie in the way of certainty in medicine from the fact of the complex nature of the subject and of the unforseen accidents which may arise to complicate the course of events, but much of this may be avoided by the employment of critical methods of study. The primary consideration in the study of the subject of this paper must be the influence of injuries in producing bone inflammation.

It is generally agreed that contusions of bone will produce swelling of the periosteum from extravasation and if the injury is sufficient or of such a character as to influence the bone an osteoplastic process will follow. It may generally be expected that resolution will take place in a short time, and that the periosteum and bone will be restored to to their former condition. If, however, this does not take place other results will follow, which it is the object of this paper to consider, and if we can reach an understanding of what may be expected from the standpoint of pathology and from the most reliable practical observations, we may be able to answer certain questions and come to conclusions which will be just and proper.

Leaving out of consideration for the present moment the results of infection, we will consider the effects of the osteoplastic process when resolution does not take place. I think it proper to stop long enough at this point to say that chronic irritation or inflammation of bone can not continue for an indefinite period of time without certain organic changes taking place. Assuming an injury to be the cause of an inflammation or an irritation of a more or less persistent character, we have as a result a proliferation of cells.

The density of bone tissue is such as to interfere with this multiplication of cells without the occurrence of a coincident absorption of bone substance, hence the bone changes in condition. The vascular structure of bone periosteum and medulla are involved, becoming more vascular and an exudation takes place underneath the periosteum into the medulla and into the enlarged Haversian canals, or in spongy bone into the trabecular structure. As the embryonic cells increase in number the osseous lamella becomes softened and absorbed and the lacunæ become larger, and these with the enlarged Haversian canals become filled with granulation tissue together with multinuclear cells, osteoclasts, which are believed to aid in the absorption of bone.

This form of inflammation of bone, known as rarefying ostitis, is attended with the formation of new bone beneath the periosteum and in the medulla, hence two processes are observed: 1, new embryonic cells and enlargement of lacunar spaces and Haversian canals; 2, the conversion of the new elements into bone.

Therefore the two processes of rarefying and formative ostitis occurring together give rise to conditions which will vary according to the predominance of the one or the other. If the irritation continues, resolution, of course, does not take place and disease becomes progressive, involving well determined pathologic changes, be they of the character of rarefying ostitis or osteo-sclerosis. If the disease is chronic or slow in development the rarefying process continues until an abnormal degree of sponginess is reached, whereby the bone becomes larger, lighter and lessened in its power of resistance and fracture easily occurs. Section of a bone which has undergone this change will show the numerous spaces, the enlarged Haversian canals and medulla or the more fragile condition of the trabecula. The extent of these abnormal appearances will be determined by the degree of inflammation present and the advancement it has made.

If, instead of the continuance of the rarefying process, the bone granulation tissue becomes organized and new bone is formed, the spaces become slowly filled, the medulla is encroached upon and the bone becomes changed in character; it becomes harder and denser. The continuance of the bone formation process indefinitely must result in an interference with the vascular supply by compression of the blood vessels and an ultimate interference with the nutrition of the bone, leading finally to necrosis of greater or lesser areas. If, however, the disease becomes arrested at a point short of a serious interference with nutrition, the condition of osteo-sclerosis may remain permanent. The lesson, then, to be derived from a consideration of the pathologic changes in chronic inflammation in bone, teaches that this condition can not continue indefinitely without giving rise to well marked internal and also external changes, which may be readily recognized if the bone is situated superficially so as to place it within easy reach. No doubt slight degrees of pathologic changes may take place without objective signs which can be discovered by ordinary surface examination.

It appears from a considerable personal observation among railway and mill employes that the organic changes in bone resulting from chronic inflammation rarely terminates in complete resolution, a degree of permanent thickening remains, which, however, gives rise to no troublesome symptoms or disability, unless the thickening is in the immediate neighborhood of a joint. There may be no constant relation between the severity of the subjective symptoms, the extent of pathologic changes and the objective signs, but it is fair to presume that if symptoms of disease persist without abatement, more or less active changes are really taking place with the results already indicated.

The foregoing relates to cases which escape the influence of microbic action, either septic or tubercular. In predicting the future results of bone inflammation we have always in mind the possibility of infection. In general terms it may be said that the more abundant the granulation tissue, the more active the suppurative process in the event of pus infection, a condition most often met with in inflammation of spongy bone, or in the trabecular structure of long bones near the articular extremities. A traumatic osteomyelitis with pus infection, occurring early or late, means a pathologic condition, manifested by evidences of a positive character, showing very soon the serious nature of the lesion; the more or less rapid approach of pus to the surface, redness and inflammation of the soft parts and final discharge, and the formation of sinuses communicating with carious or necrotic bone. In the case of rarefying ostitis of denser bone, the granulation tissue filling the enlarged spaces may become infected and the lesser formation of pus, and the more localized process may give rise to a small abscess, chronic in character and occasion less marked symptoms, but in the search for the cause of the symptoms the objective evidence will be unmistakable.

Tubercular infection of the actively granulating tissue will be marked very soon by an accession in the symptoms and a more decided progress of the disease, the early formation of sinuses consequent on the development of tuberculous pus, and if double infection from the invasion of the true pus microbe happens, the added constitutional symptoms of sepsis will follow.

There can be no doubt according to the best authorities that an ostitis of traumatic origin, even if resolution has taken place, at least to the extent of subsidence of all active inflammatory processes, may become the focus of a tubercular development, by serving as a point of least resistance. But can we say that this local predisposition to tubercular infection is permanent, *i. e.*, that after all inflammation has subsided and the structural changes have been followed by a restoration in the nutritive balance, can we say that the thickened bone, or the bone that has been subject to an inflammation, is still exposed to the special danger of a tubercular disease. The best evidence is to the effect that when the nutrition of the bone has been restored the *locus minoris resistentiæ* ceases to exist. The time for infection is when the nutrition is impaired by the products of inflammation, or when the products are in that special condition which invites the cultivation of the bacillus tuberculosis. It may be difficult to determine when the bone has become restored to that condition of normal resistance, but to my mind the appearance of a tuberculous process long after all evidence, save the thickening, of the inflammation has disappeared, is not sufficient evidence of the causative relation of the inflammation itself.

It is generally admitted that an injury to a bone, particularly to the cancellous structure in which trabeculæ are broken or in which a minute hemorrhage occurs may be the foundation of a tuberculous inflammation having its exact seat either in the new cells formed incident to repair, or in the hemorrhagic focus.

In the examination of a case of bone inflammation, even when resolution is apparently going on favorably, we can not avoid the apprehension that a tuberculous process may develop at any time, and in the light of this fact our opinion must be guarded, for the otherwise reasonable expectation of a recovery may not be realized. If it is true, as it is generally accepted, that an injured or chronically inflamed bone is subject to tubercular infection, for how long a time and under what circumstances may the above conditions serve as etiologic factors in the production of the disease? Much loose generalizing has been indulged in on this point and efforts have been made to show that a slight injury to a bone may give rise to a locus *minoris resistentiæ* which will especially predispose to the disease for an indefinite time. That is, if a bone becomes injured and all symptoms of such injury subside, yet after months, or even years, tuberculous process develops. Therefore, it is said that the injury is the remote cause. It may also be assumed in a given case of injury that even if apparent recovery takes place the claimant is exposed for an indefinite period to the rise of a dangerous disease as the logical sequence of the injury.

I am not advised that any modern writer of eminence holds to this view, but it is a fact that opinions of this character are entertained by members of the profession. Senn regards bone tuberculosis as the result of trauma under any circumstances as rare, and Cheyne, while believing in the etiologic influence of injuries in producing bone tuberculosis, cites only a few cases in which there was satisfactory evidence to his mind of the causal relation, and in all these cases the tuberculosis followed immediately without any apparent recovery from the injury itself, and the same is true of all other cases recently recorded. Referring to a previous statement in this paper, I contend that the circumstances under which infection must occur, if at all, is when the local resistance in the bone is impaired by the injury; or in the presence of a minute hemorrhage; or in the presence of granulation tissue as the result of a mild inflammation or repair; and the limits of infection must not extend beyond the restoration of the injured bone to its normal condition and that the evidence of such restoration must be the disappearance of objective symptoms in bones subject to easy physical examination.

The origin of a true bone tumor from a metaplastic process is no longer entertained. The formation of an exostosis or a localized or diffused hypertrophy from the reparative process in a bone following an injury may occur, but the fact is so plainly indicated by the physical condition of the bone that it can not fail of recognition and the continuity of symptoms subjective and objective with the development of the bone enlargement will indicate the causative relation, however slow the process may be. In the process itself we recognize the histogenetic changes already considered, viz.: Hyperemia, exudation and proliferation of cells from the deeper layer of periosteum and the conversion of the osteoplastic elements into bone.

The development of sarcoma from bone trauma is altogether possible, especially in persons predisposed through heredity. This is occasionally seen to occur in the immature callus after fracture.

In irritation following trauma newly formed embryonic cells may form the matrix for a sarcomatous development through failure to undergo transformation into tissue of a higher or more resistant physiologic type. That hereditary predisposition is not absolutely necessary in the development of a sarcoma matrix, although it must be assumed in the present state of knowledge of the histogenesis of tumors that a preëxisting matrix of embryonic tissue was present to be lighted into activity under favorable conditions, was shown in a case which came under my care some eight years ago. A man received an injury to the middle of the right humerus, not sufficient to produce a fracture; this was followed by a moderate irritation in the bone accompanied by sufficient pain or uneasiness to attract his attention when not otherwise engaged; in a few months he observed that the bone was increasing in size. The enlargement gradually increased during a period of two or three years, until it became difficult to pull over it a coat sleeve of ordinary size; finally the bone was fractured by ordinary muscular effort. The bone appeared to unite but the condition became so troublesome that he consulted me. The malignant nature of the disease was so apparent that I had no hesitation in declaring it to be a sarcoma of the bone, and advised amputation at the shoulder joint. The proposition was promptly accepted and the arm removed. A microscopic study showed the disease to be a sarcoma of the myeloid type; the growth beginning in the medulla and finally leading to the absorption of bone and extending to the contiguous soft parts. There has never been any return of the disease. The sequence of events satisfied me that trauma was an important factor in the etiology of the disease.

The practical propositions involved in this paper are based on inflammation or irritation in bone following injury and the sequel resulting therefrom.

1. Resolution, including a complete restoration of the bone to its normal condition, occurs in the vast majority of cases.

2. Resulting in rarefying ostitis. Condensing ostitis, or a combined rarefying and condensing ostitis, which may remain as a more or less permanent condition; if slight in degree giving rise to no well marked subjective or objective signs after the process becomes arrested.

3. If the process continues for a period beyond a few months, well marked and unmistakable changes in the physical condition and appearance of the bone will become manifest.

4. A persistent acute or chronic osteomyelitis will also give rise to unmistakable physical changes in the bone.

5. A persistent chronic osteo-periostitis will give rise to thickening of both periosteum and bone of a character that will be readily recognized if the bone is so situated as to admit of easy surface examination.

6. If the products of inflammation in cases of rarefying ostitis or in osteomyelitis become infected with pus-forming microbes, the suppurative process will become plainly evident, except in cases in which the process is very limited, giving rise to a small abscess in the bone which may be indicated only by subjective symptoms.

7. The injury and irritation following may establish a locus minoris resistentiæ which may become the seat of tubercular infection with certain definite results. The length of time after a trauma, during which this influence may exist, can not be definitely determined, but it may be assumed in the light of critical practical experience and pathologic research that the special predisposition will cease to exist as soon as the effused blood is absorbed, and the protoplasmic elements—the products of irritation or inflammation—have been resolved into new bone or have undergone degeneration and absorption, *i. e.*, as soon as the normal nutrition balance is restored. I do not believe there is any scientific evidence or any practical facts that will bear criticism, which will support the assumption that the locus minoris resistentiæ may continue for months or years after all signs of the injury and its immediate results have disappeared.

8. There is no evidence to show that a carcinoma or

sarcoma may develop as the result of an injury after the immature bone elements have become transformed into tissue of a normal resisting physiologic type.

DISCUSSION.

Dr. Reed, Columbus—The subject of "Remote Effects of Bone Trauma" is of interest to every surgeon, and especially to the railroad surgeon; the repairing of bone, the possibility of disease and the changes that are wrought, are all points which may interest the surgeon and interest the company—especially if the patient has occasion to call on the company for damages. The subject has been very ably handled by the Doctor; he has reviewed in brief and concise form cases relative to the repairing of bone, and the changes which take place in the anatomy, in an admirable way; at the same time there are some points which the Doctor did not touch upon, and which might be of interest to us in this connection. I have no doubt you have all had occasion to observe in your practice cases in which you had taken the best care, and in which you had put on the ordinary splint, kept the bone in proper position and to all appearances in apposition, kept him quiet the ordinary amount of time, the patient had got well; and yet after all this the patient after he was given his liberty would go out and come back to you probably in one or two years afterward with a deformed limb. Now the question comes up, Is that the fault of the surgeon or is the company in any way liable? I have in mind two cases of this kind in which the patients had a fracture of the femur, an ordinary fracture in one case and an oblique in the other; in each the patient was cared for by a competent surgeon, and was dismissed with little or no deformity, or very little shortening, and yet in each ease after the patient had gone out about his business his limb became deformed. Now we have there a case of imperfect repair. We have no doubt had in the first place a perfect union, the intervening space filled, new bone tissue formed, that is, the bone cells had bridged across the chasm, but they were not properly supplied with lime salts so as to harden them, and the result is that instead of that new bone becoming solid it was still elastic, of a cartilaginous character and we, in one case, had the bone not becoming actually displaced but giving away and causing a bow leg. In the other case the union was solid and the weight of the man on the limb gradually forced the bones past each other, not because they were not united, but because there was not sufficient bone salt to make the new bone hard. Those are points I do not think the railway company or any other company are responsible for. I think we ought to discriminate between cases in which deformity followed a union and the case where the surgeon did not properly adjust the bones from the case where the man does not have sufficient vitality to repair the bone properly, or to furnish the lime salt after the new bone was formed. Again, in reference to sarcoma, the Doctor speaks of what I think it is well to remember, that in the case of sarcoma we can not have a sarcoma following traumatism—and I think Dr. Senn has gone into that in his last work very thoroughly—unless there is is a prenatal or post-natal embryonic cell condition; if there is a prenatal or post natal disposition then a traumatic trouble may cause sarcoma, but this must exist prior to the injury and is liable to be the result of previous condition because we know sarcoma does occur without there being a trumatism at all.

In reference to tuberculosis, I recall a case that came to my notice in the hospital a year and a half ago, in which there was a marked case of tuberculosis; a gentleman had pulmonary tuberculosis, which was confirmed not only by expert diagnostitians, but by microscopic examination of expectoration, and in this case the person was emaciated and to all appearances he would die from tuberculosis before he had time to repair bone. It was a railroad accident and he was caught between the cars when the accident occurred, and there were seven distinct fractures distributed between ankles and knees. I observed in this case one fracture repaired at a time—one fracture and then on the same limb another fracture and so on; it went the round, finishing one limb before repairing the other; it was a beautiful case, and notwithstanding he was suffering from tuberculosis, coughing and expectorating profusely, the repair processes went right along just as promptly, so far as any one fracture was concerned, as if tuberculosis did not exist at all. Now the point is this: If tuberculosis is liable to come as the result of injury why would it not occur where the man was suffering from tuberculosis and the whole system run down from disease and in an ill condition to take on reparative processes at all, but we do not have it occurring in any other part of the system excepting the lung. I simply bring these cases up to emphasize what the Doctor has said in his paper, that I do not believe an injury, a traumatism, is conducive to the development of tuberculosis or sarcoma in and of itself, that it requires a condition that is entirely separate from the traumatism to induce it.

Dr. E. M. Dooley, Buffalo—Dr. Reed's remarks in reference to remote effects of bone trauma in case of fractures recall to my mind an interesting case that occurred in Buffalo about three years ago in which the case was a fracture of the tibia about the middle, and a classmate of mine attended him. He had a perfect result and a rigid union and the patient was able to use his limb. But a year afterward at the seat of fracture the callus softened and he had in reality a case of nonunion. The case was interesting because the surgeon was sued for malpractice. Now it was a case of the fault of the patient and not the surgeon, yet, although the surgeon won his suit, it put him to a great deal of expense, both in time and money. And I think these remarks in reference to the possibility of fracture, after it has firmly united to all appearances, softening a year or year and a half later, worthy of emphasis.

Dr. C. K. Cole, Helena—*Apropos* of what has just been said, I wish to refer to a case which occurred about two years ago in the practice of one of my neighbors, and which illustrates one of the phases of the subject touched upon in this paper. A man while riding on horseback was rubbed against a tree and the humerus was broken near the head, which was dislocated. The accident occurred in a remote region and a doctor was not consulted until, I think, four days subsequent, when the man received proper attention. The head of the bone was reduced, the fracture was restored. The patient then and for some weeks following complained of pain, increasing constantly. He consulted a prominent surgeon in San Francisco, who, after making a cursory examination said some things to the patient which reflected upon the doctor who had charge of the case, and these reflections suggested to the patient a suit for malpractice. But before bringing the suit, Dr. Senn of this city was consulted, and Dr. Senn discovered—I think this was some four months after the accident—an osteo sarcoma. Amputation was resorted to, injections were practiced, and the patient remained in St. Joseph's Hospital for some weeks; he returned home and again came to Chicago and was again treated, in the meantime having instituted legal proceedings against the doctor; and he died here in Chicago from a bona fide sarcomatous growth. The reason for calling attention to this case is that it is pertinent to one phase of the subject discussed in the paper and that is a phase of the subject that is not well understood. The fact that a traumatism may precipitate this growth, as Dr. Reed has well said, so far as our knowledge goes there is a preexisting condition, but an injury of this kind does precipitate a growth of this character. The medico-legal aspect is interesting to us as railway surgeons, because unless this is well understood we, and the companies we represent, are liable to be sued for malpractice in cases in which we are not at fault.

The President—I remember a case where a blow was received on the clavicle and on the skull, and sarcoma developed in both places, at the two contusions.

Dr. Galbraith, Omaha—I don't believe we will have a more important paper before this Association than the one just read. While we have so far confined ourselves entirely to pathology of bone trauma, bone inflammation and the products of bone inflammation, I think it would be well for us to give the treatment of these conditions, these lesions, some consideration, more especially as to that part of the bone which enters into the formation of the joints, inasmuch as the treatment in my belief, varies as regards the location of the bone, more especially does that apply to traumatic osteomyelitis. At various times I noted that the Doctor spoke of resolution following, as I understood, simple osteomyelitis. This may occur, but as regards the syphilitic, I do not think it possible; I believe osteomyelitis attacks this portion of the bone. More especially is this subject one, or should be one, of the most serious considerations that is presented to us of a surgical character, and my results in almost every case I can recall to mind now have been a necessitated amputation.

Dr. Ward, Conneaut—I happened to be unfortunate enough to witness a case in which a man 50 years of age had a very large osteo-sarcoma develop after the fracture of a clavicle. From its magnitude, before attention was called to it, any operative procedure was interdicted, but in connection with it there developed a very friable condition of the osseous structure generally, and from the simple act of turning in bed, or something of that kind, fractures of one or more of the limbs occurred, and death finally ended the scene. This man was supposed to be healthy and in good condition until he met with the accident leading to the fracture of the clavicle, but from that time on there was a general decline, with the development of the condition specified filling all the space. It was a very large growth and a degeneration of the bone structure generally.

There must have been a preëxisting constitutional condition, but undoubtedly, in that case the fracture was the exciting cause or the developing cause of the trouble that immediately followed.

Dr. Reed—Permit me just to make one statement in rebuttal, as they would say in court, to the remark made by our distinguished President; he spoke of sarcoma following contusion on the head and on the clavicle. I simply want to say, not less than eight weeks ago, I made an an exploratory incision into the abdomen for the purpose of diagnosis, and there I found a sarcoma of the liver and the left kidney, the lower portion of the right lobe of the liver and the right kidney, and both distinct, as far as any anatomic connection was concerned.

Dr. Eggleston, Seattle—A young man about 28 years of age, inmate of a penitentiary, while working in a brickyard received a blow on the right side of the skull from a piece of brick thrown by one of the other inmates, and a few months later a tumor developed at the point of injury, which was at first attempted to be removed by the surgeon of the penitentiary; he had to stop the operation on account of excessive hemorrhage; I believe that he attempted to do it under cocain without an anesthetic; a few months later he gave an anesthetic and removed the clot, scraping off the bits of bone; it healed nicely, but a few months later it developed again, and when it came back, a year ago last June, I observed there was a tumor on that side of the skull as large as a goose egg; I pronounced it a sarcoma. I happened to have at that time some of Dr. Colles' culture of the erysipelas and commenced the use of that by injecting it in the tumor and pushed it to the extent that I almost killed the patient, but it had no result on the growth. It went on and a few months later another tumor developed on the opposite side of the skull about the juncture of the parietal with the frontal bone, and in a short time he developed paralysis on the left side from pressure on the right side, and died. A postmortem was had; the tumor went down through the skull and pressed on the brain as large as a goose egg and there was a deposit of two or three pounds of the sarcomatous growth in the left cavity. A sarcoma resulted from contusion of the bone in this instance.

Dr. Baldwin, Salt Lake City—A man running from a policeman jumped on a shed and broke his thigh. I happened to be one of two to dress the wound. After the first, there was union there but not a bony union. Afterward he fell into the hands of Dr. Cole and that portion was excised and the bone wired, but never got a union; the result was that they finally amputated it. I have in mind another case that possibly shows the result of very remote traumatism: A young boy about 13 years old was playing with a dynamite cap which exploded and struck him on the head and it was thought only the outer table of the skull was fractured. But it went on for something like four years, when I first saw him and he began to suffer with severe pain, I do not know how long, but two or three years after the injury; and it kept up so long that it was said that something was necessary to be done. At the same time, I think about the time the pain began, he began to have indigestion—he could not eat anything or keep anything on his stomach. Dr. Cole and myself trephined and removed a portion of the bone and afterward he was relieved of the pain and materially relieved of the indigestion or the stomach trouble. Now what connection that could have with the stomach I do not know, but certain it was he was relieved considerably.

Dr. Fairchild—The object of this paper was to call the attention more particularly to sequelæ which might appear as the remote effect after apparent repair had taken place. It sometimes happens we have a patient alleging pain and difficulty in a bone like the tibia, for instance, which is exposed to easy examination and it is alleged this is due to inflammation in that bone. On examination we find nothing whatever, no thickening of any kind in any direction. Now, the question would be whether or not we could have an inflammation persisting in a bone for a long period of time, say one or two years, without any marked signs being manifest. That was one of the propositions in the paper, whether we could have a bone inflammation continue without giving rise to physical signs. I have one or two cases of that kind, a patient that hobbled around on crutches and having litigations over it, and yet a physical examination showed no sign whatever of a physical character. Then further along after the injury we might expect tuberculous disease to develop. Now in case of fracture I believe it is true that tuberculosis does not generally occur, because reaction is so active that tuberculosis is not ready to develop, that it develops in slighter injuries. Now, in slighter injuries can we say a tubercular process is liable to develop in that bone. Suppose for instance a patient received injury and it apparently healed, no sepsis discovered; yet eighteen months or an almost two years, say, lacking a day, the patient has a tubercular process develop. Now a suit is commenced, instituted on the ground of tuberculosis as the result of the injury, and yet there was no sepsis for many months. These were points on which I was anxious to get some information. Again, in case of injury to a bone which has healed, repair has taken place, and yet a year and a half after that a sarcoma develops at the seat of injury. Sometimes we are able to determine that all the nutritive balances have been established, the cells have reached maturity, perfect physiologic poise has been reached, and yet a sarcoma develops. Can we say it was the injury which caused that sarcoma, or that it resulted from the injury received months before? Those were the points I desired to bring up, and in looking up the authorities I have had difficulty to find any authority specific enough on this subject as to enable one to believe or to form an opinion as to a consensus of medical opinion. We hear in litigation, what changes will occur in bone tuberculosis, and I have attempted to say that when the nutritive balance was restored in the bone then the danger from tuberculosis was ended, and the question would be to determine when the nutritive balance was restored, whether the repair process has occurred and cells restored to maturity. We do not believe the cell that has reached a state of maturity will become degenerate, so that in bone when the bone has become restored to a normal condition tuberculosis does not occur as the result of injury. We pretend to say that in injury to the bone if the cells become restored to physical maturity, if sarcoma develops, it is not the result of the injury. It was not intended to discuss the question of reabsorption of the callus in case of fracture, although as the discussion has gone in that direction I will mention a case, a compound fracture of the bones of the forearm; the part healed without union; the bones were resected and wired, and union began. Then it was noticed after a while that an additional joint existed, that is the callus had become absorbed. A friend of mine in Washington was operated on in the same way, and I had a letter from the doctor in which he stated he had excellent results. I saw the case six months later and the additional joint was there. But this branch of the subject I did not take up, but simply the matter of the future possibilities in the examination of an individual case; and in examining a case in which there is a claim made, can we say this condition has any bearing upon the injury which the person alleges to have received?

SOCIETY PROCEEDINGS.

Medical Society of the State of Pennsylvania.

Minutes of the Forty-seventh Annual Session.

(Concluded from page 32.)

The next paper was by Dr. E. H. James of Harrisburg, on

PLEURITIS.

Until recent years, the exposure to wet and cold was supposed to be the cause of pleurisy. Medical text-books of less than a quarter of a century ago spoke of it as occurring idiopathically, or to quote Flint, "in the large proportion of cases it is spontaneous, that is, it proceeds from some unknown cause." The discovery of the tubercle bacillus by Koch in 1881 revolutionized our knowledge of the subject. We know now that the majority of pleurisies are caused by tubercular infection. It has been found that the tubercle bacillus has the property of exciting a fibrinous or a suppurative inflammation not necessarily specific in character. The infection of pleurisy like that of phthisis is not a simple but a mixed one. Some of the micro-organisms are more destructive in character than the tubercle bacilli.

A certain proportion of pleurisies are undoubtedly of rheumatic origin. The infectious matter which will excite a rheumatic polyarthritis in one individual may in another cause pleurisy or inflammation, in another serous membrane.

Treatment: In the acute stage, acetate of potassa, 15 grains, tr. aconite R. 2 drops; sulph. codeiæ gr. $^1/_8$; spirits of mindererus 2 drams. This mixture to be given every three hours. Dry heat externally. When of the rheumatic type add 10 grains of salicylate of sodium to the mixture given above. To get rid of an effusion of serum, withhold liquids as much as possible and give saline purgatives and diuretics; the blood being thus deprived of its watery elements will frequently take up that from the pleura. If it does not do so the aspirator should be used and from ten to twelve ounces of liquid withdrawn, the remainder will usually promptly disappear. The character of the fluid in the pleural sac may be easily determined by withdrawing some with a hypodermic syringe. When pus is found neither the aspirator nor trocar and canula should be used, but a free incision should be made in the seventh or eighth intercostal space on a line with the posterior axillary fold; the pus and fibrinous clots can thus be thoroughly evacuated, after which a drainage tube guarded with a safety pin should be introduced and a dressing of sterile gauze and cotton applied. The tube may be shortened from time to time and when the discharge is thin or serous may be withdrawn. The initial operation as well as all subsequent dressings must be done with strict aseptic methods, the danger of acute infection is great. It is necessary to excise a portion of rib when drainage can not be properly secured by thoracotomy. This allows thorough exploration, pockets of pus can be broken up, drainage will be perfect. Irrigation of the pleural sac I believe is harmful, it irritates, delicate adhesions are broken up.

In the pre-antiseptic era according to statistics 87½ per cent. of empyemas died. Today we expect over 90 per cent. to recover. Of six cases of empyema which I treated recently all recovered. In one of these a portion of the seventh rib was excised, the others treated by thoracotomy and drainage.

A resolution was adopted by which each member was earnestly requested to write to his members of the Legislature urging the passage of the Act now before them relative to malpractice suits.

Dr. W. M. **Robertson** of Warren presented a paper on

A COMMON CAUSE OF LOOSE BODIES IN THE KNEE JOINT.

An authority says that "In joints that have been free of disease loose bodies are invariably the result of a trauma." It is my intention to direct your minds to the more common lesion of the knee joint produced by trauma according to the teachings of Arbuthnot Lane of Guy's Hospital, London.

Injuries to the knee usually occur when it is flexed. As in all hinge joints the articular surfaces of the knee are best protected when in a position of extension. In flexion the articular surface of the tibia covered by the interarticular cartilages glides backward on the femur, exposing the articular surfaces of the condyles of the femur. During flexion the patella falls more and more into the intercondyloid notch of the femur and forms a great protection, but you will observe that the outer condyle is favored much more than the inner one. It is a great defense to the joint from injuries inflicted in front and distributes the weight when in the kneeling posture.

In falling forward the thighs are usually abducted in such manner that the exposed and unprotected articular surface of the inner condyle sustains the force of the fall and receives the trauma from which the loose bodies originate later on.

It has been supposed that these bodies came from the separation of portions of synovial fringes and injuries to the semilunar cartilages and without doubt such is the case many times, but in the majority of cases Arbuthnot Lane has demonstrated that the more common origin of loose bodies is the dry necrosis and separation of a portion of the articular fibro-cartilage of the inner condyle injured by direct violence, such as is sustained by a fall forward. In these cases the blow suffered by the articular surface is sufficient to devitalize the area.

The nutritive processes are stopped and after a time separation of the cartilage occurs and becomes the loose or floating body in the joint. This may produce the history of locking and pain, or it may give rise to simple chronic synovitis, which may in time present every appearance of rheumatoid arthritis or of tubercular disease.

A number of cases might be cited in which Mr. Lane exposed the inner condyle to view showing the area from which the cartilage had separated and then after careful search enough of cartilage found in the joint to exactly correspond to the space left after its separation.

The practical point is to recognize these cases and lose no time in operating. In a number of cases I saw Mr. Lane pare off the edge of partially dislocated semi-lunar cartilage of the knee.

Dr. **Eugene Wasdin**, Pittsburg, read a paper on

PATHOLOGY OF INFLUENZA.

Laboratory observation has alone resulted in any service here. The organism of causation has been demonstrated by Pfeiffer and Canon. It is difficult of cultivation. This disease is of great importance. It increases largely the death rate from pneumonia. He sketched its complications at some length, demonstrated the gravity of the disease, even when uncomplicated. Unfortunately, the nomenclature is much confused. General symptoms of catarrh of the stomach and small intestine are frequent. After the thoracic condition is pronounced, attention is called to the distension of the abdomen. There is no pain, but a sense of fulness, diaphragm is displaced, the weakened heart much embarrassed; all this depends upon the toxic influence of the sympathetic nerve supply. In the lungs the elastic tissue being highly organized, impairment of this tissue is followed by loss of proper action of the capillaries.

Dr. J. M. **Douthett** of Pittsburg read a paper on

CLIMATE IN CONSUMPTION.

He alluded to the want of attention to the physiologic effect of climate. We need reliable statistics on the climate of these places so much lauded for consumptives. Each vaunts its own and attacks the others. Few can go away, not having the means to travel. The most desirable conditions are: As much altitude as the patient can stand; as little humidity as possible; moderate temperature devoid of cold. High altitude increases the red blood corpuscles, with an increase of the hemoglobin, increase of lung expansion. In elevated arid regions, decay is slow, and indeed under favorable conditions does not occur, because of dryness, air purity, freedom from organic dust and germs, large amount of ozone present, etc. A dry climate is very important; next an even temperature. On the whole, the central plateau of Mexico presents the best climate for the tuberculous, combining desired altitude, low humidity, even in the winter months, and in the mountains one may have very pleasant summer weather. Hotel accommodations are very poor, the chance for employment is moderately good if one knows the Spanish language. El Paso and Las Cruces are the best all-round places in the United States. In western Texas are numerous places where one might obtain employment at a ranch or in the mines. Colorado has too severe winters, summer is the best time there. For those who have heart complications, Florida and Southern California are the best. A residence of several years is needed for a cure, hence it is necessary to find employment so as to get interested in the place. Sanatoriums are of advantage to a certain class; all should be encouraged to obtain out-door employment, to get the benefit of the sun and fresh air.

Dr. **Evan O'Neill Kane** of Kane read a paper on

WHY THE TOBACCO HABIT IS PECULIARLY REPREHENSIBLE IN AND DETRIMENTAL TO PHYSICIANS.

His purpose was to draw the attention of the profession to the injury which they do both to themselves and to their patients by this indulgence. In order to prove the truth of this statement, it is pointed out that no delicate patient can tolerate the odor of tobacco which the attending physician frequently intrudes upon them. Stress is laid upon the fact that all special senses are to a more or less serious extent dulled by using tobacco, the power to diagnose disease being thus greatly curtailed. Having passed briefly in review the manner in which each of the special senses suffers, the paper closes with the claim that even the will power becomes weakened in those who are addicted to the tobacco habit.

Singular to say, this paper was received with a round of applause from all present, as also were the remarks of Dr. A. B. Brumbaugh of Huntingdon, who fully accorded with Dr. Kane and arraigned the members for the indulgence so freely on the occasion of the reception the evening before, where every lady was compelled to pass through a crowd of smokers in order to reach the parlor where the reception was being held.

THE FAUCIAL TONSIL AS AN AGENT IN SYSTEMIC INFECTION

was discussed by Dr. G. B. **Sweeny** of Pittsburg. The faucial tonsil occupies a humble position. As an agent for the secretion of fluid to aid deglutition, it is no more active than the surrounding mucous membrane. It is only when it becomes the seat of disease that it demands attention. While in a state of inflammation it frequently affects the entire economy. It is a most readily accessible point of attack in infections; however mild the process, the tonsil becomes a hot-bed for infection, and readily distributes morbid products to adjacent and remote organs. Interfering when enlarged with respiration, it produces the "mouth breathers." Hence improperly filtered, moistened and warmed air is hastily conveyed to the lungs, oxygenation is prevented; we see then the dull, listless eye, impaired mentality, the pallid complexion, contracted chest, anemic and wasted muscular organism. The tonsil is a vulnerable point of attack for diphtheria, and often a culture medium for propagation of germs which would otherwise perish. We are now able to establish almost beyond doubt the infectious nature of rheumatism. We can not fail to observe the analogy in the systemic symptoms of follicular tonsillitis and acute rheumatism. Though we have not yet been able to isolate a germ for rheumatism, yet in this disease we find in the blood streptococci which characterize follicular tonsillitis, and are found in the tonsil when affected by that disease. Tuberculosis shows us the glandular system largely affected. Here we may regard the tonsil as mainly if not wholly the source of infection. So with typhoid and malarial fevers due to a specific bacillus, and as drinking water plays a conspicuous part in the causation, we may infer that these bacilli are thus aided in obtaining access to the whole economy. We claim that the tonsil being an open gateway for the reception of all forms of disease germs, it is plausible that it is liable to infection equal with Peyer's patches, etc.

Dr. LOUIS LAUTENBACH of Philadelphia read a paper on

THE NECESSITY FOR ACTIVE, NOT PASSIVE, TREATMENT IN EAR DISEASES.

It is my purpose to advise a more intimate study of ear conditions, and to present advanced methods of treatment. I am thoroughly convinced that by paying close attention to the ear chronic cases can often be materially improved and relieved, but especially do I advocate that upon the first evidence of any ear trouble it should be thoroughly examined, and if the physician feels himself incompetent to take charge of the case he should refer it to some one whom he knows will do justice to it. The policy of doing nothing at all, of letting diseased nature have its own way, is, to say the least, dangerous. What I protest against most strongly is the neglect of the family physician to give proper weight to the symptoms of ear disease in their incipiency, when a thorough treatment or two would dissipate the pathologic condition.

The importance the nose and throat bear to the ears has been recognized and has given rise to a false idea that ear diseases created by nose and throat trouble is curable through the nose and throat alone without local ear treatment; that the removal of the cause of the disease cures the disease itself. The removal of the cause is a necessity, surely, but attention to the changed ear condition is equally important.

To keep open the Eustachian tube, but especially to prevent any ossicular stiffening, membrane thickenings or adhesions I early use massage with the Siegle speculum or a phono or pneumo or mixed masseur of my own devising. I use the phono and mixed massage, as I find even early in cases of ear involvement there is often a tendency to a dulling of the sensitiveness of the auditory nerve from disuse.

By my masseurs I can produce any amount of suction force on the membrane I wish, with or without sound waves, giving any number of suctions I may deem advantageous, and can let the machine act upon the drumhead any period from a few minutes to several hours, if necessary. For this purpose I use machines actuated by electricity in which the suction is produced by a diaphragm operated by an electro-magnet; again a stronger one in which a suction pump is worked by an electro-magnet, and another in which a double suction pump is worked by a motor, this latter machine I am at present operating in connection with an ordinary Gramophone with an extra loud transmitter. These machines applied sufficiently early will frequently prevent the serious effects so often observed of rigid ossicles and thickened attached membranes and non-responsive ear nerves.

In cases of acute, active, painful middle-ear inflammation, I not only rely on dry heat, but am constantly using hot flaxseed poultices, and I must confess that I get remarkable results when they are used very hot and often. They will relieve pain and infiltration at times marvelously. Contrasting the results of the two methods, the passive serves to remove the exciting cause of the ear disease, depending upon the reparative powers of nature to restore the ear to normal. The other method endeavors to combat the pathologic ear processes and encourage nature to resume her normal sway. It endeavors to retain the full function of the conducting apparatus as well as of the ear nerves, and in every way possible strives to minimize the danger of any permanent disease of the ear or impairment of hearing.

There is another case of ear patients which has been almost totally neglected so far as direct ear treatment is concerned. I refer to the deaf mutes. I have succeeded in restoring one to such an extent that she can attend the ordinary public school course in Philadelphia, and another girl, 7½ years, from Shenandoah, now under treatment by me, has within the past few weeks given marked proofs of hearing, while at the same time she has learned to speak several words fairly plainly. Her facial expression and manner has become transformed from that akin to an idiot to a degree of intelligence. This has been accomplished, too, after she had been discharged from a deaf and dumb institution for the training of lip speech, on the ground, as I understand, that the child's brain was weak and inclined to be idiotic, and it would be useless to attempt to teach her. So far, in nearly all the deaf mutes placed under my charge, I have been able to develop some hearing, provided the caretakers followed my instruction. I consider the ear masseurs the important element in the treatment. It was with the conviction that my massage apparatus had helped me in my ear work that I presented the machines to the medical public some three years ago, and with the knowledge of the successful results obtained I have continued their use, modifying them as experience suggested, and I again present them here at this meeting as a method which opens up an entirely new field of ear treatment, with new possibilities not only for preventing the bad effects of ear inflammations, but for modifying and overcoming the results of such cases as have been neglected or have developed into chronic ear thickenings, membrane retractions, ossicular unions and sluggish nerves.

Dr. W. T. ENGLISH of Pittsburg read a paper on

THE ELEMENT OF FEAR IN HEMOPTYSIS.

He assumed that the extent of the fear and the neurotic perturbation are out of all proportion to the amount of blood expectorated and can not be interpreted except through the language of the emotions. After citing a number of cases exemplifying the fear element in hemoptysis he argues that the special study and treatment of this element is essential to success in the treatment of hemoptysis generally. To quiet the fear and the resultant neurotic tumult is as essential to the welfare of the patient as to cause a cessation of the blood spitting.

In hemorrhages of this character quiet is of first importance. This quiet can not be secured simply through enforced inactivity. We need calm which will diffuse itself with sure celerity through the nerve centers and plexuses, that will reach with its message of peace the remotest fiber of the nervous organism and restore the coördinations that have been lost through the element of fear as exemplified in hemoptysis. This rest is available through the hypodermic use of a decisive dose of atropia. Until this tranquility is secured all treatment will be experimental. It quiets the tumultuous demeanor of the central cardiac organ and restores its wonted rhythm. The unstable behavior of the peripheral vessels in the general circulation, as also in the pulmonary area, is replaced by a placidity that is at once restful and restorative. This quiescence is distributed equably and with promptitude and it is in this special direction that the efficiency of the atropia lies. It quickly and surely puts to rest the emotional elements that otherwise might continue indefinitely.

Moreover, the fact that atropia is rapidly diffused and quickly eliminated adds to its value in these cases. It becomes the duty of the physician to adjust the treatment to the element of fear as well as to the hemorrhage. If the hemorrhage is abundant the dosage should be large enough to paralyze the peripheral vasomotor nerves and thereby lessen blood pressure, causing a general determination of blood to the surface and thus relieving the vessels from which dangerous hemorrhages emanate. If the hemorrhage be small and the emotional manifestations, as exemplified through the element of fear be great, the dosage should be proportionate to the fear element and therefore must be generous. If there is a medium exhibition of both elements the treatment should prevail as in excessive hemorrhages. When the hemorrhage and emotion are at variance in any degree, that element which has the ascendency indicates the treatment as to the urgency, dosage and frequency of repetition. Fear must be judged of by its type, its intensity and its persistence, as also its immediate and remote influences, with the same caution as the hemoptysis.

Dr. I. C. GABLE of York read a paper entitled

APPENDICITIS WITH CASES.

The profession are more divided as to this operation perhaps than any other. When mild it may subside with no marked symptoms. The ulcerative form is seldom if ever from a primary catarrhal condition. Ulceration is due to fecal concretions and rarely to foreign bodies. The infective form may result from either. Recurrent and relapsing are not interchangable terms. Recurrent are those which repeat at considerable intervals; relapsing when the attacks are so close as to be almost continuous. In the first it would appear that there had been a recovery from the peritonitis while the appendicitis had continued. In relapsing there is no complete recovery. In mild types, starvation in its therapeutic sense, with such other as indicated. Delay is justifiable to avoid operation in absence of acute symptoms. He gave the details of some cases operated upon with success, others where operation was declined.

The officers for the ensuing year are: President, Dr. W. Murray Weidman, Reading; secretary, Dr. C. L. Stevens, Athens. The society adjourned to meet at Lancaster the third Tuesday in May, 1898, where the 50th anniversary will be celebrated, that being the place where the society was organized in 1848. About 300 members were in attendance. The afternoon of Thursday was occupied by an excursion on the Monongahela River by steamboat, and a visit to the Carnegie Plate Armor works.

Association of American Medical Colleges.

Pursuant to a call issued April 27, the Association of American Medical Colleges met in the Hotel Walton, Philadelphia, May 31, at 10 A.M.

Dr. J. M. Bodine, president, in the chair. Thirty-four colleges were registered. On motion of Dr. Larrabee, the Association resolved to adjourn to meet at the College of Physicians at 4:30 P.M., Tuesday, and thus secure the attendance of delegates known to be on the "Journal train." On motion of Dr. H. O. Walker a committee of three was appointed to consider the report of the Committee on the Codification of the Constitution. The Chair appointed Dr. J. W. Holland of Philadelphia, Dr. C. W. Kelly of Louisville and Dr. John Heffron of Syracuse on this committee. After some informal discussion the Association adjourned.

On Tuesday afternoon the Association met in the lower lecture room of the College of Physicians. Twenty-three colleges were represented, with the President, J. M. Bodine, in the chair. The minutes of the Atlanta meeting were read and approved.

The President's Address was then read and, on motion of John B. Roberts, ordered printed.

The Committee on Amendments to the Constitution then reported by its Chairman, Dr. J. W. Holland. After receiving the report each article of the constitution was taken up separately and then adopted as a whole as given in Journal, Vol. 28, pp. 796-7, corrected as follows:

Article II, Sec. 2. The college applying "shall be elected to membership if it receives the favorable recommendation of the Judicial Council and the favorable ballot of a majority of the colleges represented at the meeting."

Article III, Sec. 2. "In place of this examination, or any part of it, colleges, members of this Association, are at liberty to recognize the official *certificates of reputable* literary and scientific colleges, academies, high schools and normal schools, and also the medical student's certificate issued by any State examining board covering the work of the foregoing entrance examination."

Article III, Sec. 6. "(*b*) To graduates and students of colleges of *homeopathic* or *eclectic* medicine, as many years as they attended those colleges, provided they have met the previous requirements of the Association and that they pass an examination in materia medica and therapeutics. (*c*) To graduates of reputable colleges of *dentistry*, *pharmacy* and *veterinary* medicine, one year time."

Article V, Sec. 2. . . . "The seven members constituting the *Judicial Council* shall serve three years each. Vacancies by expiration of term shall be filled at the annual election of officers. Vacancies by death or resignation shall be temporarily filled by the surviving members of the Judicial Council."

The By-laws were unamended.

After some discussion, on motion of Dr. John B. Roberts, it was declared the sense of the Association that this constitution was in force for this time forward.

The Secretary's report was then read and approved.

Dr. J. P. Lord moved that suitable resolutions on the death of Dr. Perry Millard be prepared and spread on the records of the Association. The President appointed a committee for that purpose consisting of Dr. J. P. Lord, Dr. C. W. Kelly and the Secretary. This committee afterward reported as follows:

Whereas, We are reminded by the absence today of one who had been among our most active members, Dr. Perry H. Millard; one who was untiring in his devotion to the interests of this Association and the cause which it represents. In his death the Association has sustained the loss of its best friend, most earnest and faithful worker and wise counselor; the profession a true friend and exemplar; and this Association deplores his untimely death; therefore

Resolved, That we make this sentiment of our regard for him a matter of record; that it be placed among the minutes of our proceedings and that a copy be furnished his family.

The report of the Committee on Course of Study was read by title and ordered printed.

The recommendations and report of the Judicial Council were then read and approved.

The Medical Department of the University of Niagara was elected to membership.

The following named officers were elected for the ensuing year:

President, Dr. J. W. Holland of Philadelphia.
Senior Vice-President, Dr. H. O. Walker of Detroit.
Junior Vice-President, Dr. Thomas Opie of Baltimore.
Secretary and Treasurer, Dr. Bayard Holmes of Chicago.

Vacancies in the Judicial Council were filled by reëlection.

(Signed) Bayard Holmes, Secretary.

Judgment Against the Medical College of Ohio Resubmitted to the Council to Fix Penalty.

Whereas, By the unanimous decision of the Judicial Council of the Association of American Medical Colleges it was heretofore adjudged on May 31, 1897, that, "After due examination of all the evidence before us, and the statement of Prof. James G. Hyndman, secretary of the faculty accused, we find as follows: That the John E. Yarling specified in the charges was actually graduated at the said Medical College of Ohio as a Doctor of Medicine on April 9, 1897, and that the said Yarling matriculated for the first time in the Illinois Medical College in April, 1895, all of which is in violation of Section 5 of Article III of the Constitution of the Association of American Medical Colleges."

Now, therefore, as it appears from the action of the Association of American Medical Colleges held at Philadelphia on June 1, 1897, that the Judicial Council must fix penalties in the determination of all such matters as involve a violation of the constitutional requirements of the College Association, the Judicial Council decrees that: The provisions of Section 5 of Article III of the Constitution embody fundamental principles which must be held sacred and inviolate, and that the said Medical College of Ohio has forfeited its membership in the Association of American Medical Colleges.

The language of the Constitution is mandatory; Section 5 of Article III reads as follows: "Candidates for the degree of Doctor of Medicine shall have attended three courses of graded instruction of not less than six months each, in three separate years," prior to 1899. The Council has heretofore held that "no student can be admitted to a second course of instruction within twelve months from the date of the beginning of the first course," by any college holding membership in this Association, and that "no amount of previous study can be accepted in lieu of any part of any one of the three courses of graded instruction provided for in Section 5 of Article III of the Constitution."

(Signed) Dudley S. Reynolds.
Starling Loving.
John B. Roberts.
Randolph Winslow.
Victor C. Vaughan.
James H. Etheridge.

I certify that this is an exact copy of the original, signed by six members of the Council. L. B. Baldwin, Clerk.

Fifteenth German Congress of Internal Medicine.

Berlin, June 9-12, 1897.

In his opening address von Leyden called attention incidentally to the danger that general therapeutics may be neglected in the modern development of specialism, and Virchow observed that for fifty years he had fought specialism, but had gradually become convinced of its utility, while still recognizing its menace to general science. This peril must be borne constantly in mind and no fundamental divisions allowed in spite of the numerous ramifications. He added that pathologic anatomy is the one thing common to all special branches, and yet the pathologists are on the point of organizing a special congress!

The first subject, "Chronic Articular Rheumatism," was presented by Professors Bäumler and Ott. After urging a more exact definition and limitation of the word rheumatism, the former reviewed the bacteriologic investigations: Schüller's bacillus (1892), and the small dumb-bell bacillus found by Bannatyne and Wohlmann in twenty-four out of twenty-five cases (1894), confirmed by Blaxall as a small, short, pole-staining bacillus found in the synovial fluid in eighteen cases of polyarthritis, and absent in other forms of articular affections. He succeeded in cultivating it on the usual media, except gelatin, but did not find it pathogenic in experiments on animals. Bäumler urged further research in this line. The preponderance of female subjects suggests the possibility that the genital mucosa is the route traveled by the exciting agent. He warned against the abuse of morphin, stating that the syringe should never be given over to the patient. He added that the term, *arthritis pauperum*, is incorrect; the well to-do are affected as often as the poor. Potassium iodid was recommended by Krönig, v. Noorden and others. Davidsohn recommended "fango," Battaglia mud. V. Noorden has been testing the lemon cure in this disease, and finds that it does no harm, and even produces a transient subjective improvement, but has no effect on the metabolism. He advises antiobesity treatment, as it often leads to increased mobility of the articulations. Schüller uses an emulsion of iodoform and guaiacol injected locally. Sixteen out of twenty-nine cases thus treated were completely cured. The injections are painful, and must be repeated in large joints three to seven times. Complete cure sometimes follows one injection in the case of small articulations. An operation is more rapid in its effects. He has operated sixteen times, eleven on the knee, with complete restoration of mobility. No relapses. Improvement perceptible in a fortnight.

Professor Ott in his address signaled the importance of trauma, dampness and lack of light and air in the production of the disease; recommended woolen clothing and especial attention to the diet, with meat for a foundation, combined with eggs, fish, vegetables, butter and cheese, especially milk. Water the best beverage; alcohol and carbohydrates much restricted; moral depression avoided; a journey to be advised in some cases. Treatment should be prompt and meet every stage of the disease, which should be carefully watched over even long after convalescence. Each acute symptom must be hastened past with every possible means: Fever by repose in bed and restricted diet; local pains and swellings with Priesnitz compresses, liniments or salves with opiates or injections of morphin. Absorption is accelerated by painting the surface with tincture of iodin. Puncture is also useful in severe swellings, and elastic bandages. He adds that the success of the salicylic preparations in acute articular rheumatism is only equaled by their ineffectiveness in arithritis deformans, not only at first, but in the exacerbations. Some find salol beneficial, others antipyrin, acetanilid, phenacetin, phenocoll and malakin. When there is more or less swelling of the joints, without much loss of mobility or dislocation of the ends, external treatment is indicated that will favor absorption, such as tincture of iodin and ichthyol, which sometimes score a success. When all the symptoms of acute or subacute inflammation have subsided, baths should be recommended. They should be suspended whenever inflammatory symptoms reappear, until they pass away again. In all baths the main point is heat. This can be wonderfully attained by the new partial steam and hot air baths (Tallermann's 104–119 degrees C.); mud baths produce a mechanical stimulation of the surface in addition to the heat, and partial mud baths for weak patients have been found useful applied as hot mud compresses, with occasionally surprising success. The simple hot springs, such as at Teplitz, Gastein, Warmbrunn, etc., are especially adapted to patients with much nervous excitability. The success of sulphur baths is probably due to the heat. He also recommends the hydriatic processes, which combine hot and cold baths, as an advisable supplement to a course of hot baths, to tone up the system debilitated by the effects of the heat. They also render it less liable to relapses. In the raw seasons it is better to resort at once to a hydriatic course. He also advocated massage as an important aid in the treatment, but if the capsule is already contracted, massage can not restore it. Active and passive movements should also be undertaken to prevent stiffness; especially useful in this respect is the Zander apparatus. The climate for persons affected with polyarthritis deformans should be warm, even, dry and sheltered from the wind, with hot springs convenient. These conditions are fulfilled at Battaglia in northern Italy for the spring and fall, Ischia, where there are natural hot springs and also natural hot sand baths, and Algiers. Medication should aim to strengthen and tone up the system: Iron, quinin and cod liver oil. The iron is best administered as syrup ferri iodat., which is especially effective in younger patients. Singer has cured one typical case of acute rheumatism with intravenous injections of sublimate.

Program of the Berlin Lepra Congress.

October 11–16, 1897.

GERMAN EMBASSY, WASHINGTON, D. C., May 21, 1897.

Dr. Albert S. Ashmead:—Referring to my letter of March 22 last, I have the honor to enclose a program of the International Conference of Leprologists, to be held in Berlin, Germany, from October 11 to 16 next. You will oblige me by stating its receipt. Yours very truly,

BARON THIELMANN, Ambassador of Germany.

IMPORTANT LEPRA CONFERENCE WHICH WILL MEET IN BERLIN, OCTOBER, 1897.

More and more of late the interests of scientific circles have been directed to the question of the spreading of leprosy. The public attention also has occupied itself actively with this subject. Therefore it seems to us, that now the favorable moment has come to lead the work by unanimous consent into the right grooves. We shall stand for this, that the disease, which everywhere is in a slow but contstant condition of expansion, be stopped by suitable measures. We are of the general opinion that anything good in this field can only be obtained by a strict program, whose object and means would be as comprehensible as possible. In this sense we have the honor to make an invitation to a discussion on the lepra question to be held at Berlin the month of October, 1897. Further details will be communicated hereafter. The preparative works have been undertaken by the undersigned,

E. EHLERS, Copenhagen.
G. ARMAUER HANSEN, Berlin.
R. KOCH, Berlin.
O. LASSAR, Berlin.

PROGRAM.

The beginning of the sittings is proposed to be for the time from Monday, October 11, to about Saturday, October 16. The deliberations will take place in the meeting hall of the Imperial Board of Health, 19–20 Klopstock Strasse, Berlin, N.W., which the Imperial government has placed at our disposition for that object. The time of the plenary sitting is from 11 A.M. to 2 P.M., in order to leave the members of the conference time for other consultations and possible sittings of commissions. An exhibition of all the objects interesting for the investigation of leprosy will be connected with this meeting. The object of the conference is, in the first place, a scientific discussion of the leper questions as well as of the methods recommended for the limitation and suppression of the disease within the limits of possibility. The result of the debates shall be formulated in such a manner that on the foundation offered by them further steps may be taken eventually for legislation, administration and by international arrangements. The scientific material in hand will be analyzed and sifted by the conference in such a manner that the governments of all the states interested may be enabled to take appropriate measures. An international scientific understanding is therefore the real task of the lepra conference and state medical tendency, the larger point of view.

In order to accomplish these objects as much as possible all lepra authors, known as such, are invited to attend. As a large number of these gentlemen have already promised to come the success of the enterprise is assured. The manner of the work is in common about as follows: The questions are previously prepared by reporters and as far as the object requires or permits it provided with discussable theses. These elaborations, written in German, English or French languages, which most of the participants are likely to understand, are printed as soon as they have been delivered to Prof. O. Lassar, 19 Karlstrasse, Berlin, N.W., and continuously sent to all the gentlemen who have promised to attend. In this manner everyone is enabled to choose for himself a position for the discussions and to advocate or combat resolutions. The printed works are not used for lectures. Thus all the time and labor will be spared for the meeting without putting any constraint to the expressions of opinions and literary activity of the reporters. The reports sent are in conjunction with the record of the meeting to form a permanent literary monument of the congressional work. The printing of them is, therefore, for the present considered as a confidential manuscript and not otherwise published. Tables and diagrams will be reproduced, as far as it is possible.

As themes we can at once mention the following, barring possible changes, for which the gentlemen whose names are also mentioned have offered themselves. As a matter of course, every correction or addition which the expected participants, learned societies, or state governments will be received with pleasure and is even requested. The committee is ready to meet, as much as possible, any further proposition of this kind. It also will be thankful for everything done personally or materially in the interest of the Leprosy Congress.

THEMES.

1. The place of leprosy among the infectious diseases: Dr. R. Koch.
2. Pathologic anatomy of leprosy, Dr. Rudolf Virchow, Berlin.
3. Histology of leprosy, Dr. P. G. Unna, Hamburg.
4. How far are we justified in considering the lepra-bacillus as the cause of the disease? Dr. A. Neisser, Breslau.

5. The attempts at culture of the lepra-bacillus, Dr. B. Campana, Rome.
6. Etiologic rôle: *a*, of heredity; *b*, of transmissibility, Dr. E. Besnier, Paris.
7. Alimentation and leprosy, Dr. J. Hutchinson, London.
8. The question of inoculability, Dr. H. Köbner, Berlin.
9. Does leprosy go directly from man to man, or does it go indirectly? Dr. Lie, Bergen.
10. The patent consequences of the emigration and immigration for the leprosy question, Dr. E. Arning, Hamburg.
11. Leprosy returning from the colonies into the great cities of Europe, Dr. Hallopeau, Paris.
12. General view of the condition of therapy, Dr. O. Lassar, Berlin.
13. Leprosy of the eye, Dr. Borthen, Drontheim.
14. Visceral leprosy, Dr. Doutrelepont, Bonn.
15. Anesthetic forms, Dr. Looft, Bergen.
16. Relations between syringomyelia, Morvan's disease, Aïnhum and lepra, Dr. Zambuco Pacha.
17 Optional or obligatory isolation, Dr. Armauer Hansen, Bergen.
18. The best arrangement of leprosies, Dr. O. Petersen, St. Petersburg.
19. Foundation of lepra societies, Dr Kirchner, Berlin.
20. Nomenclature, Dr. Dehio, Dorpat.
21. Historicals of leprosy, Dr. E. Lesser, Berlin.
22. Geography of leprosy: 1, general consideration, Dr. Kübler, Berlin; 2, Norway, Dr. Hansen; 3, Sweden, Dr. Sederholm; 4, Denmark and Iceland, Dr. Ehlers; 4, Russia, Dr. Pospeloff, Moskow, and Finland, Dr. Fagerlund of Helsingfors; 6, Turkey, Dr. von Dühring, Constantinople; 7, Greece, Dr. Rosolimos, Athens; 8, Bulgaria, Dr. Bogumil Berin, Sofia; 9, Roumania, Dr. Kalindero, Bucharest; 10, Hungary, Dr. Schwimmer; 11, Austria, Dr. Kaposi; 12, Germany, Dr. Blaschko, Berlin; 13, Italy, Dr. Pellezzari, Florence; 14, Spain, Dr. Zuriaga, Valencia; 15, Portugal, Dr. Seferino Falcao, Lisbon; 16, France and colonies, Dr. Feulard, Paris; 17, England and colonies, Dr. Phineas Abraham, London; 15, Holland and colonies, Dr. Broes Van Dort, Rotterdam; 19, Belgium and Congo, Dr. Bayet, Brussels; 20, Canada, Dr. A. C. Smith; 21, United States, Dr. White, Boston; 22, Central America, vacant, 23, West Indies, Dr. Numa Rat, St. Kitts; 24, Ecuador, vacant; 25, Colombia, Dr. Carrasquillo, Bogota; 26, Chili, Dr. Valdes Morel, Santiago; 27, Argentina, Dr. Sommer, Buenos Ayres; 28, Brazil, Dr. Silva Aranjo, Rio Janeiro; 29, Madeira, Dr. Goldschmidt, Paris; 30, South Africa, Dr. Impey, Cape Town; 31, Dutch Africa, Dr. Schön, Berlin; 32, Egypt, Dr. Engel Bey, Cairo; 33, China, Dr. Kerr, Canton; 34, Japan, Dr. Kitasato, Tokio; 35, Oceanica, Dr. Mouritz, Hawaii.

The Exhibition which is connected with the Lepra Conference will be held in the rooms of the Imperial Board of Health. It embraces exclusively scientific objects and is divided into the following sections: Anatomy and morphology, micrology, photography, cartography, bibliography. We pray that this Exhibition may receive abundant contributions. In the enclosed formulary please find the provisional indications of the sendings expected. Government Councilor, Dr. Köbner, member of the Imperial Board of Health, has undertaken the direction of the Exhibition.

Formulary:—The undersigned offers for the Exhibition of the Leprosy Conference for the group: 1. *Anatomy and Morphology.* 2. *Micrology.* 3. *Photography.* 4. *Cartography.* 5. *Bibliography.* The desired space is . . square meter table surface, . . square meter wall surface. The objects are sent by post, by freight, and will arrive at the latest September 15.

Signed, ...

PRACTICAL NOTES.

Paralysis of the Forearm from Bicycling.—Dr. Destot has published in the *Gazette des Hôpitaux* an account of his own experiences. An abstract of the paper appears in a recently published number of the *Neurologisches Centralblatt.* After a long ride he experienced paresthesia in the fourth and fifth fingers, with impaired sensibility and paresis in the interossei, lumbricales, and the adductor pollicis. The paresis was followed by distinct atrophy in the affected muscles. He considers the affection to be the result of pressure upon the branches of the ulnar nerve, aggravated, doubtless, by the vibration occasioned by bad roads. He also considers that predisposing factors existed in the softness of the skin of the hand and in the exhaustion of the muscles and the consequent loss of protection to the nerves lying in or under them.

Arsenious Acid Again brought out as a Cancer Cure.—The *Semaine Méd.* of May 1 contains photographs of three persons radically cured of cancer of the nose, one a woman of 84, with views of microscopic sections of the neoplasms, showing their character. The only treatment was painting the surface with a solution of arsenious acid 1 gram, to 75 grams each of ethyl alcohol and aq. dest. (reducing this amount to 40 grams each, as the eschar grows thicker). A little fresh blood is drawn to the surface, which is then painted with the solution, and left exposed to the air if possible. An extensive cancer requires daily painting for two to three months before the cure is complete. Cerny and Trunecek conclude their report with the statement that they have not succeeded in curing carcinoma of the mamma with this treatment, but that all surface cancers are relieved and rendered almost entirely odorless with it. It is perfectly harmless, as has been shown by cases of cancer in the buccal cavity treated for months without any evidences of arsenic intoxication, and it is indicated in every cancer of the skin without ganglionic indurations.

Uncontrollable Vomiting in Pregnancy, Continuing after the Death of the Fetus.—Fabre notes a case of uncontrollable vomiting in a primipara, 18 years of age, who had previously suffered from anemia and hysteria. The vomiting began at the fifth month of pregnancy and had continued up to eight and a half months, with increasing weakness. The fetal heart was not to be heard, yet the vomiting continued and medicinal means were of no avail. It was therefore decided to induce premature labor, and Krause's method (introduction of a bougie into the uterus) was employed. On the day before this was done the patient was so weak as to require injections of caffein and ether and 200 g. of artificial serum into the subcutaneous tissue of the abdomen. Twelve hours after the introduction of the bougie into the uterus a dead female fetus was delivered by means of forceps. The vomiting still continued and the patient died twelve hours later. The only lesions found at the necropsy were those of recent gastritis. The case is interesting, for the death of the fetus was not followed by a cessation of the vomiting, a circumstance probably due to the fact that here pregnancy was not the sole factor, but had superadded to it the pathologic state of the stomach.—*British Medical Journal.*

Ligature of Carotid Arteries for the Control of Hemorrhage due to Pharyngeal Abscess.—At a recent meeting of the Royal and Medical Chirurgical Society Clutton (*Brit. Med. Jour.*, May 29, 1897, p. 1349) reported the case of a victualer, 28 years old, with a history of having bled rather profusely the day before from an abscess in the pharynx above the right tonsil. After the lapse of a few days the soft palate was divided for the purpose of a complete examination of the abscess. A hole was found passing through the wall of the pharynx into the tissues of the neck. This opening was enlarged and the cavity plugged with cyanid gauze, as it was thought from the character of the hemorrhage that the bleeding might be from the internal jugular vein. During the night following this operation, the man bled so furiously that no doubt could be entertained as to the hemorrhage being from a large artery, probably the internal carotid. On the following day the bifurcation of the common carotid on the right side was exposed and an animal ligature applied by means of a stay knot to the common carotid and its two branches. A saline infusion of two pints was given whilst the wound was being closed with sutures. The wound in the neck healed by first intention, and the abscess cavity in the pharynx was found by digital examination to have closed some time later. There was no further hemorrhage after ligature of the carotid arteries.

The Treatment of Wounds of the Air-passages.—Platt (*British Medical Journal*, May 8, 1897, p. 1149) reports ten cases of suicidal wounds of the throat in which the air-passages were injured and appends the following summary: 1. Suicidal wounds of the throat should be treated by primary suture in all cases in which the general condition of the patient permits. 2. Antiseptic precautions are most important. 3. If necessary, chloroform should be administered, and is perfectly safe. 4. Divided muscles should be sutured, and in bringing together the edges of the skin the inversion caused by the platysma muscle should be corrected. 5. The wound in the air-passage should be completely closed. 6. In many cases it is quite safe to dispense with the use of a tracheotomy tube. If a tube be deemed necessary, it should not be introduced through the suicidal wound in the air-passage, but through a fresh vertical cut at a lower level. 7. Silk is the best material for suturing the larynx or trachea. 8. During the after-treatment it is unnecessary, except in certain special cases, to feed by a tube or by the rectum. 9. If the foregoing methods of treatment be adopted, not only will a large proportion of even dangerous and extensive wounds of the air-passages recover, but the period of recovery will be greatly shortened, the patient will not be exposed to the same risks of secondary inflammatory complications, and he will be much less liable to the occurrence of permanent stenosis of the trachea or the formation of an ærial fistula.

Successful Removal of Brain Tumor with Permanent Recovery.—Ziehl and Roth (*Deutsche medicinische Wochenschrift*, May 6, 1897, p. 297) have reported the case of a man, 60 years old, who, in the midst of perfect health, was suddenly seized with a peculiar rigidity of the thumb and index finger of the right hand, followed by loss of consciousness for several minutes, but without twitching or convulsion. With the return of consciousness vomiting took place. The gait was somewhat staggering, but there was no paralysis. On the following day the patient had returned to his usual health. Rather more than six weeks later the man was seized with transient tonic followed by clonic spasm of the right hand, without loss of consciousness. After another interval of about the same duration he was awakened at night by severe headache and found himself paralyzed on the right side. In the course of two weeks the palsy of the lower extremities had receded to such a degree that the man could walk, while that of the upper extremities subsided rather more slowly. From time to time, however, the right upper extremity was the seat of clonic spasm, always beginning in the thumb and index finger. At times the entire right side of the body was involved. These attacks were followed by headache, which was absent in the intervals. A small area of tenderness was detected in the right parietal region, which subsequently became edematous. No ophthalmoscopic changes were found. It was learned that the patient had had a chancre at the age of 23 years, but secondary symptoms had not been observed. Two or three years before coming under observation he had fallen and struck his head. The use of potassium iodid was unattended with relief, while mercurial inunctions were followed by amelioration of the headache following the attacks of loss of consciousness, although without effect upon the attacks themselves. Memory beginning to fail and the general condition to suffer, trephining was decided upon. Accordingly the motor area for the right thumb and index finger was exposed. The bone was found hard and dense and covered on its surface by hyperostoses and osteophytes. The dura was covered with a brownish-red mass resembling granulation tissue, a portion of which was adherent to the overlying and eroded bone. The adventitous material was removed, together with the involved bone, and the wound was tamponed and closed. Histologically the material was found to be constituted of round cells. The surgical progress of the case was uncomplicated, but the convulsive attacks recurred, and finally the condition of the patient became so aggravated that a second operation was undertaken at the site of the first, the dura being now opened and a collection of material similar to that found originally removed. This, on microscopic examination, proved to be an angio sarcoma. The operation was followed by right hemiplegia and paraphasia, and impaired sensibility in the right arm. Later, however, progressive improvement set in, with almost complete restoration of function, and this condition was still present more than two years after the second operation.

Two Cases of Brain Cyst, with Operation, and Recovery in One.—At a recent meeting of the Boston Society for Medical Improvement two interesting cases of brain-cyst were reported, in both of which operation was undertaken, resulting in the one in recovery and being followed in the other by death. The first was reported by Cabot (*Boston Med. and Surg. Jour.*, June 5, 1897, p. 533) and occurred in a man, 23 years old, who at the age of 11 was struck on the top of the head by a heavy stick. At the age of 21 he first noticed occasional numbness at the middle of the right thigh upon its anterior aspect, associated with tickling, and recurring every three or four weeks. After rather more than a year these manifestations appeared almost daily and were soon attended with contractions of the anterior muscles of the thigh and twitching in the abdominal region. The leg became rigid and rotated back and forth involuntarily. In a short while a severe attack occurred, followed by a general convulsion and loss of consciousness. As in the other seizures, the movements in this began in the right thigh. The attack was followed by vomiting. Bromids only partially controlled the paroxysms; amyl nitrite was somewhat more successful. The attacks now began to be followed by a feeling of paralysis and numbness in the right leg and later also in the arm and face. Aphasia succeeded upon one attack. Surgical interference having been decided upon, a square opening was made in the skull over the motor area of the left hemisphere, and after an interval of five days the wound was reopened and the bulging and feebly pulsating brain exposed. The cortex presented a yellowish appearance toward the upper part of the opening. In this situation puncture was made with a trocar, and was followed by a spurt of brownish serum. A small opening was made into a cyst cavity about the size of a pullet's egg and possessing a smooth yellowish brown wall and extending deeply into the brain toward its center. On account of the size of the cyst and its probable simple non-malignant character it was decided to treat it by drainage, in the hope of thus obliterating its cavity. Several large strands of loosely woven silk were accordingly introduced and brought out through an opening in the middle of the dural and cutaneous flaps. The patient made a good recovery from the operation and was free from symptoms for two months, when the aura began to return, and soon the motor-symptom manifestations also, together with headache. Hearing and vision on the right side also became impaired. It seemed probable from the symptoms that the cyst in the brain was refilling, and, accordingly, some fifteen months after the primary operation, the wound was reopened. At once brownish serum made its escape through a yellowish area marking the site of the cyst. The walls of the cyst were now removed as thoroughly as possible and drainage was established temporarily by gauze, but later by glass. Considerable fluid escaped for ten days; the drainage tube was kept in place for forty four days. For a time there were no further symptoms except on mental application, but subsequently even this became possible without serious discomfort. Some degree of paresis and sensory impairment persisted in the right lower extremity.

The second of the cases was reported by Elliott (*Ibidem*, p. 536) and occurred in a colored man, 59 years old, with a history of syphilis, who presented progressively increasing weakness in the right upper extremity, with convulsive movements. After exposure of the motor area of the left hemisphere and evacuation of a few drops of clear, rather viscid, brownish fluid by means of an aspirator, a knife was introduced by the side of the needle, giving exit to more fluid. Examination with a finger disclosed a cavity about the size of an English walnut, whose walls were lined with gelatinous-looking granulations. A drainage-tube was introduced into the wound and improvement followed. After nearly two months an attempt was made to obliterate the cyst by dissecting away the sloughing tissue and granulations lining its walls and packing the wound with gauze. In the course of fifteen days the sloughs had all come away and the cavity was lined with pale granulations. The patient remained under immediate observation only a short time longer, insisting upon returning to his home, where he died after an interval of three months. It is thought that the condition may have been a cystic glioma, although the surrounding brain appeared healthy.

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SATURDAY, JULY 10, 1897.

THE INDIVIDUAL AND PHYLOGENIC GOOD OF PLAY.

An eminent actor, Mr. **GEORGE GROSSMITH** of London, narrating on the stage his impressions of the United States, remarked how seriously the average American takes his amusement, all the popular plays, music and songs being of a sad and melancholy nature. Not only must we plead guilty to this stricture of the genial and good-natured actor, coming as it does from a layman, but from the view-point of the medical man we must further admit that the physician of the present day does not need to be a profound student of the stigmata of degeneration to have noticed that the tendency to play is lacking in idiots of all classes, and that this defect is directly proportional to the degree of mental weakness. Since recent pathology has done much to throw light upon certain physiologic questions, the foregoing remarks would seem to furnish material for an obvious inference.

Besides the many homely adages of condensed wisdom bearing upon the importance of play and recreation, we know that the activity expended in the form of play is a normal and necessary manifestation that greatly concerns not only the development of the young but the preservation of the adult.

As the zoölogical scale is ascended, we find the play instinct in various animals. The ludicrous performances of spiders is more suggestive of incitation than of any other imaginable purpose, says **ROMANES**, while **DARWIN** writes with fulness and particularity upon the love antics of birds; and others since his time have commented upon the play impulse in discussing the theory of natural and of sexual selection, which he says acts throughout all the higher dominion of the animal kingdom. From childhood days we recall to mind the skip and play of young lambs that our primers used to tell about, as well as the rompish sports and certain festal pleasures occurring in the hey-day of life, and making red-letter days in our career, all of which go to show the existence of an impelling force inciting to the performance of actions not the result of reflection and manifesting themselves in the form of sport, frolic, gambol, recreation, pastime or amusement.

This deep-rooted instinct observed in primitive tribes, though differing somewhat in details of manifestation, is in fact only a differentiated form of the same tendency existing in civilized communities. For instance, the group of games to which our backgammon belongs is ancient and widely spread over the world, as the ancient Mexican game of *patolli*, which appears to be of Asiatic origin. Similar instances of mimetism and the like have been observed among the Eskimo of Behring Strait and the Chuckchis of Arctic Siberia, the latter of whom play football, a fact of interest in connection with the remark of the Duke of Wellington, who said that Waterloo was won on the ball grounds of England. The Chuckchis being the only tribe of Northern Siberia that has not yielded to Russia, the existence of football among them may be looked upon as suggestive of the incitation that prompts the manly pastimes of a vigorous race.

While additional instances may be cited, it seems unnecessary to say more in order to justify the position that the play impulse, deeply implanted in the race, is one of the motor activities evolved from the central nervous system, and that many of its manifestations are not only essential parts of life, but things that have a conservational tendency and make life worth living. Military and naval statistics may also be cited to show the disappearance of certain epidemic affections after rigid discipline had been relaxed and liberty to indulge in proper sport was allowed. Moreover, the recreative effect of change by breaking up monotony in the treatment of many nervous diseases, is so well known to physicians that some of them go so far as to recommend an occasional spree for the benefit of health, and **HUFELAND** even says that it prolongs life. A study of the relative longevity of English and American statesmen shows the average usefulness and longevity of public men in England to exceed that of the American by ten years. Most public men in England are among the best and keenest sportsmen; but with us it is quite different. Even General **GRANT** could not swim and did not care to shoot or hunt, and the same may be said of nearly all the statesmen of the National Capitol. Imagine the effect on his constituents of one of our hayseed senators in a pink coat riding to the hounds, arrayed in a bicycle suit, or frequenting the golf links with the British ambassador.

Notwithstanding these well-recognized facts of sport and play, the deep interest that should be felt in the people's amusement still awaits a champion; and a philosophic study looking to the furtherance of the great cause of innocent recreation most fit for health, is yet a virgin science badly in need of an exponent. Moreover, we find among the various instances of fanatic folly many cranks and sham-pious who denounce anything like the manifestation of play or amusement as a wicked thing, because in their prudish and evil-thinking minds there still lingers the puritanic spirit which calls anything sinful that makes people feel happy. The time has come, however, when biologists and physicians may treat this apparently trivial and hitherto neglected subject with ordinary seriousness, and place the same on record.

Without enumerating the sports that improve the body and break up the vices of the mind, it may be said that just as long as mankind is endowed with the faculty of emotional expression, so will its demonstration in various forms continue to manifest itself. As a rule people must and will divert and amuse themselves, and nobody can prevent them. But in these days of excessive drive and over-pressure, when undue waste of vital energy shows itself to the clinical observation of the physician in the way of various nervous and brain diseases, the question of averting or mitigating such mischief comes to us as a serious problem.

The obvious solution lies in the encouragement of all innocent recreations as a compensating factor in the phenomena of life. Clearly, our people do not play enough. If we want to keep up the spirit of a race in which runs the blood of Robin Hood and the old Viking kings, the palestric element must enter into its pastimes. If we would hold the trident of Neptune and have a long run on the world's political stage, "the man behind the gun," as well as the political ruler, will be none the worse for having been trained in the manly school of rude play and rompish sport.

Therefore, we should do all we can to further the great cause of innocent sport and recreation that bring together men and women during leisure hours at such places as the tennis court, the hunt, the meet, the golf links. In the light of more humanistic ideals of the present day, we do not admit the ethical cogency that such amusements are wrong because they are worldly. We should strive to meet people with a simple word or two expounding "the gospel of relaxation," with a view to make life better and make human actions abler when prompted by the two great motor forces of life which incite in our subliminal self the source and spring of all human actions, namely, the preservation of the individual, and the continuance of the species.

THE MEDICAL MAN AND HIS MORALS.

The question has been raised, is the profession of medicine of such a nature as to ennoble those who follow it? Would the man who comes under its influence be the same as if he had not had this experience? It is not easy to determine this matter for each individual case, but if we consider medical men in their relation to the members of other professions, and the duties and obligations society thrusts upon them, as compared with what it expects of other men, we will find that certain facts are patent to show that there is a different standard of morals for the medical profession. And this standard if followed must influence the medical man for good.

But more than this, the every-day life of a healer of the sick is of such a peculiar character that it can not but exert a power for good on those who practice it.

Let us examine these premises more carefully. Society expects the minister of divinity to be as near perfect as it is possible for him to be; it expects him to be free from petty vices, to be honest, to be dignified; it in return respects him, accords him precedence in all its assemblies and public gatherings. The "cloth" will silence levity, will gain admittance without question, will be credited without doubt. Society places such men above others in the moral scale.

In a similar way, but to a less extent, the physician has the respect of society. In continental Europe the healer of the body has as dear a place in the minds of his patients as the healer of the soul has in the minds of his flock. No one can read the strong picture of the Scotch country physician drawn by IAN MACLAREN in "Beside the Bonnie Briar Bush" without instinctively feeling that it is a true one, and that the devotion of country people was real and not unusual. A life so spent, relieving suffering must surely react strongly on the mind and make it purer, nobler and higher than it otherwise would be. Society, as we said before, demands a certain seriousness of the physician; it demands wisdom, courage and quickness of perception, but more than this, it demands soberness. The man who is jolly, who is light-hearted, who is a clown, soon finds that such a temperament is not wanted in the sick room. It serves now and then, as when it whiles away the tedious hours of a primipara's labor, but the grave face, the thoughtful look, the gentle soothing and consoling tone is the most appropriate. Hence, as a class medical men *are* serious and sober.

The medical man again must be ever ready and on the alert; he can not give up his nights to carousing, even though his patients see him not; the morning comes and with it stern responsibilities, eyes must be clear and hands steady.

Society likewise asks that its medical men have a certain mannerliness about them; they must not be fops, or dudes, but they must be dressed in a becoming fashion, they must be cleanly in appearance and habit. Lastly, society wants the physician to be above material greed. In some countries it is improper for a medical man to sue for the collection of a bill. Fees are considered as marks of gratitude and not as a compensation for services.

Even in our own country among many of the foreigners it is customary for the patient to slide the fee into the physician's palm as if it were a present, and it would be thought very unbecoming in the physician were he to "look the gift in the mouth," or complain as to the amount.

Society does not ask the butcher or baker to supply meat or bread for nothing, or even on credit, but what reproaches it would cast upon the doctor who would refuse to visit a sick patient because he had no means or because the patient had not paid his bill. In our commercial days and in the cities the doctor is becoming more like the business man, but somehow the public will not consider him in that light, and dislikes him if he practices business methods.

The doctor is asked to give his services freely to every charity "under the sun" and to feel himself honored in being accorded the privilege of so doing. But the teacher, the lawyer and the musician are paid for their services; yes, and the chaplain too.

So much for the demands of society compelling physicians by an unwritten law to behave differently from other beings. Now as to the medical Code and its demands. Every organization of men, from that of the association of robbers to that of the church, has its peculiar code of ethics, which serves to influence every member for the good of all. These codes are oftentimes more powerful in governing the conduct of men than the law of State or the opinion of society. In no organization does the code mean as much as in medical organizations. From the time of HIPPOCRATES down to the present day fraternal feeling among medical men has been a common virtue. The oath of brotherhood is taken in all lodges, in workingmen's associations, even in the society of thieves and pirates, but in medical societies it has a deeper significance. It strives here to abolish the law of competition. The ignorance and mistakes of a weaker brother, which in the natural evolution of things would destroy him, are through the Code of Ethics covered up by the stronger and abler brother. Where a word might destroy the confidence that it has taken years to gain, that word is seldom forthcoming. When the patient is impatient and endeavors to displace his medical attendant in an abrupt manner he is usually prevented from doing so by another physician, and the Code forbids the latter to in any way throw distrust upon the work of the former.

Again, the Code establishes a fraternal feeling by making it almost obligatory for one physician to treat the members of the family of another physician. Almost obligatory we say, though never considered in the light of an obligation but rather in the nature of a duty.

The Code sets the pace and though many feel themselves not bound by its articles. all strive to live up to its spirit. It serves to take the "fight" out of the medical man, to wipe out of him all traces of the competitive brute. The law of trade is "strive to conquer others, succeed by downing others, build up on the ruins of others." The law of the medical Code is "one for all and all for one. Succeed only with others, strive to aid others." Avoid competition, avoid contention.

Remember this is not a church commandment that is only believed in by the Sunday-school boys and girls, but a living commandment that is practiced every day all over the world wherever physicians are organized.

Such men who refuse to abide by this Code and grossly abuse it speedily find themselves ostracized and the profession refuses to recognize them as reputable physicians, even though the world accounts them a comfortable living and a certain confidence. The medical Code therefore would have a tendency to make men nobler who come under its influence and to make them better. Thirdly, the daily life of the doctor, what does it mean? Does it signify anything to come in contact hourly with the ills of all classes of the community? Not only the physical ills, but all the moral ills, all the mental suffering of hundreds of families. Can any one remain unmoved by the spectacle that any ordinary physician encounters daily? The young girl of promise about to graduate, stricken with phthisis; the only child of devoted parents dead after weeks of suffering; the breadwinner sick in his room with typhoid, his little ones and patient wife wanting the necessaries of life; the debauched husband killing his feeble helpmate by obliging her to be the mother of many children, or infecting her with virus picked up in the brothel; the woman pregnant for the first time, the months of anxious preparation, the final suffering, the happiness on the faces of all when in the midst of extreme agony the child is born. Such are the daily scenes of the active family physician, and it is inconceivable to us how they can fail to affect any man no matter how morally obtuse he may be, and affect him for good. The confidences of women, of men, of young people, are his; the life of the community—the inner secret life is as open to him as the sky and yet so sacred is this trust that seldom do his most intimate companions know these secrets from his lips. In fact, a famous physician was but recently fined a large sum of money for divulging a secret he obtained in professional confidence, although he abused this confidence in order to prevent his own daughter from being made unhappy. Entrusted more often with important secrets than either the lawyer or priest, yet so great a reliance is placed in the morality of the doctor, that he is changed as the grocer is changed, often for the slightest reasons, and without fear that these secrets because of revenge will be divulged. The physician must never complain of his own troubles, he must give strength and consolation to the suffering, but he must not look for it from his friends. And yet when one sees how others bear their troubles and how great is the load that others have to carry, our own ills seem little indeed, and we learn to *bear* them without complaint.

Thus the daily life that a physician is obliged to endure, in close contact with disease, misfortune, misery, death, poverty and vice, we believe tends to ennoble him, to purify and strengthen him, to make him forbearing and forgiving, loving and patient.

Can any one visit daily a poor little sick child with the purpose of relieving its suffering, without learning to love it? And when at last it is well and gains each day in health and the worn-out mother pours blessings over your head and hails you as a veritable savior, can any one at such a time be cruel or mean? We doubt it.

Every one who studies medicine does not remain in the profession. A great number each year leave, and we contend that a few years' practice will drive out those who are evilly inclined, either making of them quacks and ostracized charlatans, vendors of nostrums or disreputable abortionists whom no respectable community recognizes, or it sends them over into other professions and trades.

All physicians are not angels. But what we mean is that having a certain moral foundation to start with, a man must become stronger and better as he is subjected to the experiences of a medical life. It is true that the profession of medicine offers certain temptations to do wrong which other occupations do not, and sometimes the physician makes ill use of the trust imposed upon him, but this is comparatively seldom, and when one considers the power a medical man has to do wrong and how many chances are open to him to commit crime, it is a wonder so few of the profession do become convicted criminals. It is asserted in some quarters that as the struggle for existence grows more severe more of the medical fraternity will be compelled to do wrong, will in other words degenerate, will perjure themselves for expert fees, will perform abortion, play the rôle of charlatan, etc.

This remains to be seen. Strong social forces are at work to oppose the competitive spirit and the situation may change before many moons, the struggle being lessened or done away with entirely.

Some may say that the physician is no better at heart than other people, it is only the fear of the law, the fear of being ostracized by his brethren and the fear of pecuniary loss which keeps him in the beaten path, and that when he can violate the Code without being discovered he does so; that he is hypocritical and apt to pretend knowledge of things he is ignorant of and that he ascribes to his own powers effects which are in all probability the results of natural causes.

Such criticisms are to some extent true, but they fail to affect the general statement; they rather strengthen it because what is thus condemned in the physician is permitted to the merchant and tradesman. Whether men abstain from evil from fear or because they love the right, the abstinence in itself produces changes which are lasting. And physicians, because they are compelled to lead such lives, must in time become changed so that what was once compulsion becomes natural and automatic.

THE CRITERIA OF SENILITY.

It is not infrequently the duty of physicians to decide upon the disqualifications from age, but he would be a rash medical authority who would formulate a general rule as to the exact period in life when all men should give up active pursuits and be considered as unfit for the ordinary duties of business or professional life. It is true that senile changes occur in perhaps a majority of those that reach any advanced age that disqualify them to a greater or less extent, but there is no uniformity as to this and it is impossible to lay down any law that is universally applicable. Moltke at past the age of 70 was the organizer of the most successful great campaigns of modern times, and Gladstone at a still greater age is influential and active to a degree surpassing most younger men. These are prominent instances, but they are typical of many less prominent ones, and it would be hard to say that there is any essential reason why a man may not be as good for counsel and as mentally active at 70 as he is at 50. Many men are not, it is true, and it would be an excellent thing if most men could retire at that age to a well-earned leisure and ease. This is not the case, however, with very many, and there are others still whose retirement would be a public loss.

While our profession has never fixed the period when senility can be said to disable, legislative and and judicial authorities have been more willing to attempt it, and it has been legally decided in at least one State of our Union that after the not very excessive age of 66 a man is entitled to at least the privileges and exemptions that old age should be *allowed, no* matter what may be the bodily vigor or the capacity for mental work. It is a natural and proper thing that a certain age should exempt from active military service, though it is notorious that the fixed age of retirement of army officers seldom is willingly accepted by the individuals, who generally, and often correctly, believe themselves still capable of good service. There are other reasons, however, than their disability for this limit and it is likely to stand, especially as the government can still claim their services in emergency. There are other departments of the public service where there is no apparent age limit, and where senility, understanding by this the mental failure of old age, can be most serious in its consequences. It is a curious fact, moreover, that judges who give the decisions as to the age limit, themselves, habitually pass beyond the limit they set, while still in active life. Our supreme courts are largely made up of old men, and it seems to be one of the facts of human experience that courts that possess the highest reputation and authority are chiefly found among those that are thus composed. Some time ago there were published in a leading English periodical some criticisms of the British higher courts of justice based on the ages of the judges who, it was claimed, showed senile infirmities that ought to disqualify them for their positions. English conservatism, or perhaps we should say English common sense, has not been affected by these criticisms and the British bench still contains its octogenarians. In this country, too, we have aged judges as well as aged physicians still in active exercise of their professional functions, but it is only on the higher judicial bench that this is frequent enough to almost be the rule, and there is here a possible danger that is worth considering, even if it be but slight. A business man or a physician is, as it were, constantly on trial, but a judge is the arbiter himself and his duties are not such as would be so seriously embarrassed by a physical incapacity that would disable one in another life pursuit. He is therefore protected to some extent against the disabilities of age, while some of its infirmities may be already upon him. Are aged judges always the best court of last resort in questions where senile incompetency is involved, even when especially qualified to interpret the law on other points? This is a question that may sometimes arise, and, it is possible, injustice has been done in some instances by the unconscious prejudice of old men against what they may feel to be a reflection against themselves. This is only an example of the medicolegal suggestions that arise in the consideration of this subject.

What is wanted is, as Minot has said, a more complete study and review of the facts of senility and its effects, and some authoritative expression of the latest and fullest acquisitions of medical science in regard to it. It is not necessary to have a fixed period when a man can be said to be aged; some men are older mentally and otherwise at 50 or 60 than are others at 80. What we need is a better and fuller knowledge of all the general laws governing senile changes to and in the judgment of any individual case, a better body of scientific doctrine to govern the making and the application of general and special rules. This is one of the desiderata of modern medicine, and is equally needed for the guidance of courts and legislators, as well as for the better instruction of the public, who are at present inclined to exaggerate the disadvantages of age, often to the great hardship of the individual.

CORRESPONDENCE.

The Reorganization of the Public Hospitals in New York in 1895 and the Present Attitude of the Profession on the Subject.

New York, July 1, 1897.

To the Editor:—Two years ago the profession of this country was somewhat startled by the announcement that twenty-eight or more physicians who were serving gratuitously in the hospitals in the Department of Charities of New York were about to be set adrift without cause or pretext, except that the medical colleges clamored for their places. Surprise was heightened when it was made known that in spite of the protests of the veteran members here threatened with dismissal, and the repeated appeals of the local medical societies, the medical colleges defiantly proceeded to nominate physicians for places not yet vacated.

This procedure stirred the general profession into prompt and vigorous action, as it certainly seemed to involve the violation of one of the basic principles of the Code of Ethics of the American Medical Association.

The County Medical Association of New York—that medical organization which has remained loyal to the American Medical Association—immediately appointed a committee on "The Relation of Physicians to Public Hospitals," which at once cited every member connected with any teaching corporation to appear before it and explain or justify their action. At the same time a circular notice was served on them, requesting that "they take no action in the nomination of candidates for positions not yet vacated until those about to be removed have had charges preferred against them, or have had an opportunity to be heard in their own defense." But this notice was in every instance ignored, when the work of retaliation was begun; the fiercest blows being first directed against the medical school which occupied the public grounds covered by Bellevue Hospital.

Here the avenging hand of retaliation was first felt, and the city authorities were forced to serve notice on Bellevue Medical College to move off public grounds, when the faculty moved across the way and for a week or two joined forces with the University Medical School. Next this Committee appeared before the Commissioners of Charities and demanded one half of all the medical-staff appointments in the hospitals of New York for members of the profession at large, such appointments to be submitted by the medical societies. This proposition was received as acceptable and it was promised to be put into effect.

Matters finally came to a climax at the June meeting of the New York County Medical Association, when the following resolutions were presented by the Committee on Hospitals and adopted by the Association:

"1. *Be it resolved*, That after a thorough and impartial investigation by the Committee on Hospitals and Dispensaries of the New York County Medical Association, it now be declared the sense and belief of this Association that the reorganization of the medical service in the public hospitals in New York in 1895, as far as it concerned members of the medical profession, involved a violation of the Code of Ethics of the AMERICAN MEDICAL ASSOCIATION, was vicious in principle and unjust in its effects.

"2. *Be it resolved*, That this Association deprecates and condemns the present system on which the medical management of the Department of Charities is conducted and with the advent of Greater New York unconditionally pledges itself to leave nothing undone to effect its early repeal."

Immediately on the passage of these resolutions all formal charges against members, it appears, were withdrawn.

At the time of this reorganization upheaval in New York the JOURNAL took the ground that it was a humiliating spectacle to witness the wholesale removal of medical men without any adequate justification or pretense.

It is now to be hoped that the voice of the profession has been heard in unmistakable terms, and that means may be devised by which an honorable and equitable adjustment may be arranged and the profession once more united.

JUSTITIA.

A Literary Endorser.

SPRINGFIELD, ILL., June 21, 1897.

To the Editor:—Allow me to call your attention to the following facts and enlist your coöperation in assisting this gentleman in a way that it seems to me he richly deserves from our profession.

One of the most glaring frauds of this decade has been an appliance known as "Electropoise," advertised in *Harper's Monthly* and other leading publications. The sale of this appliance has been fostered by the certificate given its promoters by one W. H. DePuy, assistant editor for some time of the New York *Christian Advocate*, whose official position on one of the leading religious papers of the country added some weight to his statements.

Recently I received an advertisement of "The University of Literature," edited by W. H. DePuy, A.M., D.D., LL.D., who I find is the clerical endorser of Electropoise. I wish you would call the attention of the 125,000 medical men in this country to the facts in this case, so that they may treat the compilations of the Rev. DePuy with the scant courtesy which they deserve. I send you copies of the advertisement of the Electropoise and University of Literature herewith.

Yours very truly, GEO. N. KREIDER, M.D.

PUBLIC HEALTH.

Rates of Mortality in 1896 in Thirty-two Large Cities.—From the last registrar-general's report (London) and from other official sources the following death rates for 1896 have been compiled. The cities are listed in the order of their reported low rates of mortality: Frankfort-on-Main, 15.6; La Hague, 16.3; Stockholm, 16.8; Copenhagen, 16.8; Edinburgh, 16.9; Cincinnati, 16.9; Genoa, 17; St. Louis, 17.3; Amsterdam, 17.4; Hamburg, 17.5; Berlin, 17.9; Brussels, 18.2; London, 18.6; Rotterdam, 18.6; Nice, 18.6; Paris, 19; Rome, 19.1; Turin, 19; Philadelphia, 19.8; Dresden, 19.9; Brooklyn, 20; Glasgow, 20.4; New York, 21.4; Vienna, 22.3; Boston, 22.5; Munich, 23.2; Venice, 25; Breslau, 25.1; Buda-Pesth, 25.4; St. Petersburg, 30.9; Calcutta, 33; Bombay, 41.5; Alexandria, 42.4; Cairo, 55.2.

Inroads of the Bacilli.—The report of the city bacteriologist of Syracuse, N. Y., shows that during the year 1896, 600 cases of suspected diphtheria were examined. Of these, 223 proved to be true diphtheria. In 411 cases given a secondary examination to see that the throats were free from the disease, as shown by the culture test, fifteen days were found to be the average time of persistence of the diphtheria bacillus in the throat. The greatest number of cases occurred in October. Of the 223 cases, 102 were those of children 5 years old and younger, and only 17 persons were over 20 years of age. In 150 cases the tonsils alone were involved. In 187 cases the diphtheria bacilli were found alone and in 36 cases mixed with some form of cocci. In 26 of the 36 cases that resulted fatally, antitoxin was not used, while the remaining 10 cases were moribund when first seen. Examinations for tuberculosis numbered 223, and of these cases 113 were found to have tubercle bacilli present.

Judgment of Board of Examiners Conclusive.—Another victory for the cause of higher requirements has been won. It is in the decision of the case of Van Vleck v. Board of Dental Examiners, which the supreme court of California handed down March 29, 1897. A writ of mandamus had been granted, to compel the board to issue to the petitioner a certificate entitling him to practice dentistry. But the supreme court holds that there was no cause of action stated, and reverses the judgment granting the writ. Its decision turned on the construction to be given to the California statute, approved March 12, 1885, entitled "An act to insure the better education of practitioners of dental surgery, and to regulate the practice of dentistry in the State of California." It provides a board composed of expert practitioners, with power to examine and license those who have not graduated elsewhere, and to investigate and pass upon the reputability of schools and colleges issuing certificates or diplomas, and the right of the holders of such diplomas to their possession. The powers thus conferred, the supreme court says, are broad and comprehensive and, in some respects at least, must in their nature be final. The judgment of the board, for instance, as to the qualification of an applicant for license by examination, which is largely if not wholly discretionary, it holds, must of necessity be conclusive. And the requirement to "indorse, as satisfactory, diplomas from any reputable dental college, when satisfied of the character of such institution, upon the holder furnishing evidence satisfactory to the board of his or her right to the same," it maintains, implies quite as necessarily the exercise of judgment and discretion as in the examination of an applicant as to his fitness; and that the board's action thereunder is final, and not subject to the mandatory control of the courts. On the other hand, if the statute had required that the applicant make a prescribed showing in a particular manner, and that thereupon the board should indorse his certificate, the court says that it might with some reason be said that the act was more ministerial than judicial, and that, upon the prescribed showing being made, the board could not refuse to act. The allegations that the American College of Dental Surgery "was a reputable college, and there existed and was at the command of defendants sufficient evidence of such fact," and that the petitioner furnished "evidence satisfactory to defendants that he was the person named in said diploma," the court further holds, were not the legal equivalent of an allegation that the defendant board had so found, and hence furnished no basis for the issuance of a writ of mandamus.

Health Regulations in the Adirondacks.—*To the Editor*:—Our Board of Health recently adopted the following ordinance concerning the sale of milk and cream in this village:

AN ORDINANCE CONCERNING THE SALE OF MILK IN THE VILLAGE OF SARANAC LAKE.

SECTION 1. No milk or cream shall be received, kept, offered for sale or delivered in the Village of Saranac Lake after the 20th day of June, 1897, without a permit in writing from the Board of Health, and subject to the conditions thereof.

SEC. 2. Every person applying for a permit to receive, keep, offer for sale, or delivery of milk or cream, must register his or her name and residence in a book kept for that purpose in the office of the Board of Health, file a certificate with said Board from a qualified veterinary surgeon, or such other person as the Board of Health may designate, certifying that he has inspected all of the milch cattle of the applicant from which such milk has been drawn; that they have been found sound and healthy, and that the dairy and other appurtenances necessary to the business are kept in a cleanly and proper manner. Any failure to comply with and maintain the conditions herein set forth shall be a sufficient ground for the immediate cancellation of such permit.

Sec. 3. Any person violating any of the provisions of this ordinance shall suffer and pay a penalty of $25 for each and every offense.

Adopted April 10, and amended May 15, 1897.

E. S. McClellan, M.D., }
W. F. Roberts, } Board of Health.
H. L. Lobdell, }

Attest:
F. P. Calkins, Secretary.

In view of the requirements of this ordinance, the dairymen supplying the village with milk, through the assistance of the Board of Health, procured the services of Dr. Cooper Curtis, a veterinary surgeon of national reputation, to inspect and test their cattle. A physical examination was made and the tuberculin test applied to the cattle of all the herds, aggregating 220 head. Every animal was found free from tuberculosis and otherwise in a sound and healthy condition. This remarkable immunity from tuberculosis is perhaps in some measure due to the hardy character of our native cattle, as rarely any importations from foreign herds occur. Scattered throughout this section there are always a considerable number of consumptives, many of whom ramble over the pasture fields and expectorate on the grass, and some fears were entertained by the laity lest the cattle might be infected by swallowing infected sputum; but experience seems to demonstrate that tubercle bacilli do not germinate in the vigorous stomachs of our native cattle.

Very truly yours,
E. S. McClellan, M.D.

Saranac Lake, N. Y., July 5, 1897.

Liability of City for Health Officer Burning Property.—The evidence in City of Dallas v. Allen showed that the city authorized its health officer, during an epidemic of smallpox in that city, to burn property which in his judgment was infected with the disease, when in his judgment it was necessary to do so to prevent its spread. In the execution of this authority he caused a house to be burned with its contents. This suit by the owner of certain of the contents, against the city, the health officer and the sureties on his official bond followed. The district court directed the jury to find against the city and in favor of the other defendants. April 14, 1897, the court of civil appeals reversed that judgment and remanded the cause. It says that the chief question was as to the right of the city to destroy property in the exercise of the power conferred on it by its charter, to all acts and make all regulations which may be necessary for the promotion of health or the suppression of disease. It thinks that the governing rule is found in a decision of the supreme court of Texas relative to the destruction of a house by the fire department, where it held that property can be so disposed of without the city or its agents becoming liable; that such a taking does not violate the constitutional pledge that private property shall not be taken, damaged or destroyed for or applied to public without adequate compensation being made, unless by consent of the owner. But the court of civil appeals thinks that a necessity for the demolition of the building for the purpose of checking the progress of the fire would have to be shown by the city, and the destruction of a house in an isolated place that could constitute no agency in communicating the threatened danger, would not be justified. And it holds that to the same extent that a city can destroy the property of a citizen in checking a fire it can do it in stamping out an epidemic, with exemption from liability. There being in this case evidence both to the effect that the articles in question could and could not have been rendered innocuous by a simple process of disinfection, the issue of fact thus raised, it holds, should have been left to the jury to decide. Furthermore, the city having directed or authorized the destruction of the property, if it was wrongfully destroyed, the court holds that the city could not escape liability.

ASSOCIATION NEWS.

Amendment to Constitution.—The following amendment to Article IV of the Constitution and By-Laws was offered by Dr. Wm. LeMoyne Wills, of Los Angeles, Cal., in the general session on Friday, June 4, 1897, but was received too late to be incorporated with the printed minutes of the general sessions:

Art. 4. Officers. The officers of this Association shall be a president, four vice-presidents, one secretary, one assistant secretary, a treasurer and librarian. They shall be nominated by a special committee of one member from each State represented at the meeting and shall be elected by vote on a general ticket. Each officer shall hold his appointment for one year and until another is elected to succeed him.

Resolutions Against the Antivivisection Bill.—The Permanent Secretary has sent the following circular to the Senators and Members of the House of Representatives:

Philadelphia, Pa., June 29, 1897.

Hon. ——, U. S. Senate, Washington, D. C.

Dear Sir:—The following resolution was unanimously adopted at the annual meeting of the American Medical Association in Philadelphia, June 2, 1897:

Whereas, Senate Bill 1063 (formerly Senate Bill 1552) has been reported favorably to the United States Senate; and

Whereas, We believe that its passage would seriously interfere with the progress of practical medicine, and therefore be a public calamity; therefore, be it

Resolved, That the American Medical Association, with a full knowledge of the contents of Senate Bill 1063, most earnestly protests against its enactment.

The day following the adoption of the above resolution, the Association, in general session, after listening to the address on surgery by W. W. Keen, M.D., directed, with the greatest unanimity and enthusiasm, that the following extract from his address be added to the above resolution, to be forwarded to the Senate, and later directed that a copy of the entire address should be forwarded to each member of the Senate and House of Representatives:

Animal experimentation has had also a very large share in the development of modern surgery. The whole question of the introduction of animal ligatures was begun in America by Physick, who used buckskin, and his follower Dorsey, who used kid and cut both ends short, Hartshorne, who used parchment, and Bellenger and Eve the tendon of the deer, and has been solved principally by experiment upon animals in order to determine accurately the behavior of such ligatures in the tissues. Only professional readers can appreciate what a boon to humanity this single achievement has been. Modern cerebral surgery also owes its exactness and success almost wholly to cerebral localization and antisepsis, both of which were first studied upon animals and later by the application of the knowledge so gained to man. Bacteriology would not now exist as a science, nor would accurate modern surgery and a large part of modern medicine be possible, had experiments upon animals been prohibited, as some zoöphilous women who love dogs better than men and women, and even little children, desire.

The foregoing resolutions of the American Medical Association were adopted by unanimous vote at its annual meeting, when the registration of delegates present was almost two thousand. The total membership of the Association is over eight thousand, from every State and Territory of the United States (except Wyoming) representing over one thousand State and county medical societies.

Commending these resolutions to your favorable consideration and enclosing a reprint of the bill in question. I remain,

Very respectfully, (Signed) Wm. B. Atkinson, M.D.,
Permanent Secretary.

SOCIETY NEWS.

The International Medical Congress.—A letter received from the Secretary-General of the twelfth International Medical Congress conveys the following information which is additional to that which has been published in the medical journals. As it is too late to send tickets to the American congressists, they are requested to send to the Secretary-General at Moscow their addresses in London or Berlin, or Vienna, or Paris, or to avail themselves of the National Committees in those cities, in order to receive their tickets and free passes over Russian railroads in those places. The free passes are valid from July 13 to September 13 over the following routes: Eydtkunen to Moscow, back; Moscow to St. Petersburg, or Moscow to Graniza, or Moscow to Odessa or vice versa; Graniza, Warsaw, Moscow and return by Moscow, St. Petersburg (or Odessa, or Eydtkunen, or Ungheni, or Alendrowo) or vice versa. Different lines going and returning may be chosen, and stop over is permitted. Eydtkunen to St. Petersburg is excluded from the free list. A. Jacobi, Chair. Amer. Nat'l. Com.

NECROLOGY.

Benjamin H. Throop, M.D., of Scranton, Pa., who died June 26, was a man of mark and influence not only in Scranton, but throughout Pennsylvania, and the long biographies of him in his home newspapers contain some interesting facts. Though he was the first settler and the first house-builder in Scranton, he was born in Oxford, Chenango County, N. Y., November 9, 1811. His family came there in 1800. They were of the Puritan revolutionary stock, both his father and grandfather having belonged to the Fourth Connecticut Volunteers under Washington. Dr. Throop studied medicine in Fairfield Medical College, Western New York, graduating in 1832. He first settled in Honesdale, Pa. After short but successful periods of practice there and in Oswego, N. Y., he settled in the town of Providence, in the Lackawanna Valley of Pennsylvania, in 1840, but in 1847 moved to what is now the town of Scranton. He procured the completion of the Delaware, Lackawanna and Western Railroad and the extension of the Delaware and Hudson Railroad to Scranton. He obtained the first charters for gas and water, and for a hospital in the town. He laid out the suburbs now known as Hyde Park, Providence, Dunmore, Priceburg and the town of Throop. He secured the creation of the Luzerne County out of Lackawanna County. He was the first postmaster at Scranton, founder of the Lackawanna Hospital, trustee of the Danville Insane Asylum, president of the Illuminating Heat and Power Company and the chief medical adviser for many years of the railroad companies running into the city, which now numbers over one hundred and twenty thousand people. He was the first surgeon from his county in the war for the Union, taking charge of the Eighth Regiment of Pennsylvania Volunteers, and afterward of the One Hundred and Thirty-second Regiment of that State, and he established a system of Hospitals at Chambersburg and at Harper's Ferry, as well as a system of medical relief in the field, which became general throughout the Northern armies. There were no public interests in which he did not take an active part, and, while he retired from the practice of his profession many years ago, his energy in affairs was unabated to the end. About three years ago he celebrated his golden wedding.

William C. Wey, M.D., Albany, 1819, for many years Health Officer of Elmira, N. Y., died of apoplexy June 30. He was President in 1871 of the New York State Medical Society and was also President of the Board of Managers of the New York State Reformatory.

John Frelinghuysen Talmage, M.D., New York University 1859, of Brooklyn, N. Y., died in Rye, N. Y., June 30, while on a visit to his daughter, the wife of Congressman J. Murray Mitchell. He was 64 years old.

James Cavanaugh, M.D., Easton, Pa., June 28, aged 67 years.——John Norwood, M.D., Columbus, Ga., June 28, aged 60 years.——Albert S. Rogers, M.D., Pavilion, N. Y., June 30.

MISCELLANY.

A Deserved Compliment.—Prof. Virchow is to be elected a Foreign Associate of the French Academy of Sciences.

Decrease of the Birthrate at Home.—A recent table makes the birth-rate of the United States in 1890 only 26.68 per thousand whereas in 1880 it was 30.95.

Plague Commissioner Rand not Dead.—So far the reports from Bombay of June 24, indicate that Commissioner Rand, wounded by a native while leaving the Governor's reception, was still living although in a precarious condition.

Etiology of Yellow Fever.—At the request of Dr. Freire the Government of Brazil has appointed a committee of seven prominent physicians to investigate his claims in regard to the micrococcus xanthogenicus.

Duty in Selecting Surgeons.—The supreme court of Iowa holds, in the case of Maine v. Chicago, Burlington & Quincy Railroad Company, April 8, 1897, that it was the duty of the company, under its contract with the relief department which it organized whereby it was required to furnish an injured employe surgical aid and attention, to exercise due care and diligence to select surgeons who were reasonably competent to treat him, and, if it did so, it was not liable for the negligence of the surgeons in treating and caring for his injuries. An allegation that a surgeon "either lacked the requisite skill or failed to exercise the same," the court says, does not show that he was in fact unskilful, nor that the railroad company was negligent in employing him.

Discharge from Insane Asylum after Escape.—The California statute concerning the management of the insane asylum at Napa provides that the resident physician shall be the executive officer of the institution, and shall discharge such patients as, "in his opinion, have permanently recovered their reason." Under this provision, where the physician had come to the conclusion that a patient was restored to reason, and had intended to order his discharge if his condition did not change in a few days, the supreme court of that State holds, in people v. Geiger, April 7, 1897, that the fact that the patient had in the meantime escaped, and was not present when his discharge as "recovered" was entered of record by the physician, was no ground for impeaching the physician's act.

The Sensational "Affaire" Thomson at Paris, mentioned in these columns at the time, resulted in the condemnation to five years imprisonment of the two physicians involved. Whether legally liable or not, Dr. B. was certainly indiscreet in curetting the uterus of a woman without ascertaining whether she was pregnant or not, and with such a lack of skill as to extract loops of the intestines through the cervix, not to mention the impropriety of performing such an operation (for which there was not the slightest excuse of urgency) on his dining table, with the assistance of his cook and coachman. He was on the staff of the *Revue Médicale*, and this magazine denounces Brouardel's expert testimony in the bitterest terms. Nothing seems to have been proved against Lajarrige except that he had directed Miss Thomson to Boisleux.

Not Hospital "Treatment."—One of the questions in an application for life insurance was as to whether the applicant had ever been under treatment in any hospital, asylum or other institution. This was answered, "No," in the case of Chinnery v. United States Industrial Insurance Company. But there was evidence that some twenty-five years previously something had blown into the applicant's eye, that she went to a hospital, by appointment, to have it removed, and returned the same evening. This, the appellate division of the supreme court of New York holds, April 6, 1897, was not being "under treatment in any hospital" within the meaning of the policy. It adds that it had nothing to do with the general health of the assured, and if it had been known to the company, could not possibly have been considered by it as a reason for refusing to issue a policy of insurance.

H. D. Didama, M.D.—A dinner was given in honor of Henry D. Didama, M.D., on the occasion of his fiftieth anniversary as a practitioner of medicine, by the faculty and the Alumni Association of the College of Medicine, Syracuse (N.Y.) University, on Wednesday evening, June 9. Dr. Nathan Jacobson acted as toastmaster. Eulogistic speeches were made by Dr. E. D. Ferguson, Dr. A. Vanderveer, Dr. Matthew D. Mann, Dr. Wm. S. Ely, Dr. Robert L. Morgan, Dr. Brace W. Loomis, Dr. Henry O. Marcy, Dr. John Van Duyn. Speeches were made by Chancellor James R. Day, Dean James B. Brooks, Rev. George B. Spalding, Hon. Frank Hiscock, Hon. Carroll E. Smith. The occasion was one long to be remembered by Syracuseans, and Dr. Didama's colleagues in the Association throughout the country join in congratulations.

Domestic Remedies in the Retrospect.—The *N. Y. Evening Post* of July 3 in a running summary of "The American Frugal Housewife" printed in 1835, refers to several expedients for home treatment. The usual precaution "before sending for the doctor" appears to have been omitted. To prevent lockjaw, lye, a rind of pork, strong soft soap, spirits of turpentine, and pulverized chalk are recommended; for throat distemper, the old name for diphtheria, a poultice of roasted apple mixed with an ounce of tobacco, the whole wet with spirits of wine and spread on a linen rag to be bound about the throat, is a panacea; to stop the blood from a wound apply scrapings of sole leather; a spoonful of ashes stired in cider is suggested to relieve nausea in cholera morbus. A salve to reduce inflammation in wounds is made from lard melted and cooled five times in succession, then simmered with sliced onions, and once more cooled; low-blackberry tea is prescribed for calomel sore mouth.

Colleges.

The annual commencement of the Yale Medical School was held June 30. About thirty new doctors received degrees.——Merced University has conferred the degree of LL.D. on W. A. Adams, M.D., Chief Surgeon of the Fort Worth (Texas) and Denver City Railway Company.——The Maine Medical School, Bowdoin College, at Brunswick on June 23, presented thirty-four diplomas.

Societies.

The ninth June meeting of the Dubuque (Iowa) Medical Society was held June 30.——The Eastern Iowa District Medical Society met at Washington, Iowa, June 24. The new officers chosen are Dr. W. B. La Force of Ottumwa, president; Dr. Grimes of Wapello, vice-president; Dr. M. C. Carpenter of Fairfield, secretary and treasurer.

Hospitals.

A new free hospital was opened by the Christian Hospital Association, Los Angeles, Cal., July 1.——The Salem (Mass.) Hospital is the recipient of $10,000 for the establishment of a home for convalescents, a memorial to William G. Webb, who at the time of his death (May 17, 1896) was president of the hospital corporation.——An annex to St. Vincent's Hospital, New York City, has been opened at Far Rockaway, about three minutes' walk from the station. Ocean breezes, ample rooms, well shaded grounds and trained nurses are mentioned as the attractions.——The Ladies' Deborah Nursery and Child's Protectory, New York city, has passed into the hands of a permanent receiver.

The proposed new hospital of Harlem, New York city, is likely to meet with much opposition by the owners of the site. It was to have been located on the east side of Lenox Avenue between 135th and 136th Streets, but the Equitable Life Insurance Society demur because the necessary condemnation proceedings will give them only the market price instead of the prospective value. The old Harlem Hospital has outgrown its capacity and a new institution in the upper section of the city proper is an absolute necessity. The Commissioners of Charities, who have taken in consultation the proper medical authorities, have authorized an expenditure of $300,000 upon the building alone and the cost of the land as calculated should not have been more than $200,000 at the extreme limit.

Washington.

The Chinese Apothecary.—A local Chinaman has made application for a license to sell medicine to his countrymen in the District.

Mandamus for the Board of Medical Supervisors.—The Board of Medical Supervisors for the District, in the opinion of Dr. Alderman, have been too slow in issuing a license for him to practice medicine and surgery in the District, therefore he applied to the courts to secure his rights, as he understands them. Judge Bradley issued a preëmptory writ of mandamus, requiring the Board of Examiners to show cause, etc.

Hospital for the Insane.—President McKinley has appointed Ex Surgeons General Francis M. Gunnell of the navy and John Moore of the army as members of the Board of Visitors to the Government Hospital (St. Elizabeth's) for the Insane.

The Contagious Hospital Site.—The Commissioners of the District have reported adversely the recommendation of Senator McMillan to locate the contagious hospital, recently appropriated for, in the grounds of the Washington Asylum. They base their adverse report on the bad hygienic conditions adjacent to the Asylum grounds. The eastern branch of the river, which passes directly back of it, is a cesspool and hotbed for disease breeding, it being practically an open sewer, receiving the sewage from a large portion of the District, where it is subsequently washed over the flats. This pestilential condition has more than once been reported by the surgeons in charge of the U. S. Naval Hospital and Marine Barracks and the surgeons in charge of the Government Asylum for the Insane, as being directly causative of a great deal of otherwise preventable disease in these institutions. The Medical Society and the Washington Board of Trade, through their health committees, have frequently pointed out the dangers of this locality. It is probable that the contagious diseases will eventually be treated in isolated buildings, to be erected in the grounds of two of the general public hospitals of the District.

Cincinnati.

Dr. Gillert I. Cullen is announced as associate editor of the *Medical Fortnightly* of St. Louis.

Dr. O. V. Limerick, who was jointly indicted with ex-Health Officer Dr. J. W. Prendergast on the charge of attempted blackmail of the Fraser Tablet Co., has been granted a new trial by the circuit court.

Dr. Robert Suttler has placed an order with Mundheuk, the sculptor, for a bust of the late Dr. E. Williams, who was the founder of the Ophthalmic Institute of Cincinnati.

The Tuberculous Patients and convalescing children of the Cincinnati Hospital have been removed to the branch hospital, which is located twelve miles from the city and in every way adapted for the care and treatment of these patients.

The Annual Meeting of the City Hospital medical staff resulted in the election of Dr. N. P. Dandridge president and Dr. J. C. Oliver secretary.

Dr. John K. Woods of Van Wert, Ohio, has been appointed chief surgeon of the Ohio division of the Jackson and Mackinaw Railway.

The Health Department has issued an order to the effect that hereafter all cattle added to the dairies supplying milk to the city must be tested with tuberculin, and those found diseased will be condemned.

At the meeting of the Academy of Medicine last week, Dr. James T. Whittaker read a paper entitled "Six Years with Tuberculin." He claimed that this remedy had proven to be the most valuable diagnostic agent and single remedy we have. The period of childhood was given as being the time of most frequent infection, and that of puberty of most frequent manifestations. Children who suffer with frequent or more or less continuous malaise, who feel more than others the confinement of the school room, who are said to be predisposed to phthisis, should be tested for some depot of tuberculosis. Children who live in an atmosphere of infection are almost necessarily subjects. Among the earliest signs mentioned usually are a peculiar odor of the breath, a red line on the gums, clubbed fingers, and local signs, as affection of the bones, joints, skin, testes, Fallopian tubes, adenitis. Scrofula is external tuberculosis. There is a pre-tubercular albuminuria, which is recognized by delicate tests, as by that of Spiegler. Cardiac palpitation and early dyspnea belong to the same toxemia. This albuminuria is not a nephritis, but is a toxic alteration of the albumin whereby it becomes more dialyzable. The Diazo reaction is less common and less reliable. The search for the bacillus in the blood in hectic fever and the other blood tests are really quite superfluous. Cough is most suspicious when it occurs in the morning and evening. Local depots excite no cough and there is no cough in acute miliary tuberculosis. The great contribution of modern times came with the discovery of the tubercle bacillus in the sputum. The use of the centrifuge, after fluidification of the sputum with soda or potash, shortens the examination and increases the value of the test. The pseudo-bacillus, the bacillus of leprosy, of syphilis, and of anemia were next differentiated. The discovery of elastic tissues was passed by because by this time there are physical signs. The importance of hemoptysis was remarked. It is not too sweeping an assertion to say that hemoptysis in perfect health means tuberculosis. Next followed the demonstration by inoculation of the guinea pig, which is certain but too slow to be of diagnostic value. In this way the clear effusions of pleurisy are determined to be tubercular in nearly three-fourths of the cases. The value of tuberculin in the diagnosis of the disease in cattle is universally accepted. According to the report of Salmon, thus far we have yet to meet the first case which reacted and did not show tuberculosis upon postmortem examination. The value of tuberculin was slow of recognition in man because of various objections, one, that reaction may set in in the absence of tuberculosis. These cases are now explained by the existence of concealed latent depots. The objection of Klemperer to the effect that reaction will occur with every deposit, even in latent cases, is really only confirmation of the value of the test. The most serious objection, that of Virchow, that tuberculin awakens tuberculosis from latent sources and disseminates the disease, an objection which was caught up and echoed on all sides, has been found to rest on erroneous premises. All the individuals who have had the most to do with the use of the remedy disclaim any danger of this kind. Thus Penzoldt, Wassermann, Prior, Springthorp and Klein all speak of the absolute safety of the remedy in proper use. The speaker had himself used tuberculin every day in hospital and private practice for six years, in now nearly one thousand cases, and had never seen any kind of evil result. Most of his use of the agent had been, of course, in the small therapeutic dose. But in the larger quantity necessary to secure the test reaction he had come to consider it the best possible and a perfectly safe means of diagnosis. Koch declared that his own individual experience in the early diagnosis of tuberculosis in man in more than one thousand cases shows its perfect safety and puts the diagnostic value of tuberculin in recognition of the disease in man on the same plane as in animals. The action of the remedy is ill understood, notwithstanding all the work that has been expended upon it. Introduced under the skin, it produces a general leucocytosis and fever, but tolerance is soon begotten to the use of the agent, so that individuals who react to a few milligrammes become finally insensitive to one hundred times this quantity. The knowledge of the existence of this tolerance to a poison was known in antiquity, and the principle is utilized in increasing the antitoxic properties of blood serum. The old tuberculin neutralized only the toxins of the tubercle bacillus, but in this method superficial processes are detached and discharged while reabsorption takes place in the interior of organs. Unfortunately, the effect is in no case final, because of the fact that the remedy has immunizing properties only against the toxins. With the new tuberculin there is higher promise because it immunizes against the tubercle bacilli themselves. "I have used the new tuberculin for about six weeks in twenty selected cases. The time is too soon to say anything more than that the dose is well borne by these patients, the signs of improvement are more continuous and the patients, most of them individuals under treatment with the old tuberculin, are better suited with the new."

THE PUBLIC SERVICES.

NOTICE.—An Army Medical Board will be in session at Washington City, D. C., during October, 1897, for the examination of candidates for appointment to the Medical Corps of the United States Army, to fill existing vacancies.

Persons desiring to present themselves for examination by the Board will make application to the Secretary of War, before September 1, 1897, for the necessary invitation, giving the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from which they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal acquaintance, from at least two reputable persons, as to his citizenship, character and habits. The candidate must be between 22 and 29 years of age, and a graduate from a Regular Medical College, as evidence of which, his Diploma must be submitted to the Board.

Successful candidates at the *coming* examination will be given a course of instruction at the next session of the Army Medical School, beginning November 1, 1897.

Further information regarding the examinations may be obtained by addressing the Surgeon-General, U. S. Army, Washington, D. C.

George M. Sternberg,
Surgeon-General, U. S. Army.

Army Changes. Official List of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from June 5 to 11, 1897.

Capt. Robert R. Ball, Asst. Surgeon, leave of absence granted is extended two months.

Capt. Charles M. Gandy, Asst. Surgeon, now on duty at Washington Bks., D. C., will report in person, on July 1, 1897, to the governor of the Soldiers' Home near Washington, D. C., for temporary duty during the absence on leave of Col. William H. Forwood, Asst. Surgeon-General, and upon the return of that officer will rejoin his proper station.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the two weeks ending July 3, 1897.

P. A. Surgeon G. B. Wilson, detached from the "Yantic," ordered home and granted two months' leave.

Asst. Surgeon J. F. Leys, detached from the "Vermont" July 6 and ordered to the "Helena" July 7.

Asst. Surgeon C. E. Riggs, ordered to the "Vermont" July 6.

PAMPHLETS RECEIVED.

Columbian University Announcement for 1897-1898. Washington, D.C.

Experiment with the Serum Reaction as a Test for Typhoid Infection in Water. By Wyatt Johnston, M.D. Reprint *from the New York Medical Journal for June 5, 1897.*

Howard University Medical Department Announcement for 1897-1898. Washington, D. C.

Ichthyol as a Therapeutic Agent in the Treatment of Diseases of the Uterine Annexa. By Robert Bell, M.D. Reprinted from the Edinburgh Medical Journal for April, 1896.

Infant's Weight Chart. By J. P. Crozer Griffith, M.D., Philadelphia.

Program of the Annual Meeting of the Medical Society of New Jersey, 1897.

Northwestern University Medical School Announcement for 1897-1898. Chicago.

CHANGE OF ADDRESS.

Bowers, C. E., from St. Louis, Mo., to Wichita, Kan.

Campbell, A. W., from 215 Sangamon to 358 W. Adams, Chicago, Ill.

Devine, G. C., from Oregon to Chetek, Wis.

Ducker, J. O., from 100 State St. to 360 Erie St., Chicago, Ill.

Diemert, J. R., from 9½ Woodland Av., to 109 Ontario St., Cleveland, Ohio.

Jones, Philo E., from Mercantile to Atlas Block, Salt Lake City, Utah.

Kirkpatrick, T., from State House to 828 Kansas Av., North Topeka, Kan.

Lawrence, G. H., from Creston, Ill., to 910 W. Madison St., Chicago, Ill.

Lesan, Cassius T., from Mt. Ayr to Bedford, Iowa.

Lockwood, W. D., from Rock Port, Pa., to 723 Spruce St., Philadelphia, Pa.

McCreight, A. H., from Chicago, Ill., to Ft. Dodge, Iowa.

Montgomery, A. B., from Chicago, Ill., to Reynolds, Ill.

Ritter, C. L., from 846 Virginia Av. to 866 Virginia Av., Indianapolis, Ind.

Smolt, A. E., from Chicago, Ill., to Stillwater, Minn.

Strong, A. W., from Chicago, Ill., to Fort Atkinson, Wis.

Schenck, W. L., from New Castle, Colo., to 701 Brigham Av., Topeka, Kan.

LETTERS RECEIVED.

Ames, Delano, Baltimore, Md.; Adams, W. A., Fort Worth, Tex.; Atkinson, Wm. B., Philadelphia, Pa.; Ammonol Chemical Co., The, New York, N. Y.

Brittin, A. L., Athens, Ill.; Barnhill, J. F., Indianapolis, Ind.; Boston Filter Co., Chelsea, Mass.; Berger, L. A., Kansas City, Mo.

Crawford, A., Miles, Iowa; Courtright, F. E., Shawtown, Ohio; Coone, Barthena, Hanna City, Ill.

De Schweinitz, E. A. (2), Washington, D. C.; Dolliber-Goodale Co., Boston, Mass.; Dubs, R. S., Chicago, Ill.

Eastman, Joseph (2), Indianapolis, Ind.; Elkin, W. S., Atlanta, Ga.; Erwin, William H., Oak Grove, Mich.

Gittelson, S. J., Philadelphia, Pa.; Guiteras, Ramon, New York, N. Y.; Greason, W. B., Lathrop, Mo.

Hughes, C. H., St. Louis, Mo.; Hirschfelder, J. O., San Francisco, Cal.; Hoff, John Van R., Vancouver Barracks, Wash.

Johnston, Wyatt, Montreal, Can.

Knoff, S. A., New York, N. Y.; Kress & Owen Co., New York, N. Y.

Lerche, W., Ferryville, Wis.; Lewis, H. K., London, England; Lockwood, T. E., Detroit, Mich.

McCurdy, Stewart L., Pittsburgh, Pa.; Mills, Chas. K., Philadelphia, Pa.; Mizell, A. G., Humboldt, Ill.; Mather, E., Paterson, N. J.; Meacher, William, Portage, Wis.; Manley, Thomas H., New York, N. Y.; McBride, M. A., Tahlequah, I. T; Moloney, D. Monas, New York, N. Y.; Minaker, W. R., Onsted, Mich.

Ohio Medical University, Columbus, Ohio.

Parkinson, James H., Sacramento, Cal.; [illegible] Pope, Curran, Louisville, Ky.; Patterson, [illegible]

Reynolds, Dudley S., Louisville, Ky.; Bl[illegible] Reed, R. Harvey, Columbus, Ohio; Reed, [illegible]

Sternberg, George M., Washington, D. C.; Southern Medical College, Atlanta, Ga.; Stillman, G. B., Cleveland, Ohio; Scott, W. A., Swanton, Ohio; Sweet, C. L., Boise, Idaho; Squibb, E. H., Brooklyn, N. Y.; Slagle, Chas. D., Portsmouth, Ohio; Scott, Clifton, Des Moines, Iowa.

The G. F. Harvey Co., Saratoga Springs, N. Y.; Tyree, J. S., Washington, D. C.

Weaver, H. B., Asheville, N. C.; Woman's Medical College, Philadelphia, Pa.; Waters, G. M., Columbus, Ohio.

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ORIGINAL ARTICLES.

SERO-DIAGNOSIS IN TYPHOID FEVER.

Presented in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY WYATT JOHNSTON, M.D.
MONTREAL, QUE.

By his admirable summary, covering so thoroughly the general subject, Professor Welch has made much simpler the work of those who are to speak upon special divisions of the subject. In speaking of practical results I shall confine myself chiefly to my personal experience because it is with regard to that that I can speak most positively and which I feel most certain about. But I think where the results of one observer differ from those of another in this test one should be very careful in comparing the two, because very slight differences in technique, or interpretation of the phenomena observed will give a very different percentage in results.

My own experience consists so far in the examinations of somewhat over 600 bloods, of which more than half were from cases of typhoid fever. In these examinations and in my work I have been assisted very much by Dr. MacTaggart, of Montreal, resident pathologist of the General Hospital. Before covering the ground which Professor Welch has indicated as being a suitable field for discussion I might point out one or two directions in which the study of this reaction may be profitable aside from the question of the diagnosis of typhoid fever. There are other diseases which will give the reaction, cholera for instance, and, it is said, Malta fever and the bubonic plague. But both of these are rare diseases with which we have little to do. It seems to me that some other common diseases may give a diagnosis in this manner. With reference to typhoid, other applications of the test, such as the identification of doubtful cultures isolated from suspected water or suspected stools, might receive more study than they have. It would be foreign to the discussion to go into this subject, but some of the results of the preliminary studies which I have made in this direction have been extremely interesting, and very encouraging as showing a possible future for applying the test for the identification of the typhoid bacilli in suspected water, etc. We tried to utilize the clumping as a means of isolating the typhoid bacilli from mixed liquid cultures, and when one acts with media artificially infected with typhoid and colon bacilli the results are quite striking. One can produce clumping in the mixed bouillon of typhoid bacilli and colon bacilli, and one can filter this very much clumped culture through a filter of sand so that the typhoid will remain in the sand while the colon runs through the sediment. This can be seen very nicely by using this differential test on the sand and filter. The typhoid very largely remains in the sand, and the filtrate consists largely of colon bacilli. I have endeavored to apply this more in routine laboratory work, but have not yet succeeded in getting a definite practical method for routine use. This isolation might be of more value if combined with some other method.

Another experiment was to inoculate with a culture, and test for typhoid in the animals after about one week. In some cases I was able to obtain the reaction where the quantity of the typhoid material originally introduced was very small, represented by one part of bouillon culture to four millions of water, containing eleven thousand bacteria to the cubic centimeter. These experiments, however, I do not think are by any means as severe a test as one would find in natural unintentional infection of water, for where you artificially put in typhoid it is relatively easy to get at it again. I mention this simply as a field of possible utility.

With reference to the application of the method to the diagnosis of disease by using pure cultures, the field of application seems to have been transformed by advanced steps. Prior to Widal's discovery the impression was general, and I shared it, that this was an exceedingly complicated subject and very difficult to take up. The methods of Pfeiffer certainly did not sound easy. Widal, I think, has introduced marvelous clearness into the method. The whole thing became clear and comprehensible to the ordinary mortal, and has been largely carried out since. It was thought to be a bedside or clinical reaction, but subsequent events have shown that while it may answer well as a clinical test, perhaps the best results can be obtained in laboratories, and sending of material taken for diagnostic purposes to the laboratories to be examined there, is the best procedure.

With reference to the general application of the method, my own small share in the matter has been in the direction of trying to apply the principle of what I may call wholesale-public-health diagnosis, as introduced by Professor Biggs and Dr. Park. The object was to reduce to the minimum the trouble of the technique which one would expect of a person who had charge of a case, and transfer that, as much as possible, to the laboratory; so I made use of the fact which Widal had established, that drying of the blood did not interfere with the reaction, and applied it to the use of dried blood for the test. Whether this is the simplest way for transmitting material for examination depends largely upon the conditions of the case. As bacteriologist of the Province of Quebec, which comprises about two-hundred square miles, much of it sparsely settled, I think the method has distinct advantages. We have seen cases from Murray Bay, where the doctors are prompt in sending cultures. They send them on paper. We find that a great assistance in our work. I do not say that it is the method which should be used in hospital practice or city practice where the facilities for transmission are greater. It is a very simple thing to send the dried blood by post, and in our work we use the postal facilities very largely. So that, as to the method to be employed, I think Professor Welch has stated the matter extremely well, that it should be as simple as possible, but we must have an accurate technique. The attention to the technique has been, I think, very largely in the direction of quantitative estimation. The dried blood method at first did not seem to offer a promising field for quantitative estimation, and I remember feeling rather discouraged because other people were getting quantitative results and I could not. However, by the use of the hemometer, testing the hemoglobin by the ordinary coloring method in the solution of dried blood, one would get results corresponding very closely to what he would get in a control drop of blood which was not allowed to dry. Of course the longer the drying was continued the less accurate the results were. But I found that by this dilution I was not able to diagnosticate cases which I could diagnosticate without the accurate estimation of the dilution. A little practice will enable one to get a distinct reaction with a high degree of dilution. I do not say that it gives as good scientific results, but after using both methods I found that I could get just as good results without the dilution as with high dilution. But instead of the dilution, we used a special kind of culture, and I found there was a difference in this respect between serum and a solution of the entire blood. I think that is a point of some importance, so that what I say of blood solution may not hold true of serum. Blood solution appears to be more liable to give clumping, a false clumping, than serum. This is especially the case with typhoid cultures where the movement is very active, and for this reason in using dried blood it is better to get cultures where the motility is gentle. There is not much motility where we use old cultures. We found that out by accident. At first we used old cultures and got good results. It was only when we changed cultures that we got bad results, and on returning to the old method we found out what was the cause of success.

The question of the alkalinity of the culture is, I think, one of considerable importance, and one to which little reference has been made. The alkalinity has a marked effect on the clumping. A slightly acid medium may give no clumping, but by rendering it slightly alkaline clumping will again take place. The bouillon in which the culture is made seems to exercise some influence. Recently we found an excessive amount of spontaneous clumping taking place in our cultures and we were able to trace it apparently to the fact that the laboratory bouillon was made more alkaline than formerly; it was strongly alkaline instead of slightly alkaline. A culture which gives a very heavy growth, which does not work well with a bouillon of twenty-four hours, does not work well with the dried blood method, although it may with the serum. And if there is any deposit with the dried blood method in twenty-four hours, it does not work well so that one can tell, if he is using the culture every day, whether it is in good condition or not. It is important to get the bouillon in a proper state of alkalinity, and my object has been to get cultures into such condition that with this method they will not react to other bloods and will act decidedly to typhoid bloods. Although no positively accurate method may be obtained, yet one may get a method which is qualitative and reliable for the greater percentage of cases.

With reference to quantitative estimation, I think the variations produced by the condition of the culture and the alkalinity of the medium may have an influence in determining the quantitative result. There must be a fixed basis for the quantitative result and if this is going to react differently with different cultures there will be a shifting base.

With reference to the B. coli reaction, referred to by Dr. Welch, I find that also of considerable use in diagnosis in doubtful cases, where there are symptoms like typhoid but no reaction, or where there was a doubtful reaction blood. Such bloods I found generally to give a very decided reaction with the colon bacillus. This I interpreted to be due to B. coli inflammation, and it seems likely the colon bacillus in these cases is capable of producing a distinct infection which will give rise to symptoms very much like typhoid.

Definition of the reaction perhaps deserves more attention than it has received. What one man would call a reaction perhaps another man would say was not quite complete, so that uniformity of terms would be desirable. I believe that the coincident occurrence of the gradual cessation of motion and clumping is the characteristic feature; but if motion goes on and the clumping is not ultimately typical, that looks very much like pseudo-reaction. If there is clumping with incomplete loss of motion, it is perhaps to be regarded with suspicion; and I think in doubtful cases should not be considered so seriously as to upset the whole theory, borne out by such an enormous number of cases, as to the specific value of the reaction. Perhaps the selection of cases is something which deserves consideration, for one's results depend very largely upon whether he takes typical cases or doubtful cases; and I think a corroborative examination by means of bacteriologic tests in doubtful cases would give valuable additional evidence. Personally, I have never yet got a typical reaction in a case in which there was not strong ground for believing it was typhoid fever. I have had one case of typhoid fever in which the reaction was absent as far as I could make out, both by the dried blood method and the serum method, but that case was seen only in the later stage. It ended in recovery. Therefore we are not certain as to the nature of the disease. But possibly the reaction may be absent. It is not infrequently delayed into the late stage so that repeated examinations are necessary, and one can utilize for statistics only cases in which there have been abundant chances for observation and reexamination. I think these questions will be decided by the clinicians, not by the laboratory men, because so much depends upon the diagnosis of the case being accurately made.

DISCUSSION.

DR. N. S. DAVIS, JR., Chicago—This question of serum test has been one of great interest to me the last year, and fortunately soon after Widal's paper first became generally known I succeeded in interesting our resident physician, Dr. Miller, in making the examination in all typhoid fever cases which entered the hospital the last winter. He has carefully carried out the various methods, and the conclusions he has reached correspond very closely with those given by Dr. Cabot in his general summary. For example, he found in about 90 per cent. of the cases of genuine typhoid fever a positive reaction; in 6 per cent., of the cases he has found a partial reaction, not a perfectly positive one; in 3 per cent. there was no reaction whatever.

I remember one case under my observation a few weeks in which the febrile symptoms were so mild that we would scarcely have regarded it as a case of typhoid fever. There occurred, however, after the patient had been in the hospital four or five days characteristic typhoid stools. The reaction had been obtained in a very pronounced manner immediately upon the patient entering the hospital, which was on the third or fourth day of his illness. The course of the disease in that case was short, lasting only about two weeks. In other instances the reaction was not obtained until late in the disease. Of the cases examined not of typhoid fever, Dr. Miller found the reaction in 2.5 per cent. In part of these cases there was a history of prior typhoid fever, but not in all of them. It is evident, therefore, that while this reaction is very frequently present in typhoid fever, it is not an absolutely constant occurrence.

I feel inclined to criticise the tendency to call the reaction the typhoid fever test. Would it not be better to call it a symptom of typhoid fever? We have other symptoms of typhoid fever upon which we have relied in times past very largely in making the differential diagnosis where diagnosis was difficult, for example the occurrence of rose spots. Yet we know that rose spots occur occasionally in other diseases than typhoid fever. We know they do not occur in all cases of typhoid fever. Yet when we find rose spots in connection with other symptoms we make our diagnosis. We rely upon the *tout ensemble* rather than upon the individual symptoms. Therefore, would it not be better to regard the serum reaction as a symptom of typhoid fever rather than as a test, and take it only in connection with other symptoms, and not look upon it so exclusively, as some seem inclined to do, as a test pure and simple for typhoid fever?

Dr. H. A. **West**, Galveston, Texas—I wish to make one remark with regard to the importance of this test in sections of the country from which I come. It appears to me that it may be the possible means of settling some vexed questions in my section of the country with regard to the diagnosis of fevers. While in my own mind I have been satisfied as to the extensive prevalence of typhoid fever throughout Texas, and believe that the continued fevers which fail to yield to the salts of cinchona are typhoid fever, yet there is a division of opinion and the question is far from being settled. There is a class of practitioners who do not regard this continued fever as typhoid. They do not see the eruption; they do not find the ordinary classical symptoms of typhoid fever; they call it slow fever, catarrhal fever, simple continued fever, thermic fever, etc. There is another class of practitioners who call them cases of continued malarial fever. While they acknowledge the fact that they last three or four weeks, sometimes six or eight weeks, in spite of daily doses of 20 to 40 grains of quinin given during that period, still it is claimed that they are cases of malarial fever. The question came up at the State Association, and I regard it as one of the most important questions before the South or the country at large. From what I have heard this evening, I do think this method may be the means of settling that vexed question. I propose to carry it out to the extent of my ability, but I may say that the cases which I see in Galveston are classical typhoid fever with eruption, and running the course which typhoid fever runs the world over.

Dr. J. B. **Herrick**, Chicago—I will mention some of the results obtained in about one hundred cases by Dr. George H. Weaver in the laboratory of Rush Medical College. In general his results have been confirmatory of those we have listened to today, but in two cases, shown postmortem to be typhoid, the blood examination during life and after death was negative. Now it may be a peculiar coincidence that in these cases there was also tuberculosis. One patient, an adult negro, under my own observation, died of typhoid fever as nearly as we can judge, in the fourth week, and postmortem we found typical healing typhoid but also a tubercular gland opening into a vein serving to explain distinct tubercular foci. In the second case, not under my own observation, a somewhat similar finding was made. This, I say, may be a coincidence, but it opens up the question whether this serum reaction will be modified by mixed or secondary infection. I believe other observers have reported on a few cases of mixed infection where the reaction has been positive.

RELAPSES IN TYPHOID FEVER.

Presented in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

BY WILLIAM OSLER, M.D.
BALTIMORE, MD.

One of the most distressing incidents which we may meet in typhoid fever is the occurrence of a relapse after we have guided the case safely to convalescence. The temperature has become normal, the patient is happy and hungry, the relatives contented, the doctor congratulates himself that he has cured a case of typhoid fever, and then comes the relapse and the tempest of the soul, so to speak. In the first place it is always a source of congratulation to the doctor that he is not personally responsible for the relapse. The condition under which relapse occurs is not, I think, in the large majority of cases within the control of the physician. Errors in diet are in some instances held responsible for it, but only in a very limited number of cases can the diet be held to be definitely responsible.

It is important in the first place to define accurately what a relapse is. I think the term should be limited exclusively to reinfection after a distinct and definite period of apyrexia. It is quite true that that definition does not include a certain number of cases which have been termed the intercurrent relapse, and we have a certain number of cases in which the temperature falls not quite to normal, say to 100 degrees F. or the morning temperature to 99.5 degrees, while for three or four days there is a distinct lull and then a recurrence of the symptoms. One is often in doubt whether such a case should be positively called a relapse or not; but such cases should be grouped as intercurrent relapses and not as true relapses. The occurrence of a relapse is an indication that immunity in typhoid fever is slowly acquired, and not fully acquired when apyrexia is reached.

The sources of the reinfection are as yet unknown, just as are the conditions under which relapse develops; but of the possible sources of reinfection we may mention the lingering of the typhoid bacilli in the mucous membrane and in the adenoid tissues of the intestines. We have been told today by Dr. Richardson, that even after a considerable period of apyrexia typhoid bacilli have been found in the stools. Then it is possible that the source is in the mesenteric glands and the spleen—in the latter region we know that typhoid bacilli remain for a very considerable length of time after convalescence. Chiari recently made an interesting suggestion that the typhoid bacilli remain in the gall bladder, persisting after a long period of time, not only for weeks but even for months, and that the organisms in the gall bladder may be the source of reinfection. He has found typhoid bacilli in the gall bladder in nineteen out of twenty-three cases, a much larger percentage than has been met with by other observers. But the persistence of the typhoid bacilli in the bile passages is well recognized, and he suggests that the taking of an extra amount of food and gastric disturbance may be associated with the passage of a large number of these bacilli from the gall bladder into the intestines.

The evidence of relapse is very different in different series of cases. Up to Aug. 5, 1896, 500 cases of typhoid fever were treated in the wards of Johns Hopkins Hospital and forty cases had relapsed, or 8 per cent. That is the same percentage as is given by Liebermeister in about the same number of cases. It is a very much larger percentage than that given by Murchison in a larger series of cases—in two or three thousand cases there were only 3 per cent. of relapses. Other percentages run up as high as 20, but older observations, and even more recent ones, show that the percentage of relapses varies very much indeed. The relapses may not be single but double, now and then triple, and a few cases have been reported in which four or five relapses occurred. We have only had a few cases in which two relapses occurred, none in which there were three.

As illustrating the extraordinary length to which a case of typhoid may drag itself with only two relapses, I may mention a case which was admitted in October, 1893. The patient was a doctor, admitted to a private ward with well characterized typhoid fever. The temperature became normal on the forty-first day. There was then complete apyrexia for twenty-three days and the patient had arranged with relatives to be taken home. But fever developed and persisted forty-one days, the temperature reaching from 104 to 105 degrees F. Then there was a period of complete apyrexia for forty-two days, six full weeks without fever. Then there was fever for fourteen days, without rose spots, it is true, but with furred tongue and moderately high fever and with some abdominal distension. So that altogether the original attack with the two relapses covered a period of very nearly six months.

The mode of onset of the relapse is interesting. It is not always, as stated in most works, exactly like the original attack—a stepping up of the temperature each day. It may, in fact, begin abruptly, as in the case which I have just mentioned. The onset of the first relapse was with a series of chills, and a maximum temperature of 105.5 degrees was reached within twenty-four hours of the beginning of the fever. Those cases are not very uncommon. In other instances the relapse is the exact counterpart of the primary attack, the temperature rising gradually, a degree or a degree and a half daily.

Another question has been raised to which I would like to refer, namely, whether the Brand treatment has anything to do with the increased number of relapses. Our percentage is, as you have noticed, not very high, and I do not think one can state that hydrotherapy has any influence in promoting relapses. There are many series of cases with a larger proportion of relapses in which hydrotherapy had not been carried out. Indeed, in certain series in which the relapses have been up to 15 or 20 per cent., the ordidary expectant method of treatment, or perhaps more correctly, the various medicinal plans of treatment have been carried out.

FURTHER REPORT OF CASES TREATED WITH ANTI-TUBERCLE SERUM.

Read in the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY PAUL PAQUIN, M.D.

ST. LOUIS, MO.

In presenting this report to the American Medical Association I am not mindless of the many objections which have been presented against sero-therapy in this disease, and of the numerous criticisms which have been passed upon it, and of the feeling of apprehension and doubt which still pervades the minds of many of the profession. I am fully aware that experimental tuberculosis in small animals has failed to accomplish to the degree expected, the kind of so-called cure, hoped for. Nevertheless, I again take the liberty of presenting a report of cases treated with serum, with the results obtained since the last months of 1894 to this date. Naturally, I must leave out a large number of cases of which the reports are incomplete, or otherwise unsatisfactory for the reason, on the one hand, that some physicians did not keep the proper records, and on the other, there was in certain cases some doubt of the nature of the disease and of the results obtained. The cases reported here are such as I know had tuberculosis, and, I feel convinced, have experienced the results I shall mention.

In January, 1895, I presented to the St. Louis Medical Society a report of the results obtained in twenty-two St. Louis City Hospital patients, who had been treated exclusively with serum for three months. The good results in certain classes of patients were so uniform that the presentation of the matter was warranted at the time. The experiments were interrupted there by change of administration and the patients scattering I was able to keep track of only three of those improved, all of whom are still living and back at work apparently well, although I do not yet use the designation cured.

A second report of entirely new cases was made to the St. Louis Medical Society in March, 1896, and included the recovery of two *acute* cases of pulmonary tuberculosis, who had been in the care of three leading physicians of Missouri, who had given as their opinion that there was no hope. It also included the recovery of fourteen cases of chronic pulmonary tuberculosis. In that report I made the following statement: "That of 100 cases treated in a period of eighteen months, the following results obtained: In the first and second stage, as understood in general practice, 14 recovered; in the second stage, improved or checked or still improving at the time, 26; among these 26, 12 seemed to have really recovered, although the time had not been long enough to warrant positive assurance; there had disappeared from observation, in all stages, 35; died during treatment, begun at the third and fourth stages, including 10 moribunds who insisted on trying the treatment, 25. In the same year, Dr. Hayden of Evansville, Ind., reported 4 cases of tuberculosis; all improved and 2 apparently recovered. Besides these. Drs. L. L. Shropshire, San Antonio, Texas; Dr. William Miller, Boerne, Texas; Dr. Hoell Tyler, Mentone, Cal.; Dr. H. S. Lewis, New Orleans, La.; Dr. E. L. Mitchell, Carbondale, Ill.; Dr. J. M. Allen, Liberty, Mo.; Dr. A. G. Deardorff, San Francisco, Cal.; Dr. J. L. Wiggins, E. St. Louis, Ill.; Dr. J. L. Dunwoody, Cripple Creek, Colo.; Dr. W. H. Prioleau, Summerville, S. C., reported the recovery of ever twenty-five cases and marked improvement in over one hundred, while at least seventy-five physicians have reported improvements, of various degrees, in over one hundred cases impossible to record, most of them hopeless from the beginning.

In September, 1896, I presented a report to the Virginia State Medical Society, of a total of 226 cases of tuberculosis. I quote from this paper:

Class.	Pulmonary Tuberculosis.	No. of Cases.
1.	Destructive broncho-pneumonia with cavities	37
2.	Destructive broncho-pneumonia without recognizable cavities	66
3.	With diffuse febrile pneumonia with or without a destructive process	19
4.	With diffuse non-febrile broncho-pneumonia with or with- [illegible]	19
5.	W[illegible] le broncho-pneumonia	[illegible]
6.	W[illegible] stic broncho-pneumonia	[illegible]
	Diagnosis not reported clear enough for classification	[illegible]
	Hip-joint tuberculosis	[illegible]
	Laryngeal tuberculosis	2
	Ovarian tuberculosis	1
		226

In every one of these cases the diagnosis had been verified microscopically. During the treatment of these 226 cases the following conditions obtained:

Effect of serum on fever: 60 subsided, 56 reduced, 26 stationary, 84 not recorded.

Effect of serum on night sweats: 69 subsided, 17 unchanged, 140 not recorded.

Result of serum on weight: 125 increased, 15 unchanged, 27 decreased, 59 not recorded.

Result of serum on strength: 154 increased, 9 unchanged, 24 decreased, 39 not recorded.

Result of serum on appetite: 114 increased, 15 unchanged, 31 decreased, 66 not recorded.

Result of serum on local signs: 40 disappeared, 58 mitigated, 28 unchanged, 100 not recorded.

Result of serum on tub. bacilli: 40 disappeared, 103 reduced, 7 altered, 76 not recorded.

Result of serum on general well being, exclusive of the 40 recoveries: 145 improved; 9 unchanged, 32 not recorded.

Number of recoveries that seemed complete and permanent	40
Number of apparent recoveries with existing lesions (cavities) in statu quo	3
Number of improved capable of performing usual duties	41
Number of improved to a lesser degree	69
Number of deaths reported	32
Number of cases disappeared from observation or under various treatments	41
	226

As to the pulmonary cases, the extent, stage and importance of the conditions at the beginning of were as follows:

In Class	1	there	were	20	cases in	advanced	stage;	3	in early	stage
“	2	“	“	33	“	“	“	6	“	“
“	3	“	“	12	“	“	“	0	“	“
“	4	“	“	9	“	“	“	0	“	“
“	5	“	“	12	“	“	“	3	“	“
“	6	“	“	7	“	“	“	1	“	“
				93				13		

Not classified accurately enough for satisfactory description of the stage 120

I beg to say today that those cases reported as having recovered, dating back from one to three years, are still living and apparently well. None of these cases recorded as having improved greatly have succumbed yet, but some of those reported as having up to that time remained unchanged or mitigated or slightly improved, have since died. I have been unable to get an absolute record as to the number of these, although we are using a method of tabulation and clinical report chart which we send out to physicians using the serum. It seems that not one of the cases reported by doctors as having recovered, or in which the disease seemed to have been arrested permanently, have had a relapse, so far, although most of them remain in an unfavorable climate where the disease originated, as in St. Louis, for instance.

I beg now to present a report of 67 cases, which were not included in the foregoing, and which have been treated in the last year, and purposely recorded since the last meeting of the AMERICAN MEDICAL ASSOCIATION, concerning which I have direct information.

Total number of cases 67.

Effect on fever: 17 subsided, 22 reduced, 5 increased, 23 not recorded.

Effect on night sweats: 26 subsided, 4 unchanged, 27 diminished, 10 not recorded.

Effect on weight: 40 increased, 11 unchanged, 4 decreased, 12 not recorded.

Effect on strength: 34 increased, 10 unchanged, 4 decreased, 19 not recorded.

Effect on appetite: 34 increased, 10 unchanged, 4 decreased, 19 not recorded.

Effect on local signs: 17 disappeared, 22 mitigated, 27 not recorded.

Effect on tubercle bacilli, 17 disappeared, 35 reduced, 15 not recorded.

Number of recoveries that seem complete at present	17
Number of improvements to a considerable degree	35
Improvements to a lesser degree	11
Deaths	4

Thus the grand total of cases recorded above properly enough for reliable report is, not including the various doctors' reports herein mentioned 293

Of these, have recovered	57
Apparent recoveries with lesions in statu quo	3
Improved capable to perform again usual duties	76
Improved to a lesser degree	80
Deaths reported (probably some not known)	36
Cases disappeared from observation	41
	293

This report does not include the numerous cases in which serum was tried in moribunds or in more favorable cases for too short a time. Nor does it include a number of cases improved in the last few months by using serum by rectal injection.

In concluding this report, I wish to say that too much is expected of sero-therapy in tuberculosis, or of any treatment for that matter. It can never be possible to arrest consumption when the tissues are so destroyed and their generative energies so enfeebled that they are beyond the power of stimulation. It is only in the early stages that one may expect the best results (and in the early stages it is a most efficacious remedy). One great trouble we have to deal with is mixed infection and this can be reached only by the use of antitoxins prepared specially for the germs producing the complications, assisted occasionally by other measures. Tubercle antitoxin can not act directly against microbic complications. Furthermore it should not be forgotten that the destructive process of tuberculosis is so great, so comprehensive, that no means of wise special or general treatment should be spared to assist sero-therapy or any other special treatment in the work of repair. Most of them were cases of an experimental character. The cases which I have submitted here have been treated almost exclusively by the use of serum.

I am fully convinced that no one is warranted today in proclaiming the absolute and exclusive curative properties of an exclusive specific alone in tuberculosis of all kinds. Every case must be treated on its merits, considering in each the symptoms, lesions, predispositions, inherited conditions and the various susceptibilities present. Sero-therapy is nature's remedy and offers the greatest assurance of benefit in the subjugation of the specific cause or causes, but in most cases, as just stated, it should be supported in its splendid work by such hygienic, dietetic and medicinal measures as are considered wise for each individual case.

THE CAUSE AND MECHANICAL TREATMENT OF SUBLUXATION OF THE KNEE-JOINT.

Read at the Third Annual Meeting of the American Academy of Railway Surgeons held at Chicago, Sept. 23, 24 and 25, 1896.

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In order that the treatment of subluxation of the knee-joint may be properly carried out its cause must be thoroughly understood.

Subluxation of this joint is an under-dislocation of the head of the tibia back of, or posterior to, the condyles of the femur. Such a deformity does not exist as a result of chronic disease when the femur is kept parallel with the tibia, during tubercular, synovial, traumatic, gonorrheal and other inflammatory diseases in and about the knee-joint. It can only result from direct violence and from faulty position during the course of treatment.

The series of experiments has been carried out to determine the relative power of the flexor and extensor muscles of the leg, as well as to determine at what angle, in flexion, the flexor muscles equal the extensors in power. We must remember that extension of the leg is limited to a parallelism with the thigh, and that flexion is only limited by the resistance of the calf with the thigh muscles, or through an arc of 90 degrees. In extension the flexors and extensors are antagonists, and oppose each other with equal advantage, so far as the position of the bones themselves are concerned, because they both have direct action. The advantage, however, is in favor of the extensors, because they are always more powerful. When the leg is flexed the extensors lose their power of direct action and act over a pulley. This pulley is formed by the action of the quadriceps extensor femoris, patella and ligamentum patellæ over the condyles of the femur. As the leg is flexed the extensors lose power and the flexors gain. In order to determine the power of these sets of muscles and to more particularly determine at what angle of flexion the flexors equal the extensors, experiments have been carried out.

Without giving in detail the various experiments which were made upon different individuals, it was found that the extensor muscles upon an average had a resistance of thirty-two pounds, and the flexors twenty-four pounds and that at an angle of about 35 degrees the resistance of the extensors was reduced to twenty-four pounds. This shows that the extensors and flexors have equal power when the leg is flexed to an angle of 35 degrees. A slight variation from the above is found in different individuals.

The experiments were carried out by the use of a goniometer, a pair of spring scales, and four hooks on the jam of a door, one on either side opposite the knee and the other two below these near the floor. To test the extensors, a tape is secured to the hook in front of the knee and thrown around the knee above the joint. The scale is hooked to the hook back of the foot, and another tape is thrown over the ankle and the free ends passed through the ring of the scale. With the leg in extreme extension the tapes are drawn through the ring of the scales. The scales will first register the extreme power of the extensors, but as it is drawn back to about 10 degrees it requires less force to make flexion, hence, a reduction on the scale dial.

To test the flexors, the scales are placed in front of the foot and the knee secured from the hook immediately back of it.

It is quite customary to treat the diseased conditions of the knee-joint in flexion, the degree of flexion being determined by the attending surgeon. Some reasons given for this are that it places the leg in a better position for use during after years, or it is more comfortable to the patient, etc. All of the reasons given are fallacious and founded upon anything but sound reasoning.

In the case of traumatic and other forms of synovitis it is probably true that a greater area of synovial surface is included between the heads of the bone and semilunar cartilage. Such a reduction in actual surface pressed upon could not diminish the pressure, but would place the leg in a less secure position and thus increase muscular spasm and as a result increase intra-articular pressure.

It must be remembered that all muscles which pass over, or the tendons of which pass over or control the action of a joint in inflammation, are in a state of spasmodic contraction. This increased action on the part of the muscles is an effort on the part of nature to protect the sensitive joint. The deformity which follows is in the direction of the most powerful muscles, or sets of muscles.

In hip-joint disease it is flexion, adduction, or abduction. In tarsal disease it is valgus, varus, flexion, extension, etc. In knee-joint disease it may remain normal, as it generally does in diseases of the shoulder or wrist, so long as the leg is kept in a position favoring this. Just as soon, however, as the flexors have a greater power than the extensors we have an increase of flexion.

As a result of my experiments an approximate estimate of the muscular power showed that the flexion at an angle of 45 to 50 degrees, the flexors had absolute control of the leg. This will admit of two things, an increase of flexion and a tendency of the head of the tibia to glide further back under the condyles. This is not only correct theoretically, but it is borne out clinically and has no doubt been observed by many of my hearers.

I have thus dwelt at length on the cause of the condition under consideration in order that the treatment might be preventive rather than that we be called upon to correct the deformity after its existence.

The treatment of subluxations may be summed up briefly as follows:

It must first be determined whether true or false ankylosis exists, whether the dislocation is partial or complete. In true ankylosis a complete section of the bone must be made either by the use of chisels or saw, and if the relationship of the bones can not be restored without it, a wedge-shaped section should be made, the bones brought together and or otherwise secured.

In cases of ligamentous or false ankylosis with a partial subluxation, *brisement forcé* with tenotomies of the hamstring tendons is generally sufficient. The most difficult cases to manage are those where the adhesions are more or less firm and a complete luxation of the bones exists.

Tenotomies of the tendons will free the lower portion of the head of the tibia, but great force does not as a rule restore the joint surfaces to a normal relationship. It is quite possible, after tenotomy, to bring the leg parallel with the thigh, but it will be found that the leg is upon a lower plane than the thigh. This is due to the fact that the head of the tibia does not slip down and forward upon the condyles, but instead the relationship of these bones are not disturbed.

Immediate reduction of subluxation of the knee-joint is prevented: 1. By the adherent patella and synovial membrane to the condyles. 2. By the impinging of the anterior portion of the head of the tibia against the condyles. In cases where the hamstrings are not cut this burrowing in of the bones upon each other is much greater, and an immediate reduction is less likely to be effected. Gradual and continuous leverage offer the best means for correcting the deformity mechanically. In this degree of deformity a rapid cure can not be promised. except by a radical operation.

A complete correction mechanically must not be attempted at the time of the practice of *brisement forcé*, but instead the leg should be carried forward to an angle that would permit a gradual correction of the subluxation. If plaster of Paris is used as a support, it should be reapplied every ten to fourteen days.

DISCUSSION.

Dr. Mayo—Dr. Gillette of St. Paul, in a number of cases, has broken up the adhesions by means of great force, using some form of mechanical apparatus in one sitting and without tenotomy. I have myself been afraid to apply this extreme degree of force, and, if the deformity is sufficiently great, much prefer to make an osteotomy of the femur after the method of Macewen; this, it appears to me, gives the best results with the least loss of time and danger. The mechanical apparatus of the doctor I believe would succeed better in the hands of the inventor than with the rest of us. In my experience I have seldom been able to succeed with another man's splint as well as does the inventor himself, and as a rule do better with the plaster of Paris cast.

Dr. Hawes—I wish to take exception to one statement in the paper; no mention is made of complete reduction of the subluxation at one sitting. I think the best result I ever had was where it was necessary for me to use force; I actually tore the skin in the popliteal parts. The splint I have been accustomed to use has two bars on the outside and one inside, extending from the inside of the thigh to the heel and outside to the heel and carrying the bandage around it all, behind the tibia. It seems to me I ought to get better results than I would with this splint.

THE DIAGNOSIS OF MALARIA.

BY ARTHUR R. EDWARDS, A.M., M.D.

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The diagnosis of malaria, like its pathogenesis, has a scientific life of scarcely two decades. The subject has been roughly handled since an acquaintance with its microscopic diagnostic methods has reached the general profession from the laboratories of scientific biologists and clinicians. As in all newly developed methods, medical and otherwise, there is a tendency to swing from one extreme to the other. Great skepticism greeted Laveran's initial reports that certain parasitic elements existing in the blood of malarial patients and hitherto confused with pigment-bearing leucocytes, were the cause of malaria. The general skepticism of Laveran's colleagues is now superseded by equally universal credulity. While previously no parasites were admitted, now they are even confused with the constituents of the normal blood. Five years ago the existence of malaria in Chicago was denied, while today many vague diseases, especially obscure or obstinate fevers, are diagnosticated malaria.

I. DIAGNOSIS OF THE EXISTENCE OF MALARIA.

(*a.*) *Positive blood findings*, i. e., the detection of the plasmodium of malaria, establishes the fact o malaria, since malaria is always caused by the parasite, and again the organism is almost always found in malaria and in malaria only. A few microscopic examinations will convince the greatest skeptic. It must not be forgotten that, in certain instances, two diseases may occur simultaneously. We have seen malaria in conjunction with various ancient heart lesions, ulcerative endocarditis, pulmonary tuberculosis, chronic nephritis, although never with typhoid fever. These coincidences are, however, infrequent, and the presence of malaria plasmodium makes possible positive differentiation from other diseases, e. g., the frequent error of overlooking or misinterpreting an incipient pulmonary tuberculosis attended with chills. Atypical fevers, associated with chills and sweating, which have few or dubious local findings and are therefore difficult of diagnosis, can at least be differentiated from malaria; for example, analagous typhoid, septico-pyemia occulta, generalized miliary tuberculosis, febrile gastritis, cholecystitis suppurativa, central pneumonia, deep-seated sarcomatosis, ulcerative endocarditis, etc.

(*b.*) *Negative blood findings*, in suspected malaria, are not definitive from one examination. Not infrequently is more than one microscopic search necessary for the positive exclusion of malaria. While suggestive, then, a single negative finding is far from conclusive. The parasites may be indistinguishable in the first few days of the disease. In certain forms they swarm in internal organs, avoiding the peripheral circulation; and lastly, in chronic and recurrent types they are found with great difficulty. Sometimes visceral (splenic) puncture is needed for their detection.

(*c.*) *Fallacies.*—Certain deformities in the red blood corpuscles are often mistaken for plasmodia, *e.g.*, crenations, poikilocytosis and vacuole formation. Not only can the more intimate structure of the red blood discs retract, simulating plasmodia, but the exterior of the hemacyte is far more plastic than is commonly acknowledged, even to the extent of protruding pronounced pseudopodia-like processes. These are but too frequently mistaken for parasites, being found in very many instances of apparently otherwise normal blood. Vacuole formations are characterized by their sharp contour and high luster.

Melaniferous leucocytes are readily distinguishable from the plasmodia by their large nuclei and by their ameboid movement, always absent in adult parasites of equal size. Unstained spores may be confused with the blood plaques, which are, however, structureless and contain no pigment. An Austrian pediatrist lost a docentship for reporting as malaria cases whose blood preparations afterward proved to contain only blood plates and no plasmodia. Coagulation products have been confused with flagella. Many of the small dots seen in malaria which resemble micrococci and were mistaken for such by the earlier Italian observers are similar to those found in most anemias and described by Ehrlich as degenerative changes.

II. DIAGNOSTIC TECHNIQUE.

Complex methods of staining and counterstaining the parasite have been in vogue, but the simplest and most accurate is the direct examination of the freshly-drawn unstained blood, a method we have used with entire satisfaction for several years. In this procedure injury to the corpuscles and staining of the blood plaques are obviated.

The lobe of the ear is cleansed, pricked and a quite small drop is gently expressed. A clean cover glass is held in a pair of forceps to avoid the heat and moisture of the hand, and is carefully brought in contact with the top of the drop. The heat and moisture of the hand or rudely placing the cover against the drop favor imperfect spreading from precipitate drying of parts of the blood. Rubbing the slide well facilitates equable spreading of the blood. Examination is best made with an oil one-twelfth inch immersion lens, although Laveran used lenses of lower magnification. Permanent preparations are procured by allowing the covers to dry. to remain half hour in equal parts of absolute alcohol and ether and by painting with filtered eosin and methylene blue. The use of stains is not usually

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advisable, since they obscure the otherwise more brilliant microscopic findings, they act as protoplasmic poisons, abolishing both the ameboid movement of the parasite and the highly characteristic vibrations of its pigment, and finally, they stain the blood plates and coagulation products, thereby confusing the findings, particularly for the unwary clinician.

III. THE DIAGNOSIS OF THE TYPE OF MALARIA.

It is impossible to enter here into the detailed differential morphology of the malarial parasites. Blood examination, however, demonstrates not merely the fact of malaria but also its types, since the various clinical forms of the disease correspond to zoölogically distinct, immutable species of parasite. Determination of species embraces more than purely biologic interest; it declares also the prognosis as in the pernicious forms and designates the treatment, as arsenic in the tropical types. Councilman stated several years ago that in intermittent fever the parasite was seen within the red blood corpuscle, while in remittent fever or in malarial cachexia it was frequently seen without the same or in elongated forms and crescents. Crescents augur relapse. The presence of segmentation forms predict an imminent or incipient paroxysm. The alleged detection of plasmodium is often doubted by us, since it is not uncommon to hear practitioners state that they have found Laveran's organisms an error at least in species determination.

In general terms, the number of parasites found in the blood corresponds to the severity of the attack, although Antolisci, and others with him, believe the large spore-producing bodies remain largely in internal bodies.

Relative exceptions to this rule exist.

(*a.*) *Diagnosis of type from motility.*—In the ordinary tertian parasite there is lively ameboid movement in the young and middle-aged forms. In the quartan form there is slight movement in the young parasite. In the estivo-autumnal type it is variable, often very active.

(*b.*) *Diagnosis from pigment.*—In tertian malaria the pigment is pale and yellowish brown, is fine, and in the young forms is most active, or "swarming"; it accumulates toward the periphery of the parasite, as the pseudopodia protrude, but in the older forms it becomes central. The pigment is inversely proportional in amount to the ameboid movement, *i. e.*, the more pigment the less the ameboid movement.

In the quartan the pigment is coarse, being somewhat larger than in the tertian, irregular, with but little if any movement.

In the estivo-autumnal form the pigment is active, although some describe it as slight, at first fine, later coarse, even rodlike.

(*c.*) *Diagnosis from size.*—The tertian is as large as the red blood disc, even larger; the quartan not larger than the red corpuscle, while the tropical forms are much smaller, from 1-5 to ⅔ the size of the hemacyte.

(*d.*) *Protoplasm of the parasite.*—In the tertian it is pale and indistinct; in the quartan sharply outlined, and of a characteristically high index of refraction; in the autumnal type it is ringlike, very small, hyaline and difficult to detect.

(*e.*) *Morphologic alteration in the red blood cells.*—In the tertian the red blood cells hypertrophy and are rapidly and completely decolorized. In the quartan they are but little decolorized. may be darker than normal and are not essentially altered in size, although the corpuscles may become slightly smaller than normal. In the more pernicious types they are shrunken, become either darker, of "brassy" color, or completely decolorized, "shadowlike."

(*f.*) *Diagnosis from sporulation form.*—In the tertian the spores are more or less irregularly grouped, individually small, round, whose nucleolus is seldom seen in unstained specimens, numbering 15 to 20 or somewhat less. The segmenting forms are about the size of a red disc, and are of irregular form. The segmenting bodies are found in the peripheral blood rarely, or in small numbers only, except at the time of a paroxysm.

In quartan malaria the spores exist in the marguerite form, spores being individually long, with distinct nucleolus, 6 to 12 in number. The segmenting forms are smaller than a red blood corpuscle, of a rosette form, are found in equal numbers in the peripheral and visceral circulations, and may be detected in the apyretic interval as well as in the paroxysms. In the estivo-autumnal types the spores are irregularly formed or stellate, six to eight in number, possibly more, and segmentation occurs chiefly in internal organs.

(*g.*) *Diagnosis from crescents and flagella.*—The crescents are found only in the estivo-autumnal forms, and represent a very resistant form of the organism. They may exist for months at a time without fever or other symptoms. They may be converted into round bodies, from which flagellation is frequently observed. We have never seen crescents apart from extreme anemia. Persisting as they do we can scarcely consider them solely as degeneration forms; they impress us rather as resting stages.

Flagella may be found in any type, though not frequently in quartan fevers. They may be seen when quinin has been previously given, and have been considered by some as degenerative forms. They are but rarely seen in freshly shed blood, but we have seldom missed them when examining a specimen for a long period, *e.g.*, in clinic demonstrations.

IV. THE DIAGNOSIS OF INDIVIDUAL MALARIAL SYMPTOMS.

The diagnosis of individual or isolated cases is most intimately linked with the diagnosis by blood examination. Certain malarial symptoms are not only immediate sequences of the malarial infection, but are also most beautifully explained by the life cycle, life activity and metabolism of the organism.

The melanemia corresponds with the structural disintegration of the hemoglobin of the red blood cells and its diffusion through the blood plasma. The anemia is secondary to reduction of the hemoglobin and diminution of the number of red blood corpuscles; in other words, to morphologic hemodyscrasia. No leucocytosis is seen, save a transient apparent increase at the beginning of the paroxysm. The hemoglobin and red discs are destroyed in equal degree. The anemia is rapidly produced; in fact, corpuscular deglobulization is more rapid than in any other acute affection, and can be utilized to differentiate from pneumonia or typhoid fever.

Each paroxysm being the ripening of a new generation of parasites, the fever corresponds to their sporulation and a saturation of the blood with toxins liberated from the red blood cells. It is a chemic hemodyscrasia or, as Mannaberg aptly puts it, a "protozoan sepsis," analogous to that discharge into the blood stream of infective material observed in septicopyemia.

We fully comprehend any clinical form of fever, when we realize that the fever is a toxic manifestation and that as often as the parasites segment, fever occurs. Hence two generations of tertian parasites cause quotidian fever, also caused by three generations of quartan parasites of unequal age. Quotidian continued fever accompanied by splenic tumor, the diazo-reaction, and even roseolæ or slow pulse, may cause difficulty in diagnosis from typhoid fever, especially as typhoid may be attended with chills and sweats. The blood examination speedily differentiates and Widal's serum test for typhoid is of great aid. The splenic tumor and bone pains are explained by the phagocytic process in their substance, the hemoglobinuria, diarrhea, retinal and other hemorrhages by the toxemia, the cerebral symptoms, as coma, convulsions or bulbar symptoms, by aggregations of the parasite in the cerebral vessels with thrombosis.

Some special mention of the diagnosis of the estivo-autumnal form is timely since the disease may be imported from the South, and require prompt recognition. Personally we have seen two fatal and a third comatose case, the same number reported from Osler's clinic. The disease is acyclical, arrhythmic in sporulation; while quotidian in type, the paroxysms are of long duration, lasting nineteen to twenty-four hours and frequently overlapping each other with irregular or continuous fever as a sequence. Often chills and chilly sensations are lacking, the rise of fever is gradual instead of sudden and the febrile solution is also gradual. There is greater tendency to retardation or anticipation of the paroxysm than in quartan or tertian types. Profound anemia and cachexia are common, fever may be lacking, relapses are imminent, as long as crescents are found, indeed after they have disappeared and finally spontaneous recovery is infrequent.

V. THE DIAGNOSIS E JUVANTIBUS.

The therapeutic diagnosis, despite the fact that quinin is a specific remedy, is subject to certain errors. First, many fugitive febrile diseases disappear under the use of quinin, which run their short course with equal celerity under other treatment or with no treatment at all. Hence not all is malaria which quinin seems to cure. A blood diagnosis must precede and succeed the therapeutic test.

Second, malaria manifests a certain tendency toward spontaneous recovery. The disease untreated follows a cycle: 1, a gradual increase in the intensity of the paroxysm; 2, a period of oscillation; 3, spontaneous recovery; 4, a relapse in one or two weeks. Then the same rhythm of symptoms is followed. Not infrequently in hospital practice when we give a placebo that we may study the plasmodium, the disease disappears without therapeutic interference. Hygiene, change of habitation, rest in bed and lack of reinfection favor self-limitation. While the fever is a symptom of malarial infection, it is per se a conservative process, killing the parasites. Indeed if all parasites are of the same age, a catastrophe ensues, and the disease is instantaneously cured by the fever. Many of the germs remain sterile. Spontaneous recovery is most common in tertian types and least frequent in the estivo-autumnal variety. The process of phagocytosis, while not yet completely understood, undoubtedly plays an important rôle in spontaneous recovery. The multinuclear neutrophile leucocytes have the greatest phagocytic action and the process is almost always noticed when the flagellate forms abound. Phagocytosis is most marked during the paroxysm and lasts eight to twelve hours. It is consummated by the macrophages of the spleen, liver and bones and to a lesser extent by the endothelial cells in various organs, *e. g.*, the cerebral vessels and by the leucocytes. The slow current of the hepatic vessels, and their large caliber aid the process.

The use of quinin.—The drug does not greatly impress the endoglobular parasite, shielded as it is within the protoplasm of its host, the red blood cells. Coming in access with the free spores in the plasma, it speedily destroys them, and the disease may be extinguished at one dose, as it were, if the parasites are of but one generation. Highly specific in the tertian and quartan types, it is resisted more effectual by the estivo-autumnal form. Most authors state that the specific action of quinin is manifest even in this form, unless the case is far advanced before treatment is begun. We have seen the estivo-autumnal resist sixty grains of quinin per diem for two weeks, and then to react but slightly to the drug.

Regarding our endogenous malaria, the benignant tertian variety, the therapeutic diagnosis can be quickly made. Twenty to thirty grains should at once destroy at least the fever type and, repeated, should in two days cure the disease. If the disease lingers, but two alternatives exist: 1. The quinin is not absorbed, due to faulty administration, in the form of pills, etc., or 2. The disease is not malaria When we hear that a Chicago malaria resists quinin, we know that another disease causes symptoms which simulate malaria, providing of course the administration technique is irreproachable. Not to encroach upon the treatment of malaria, we assert that at least our northern malaria reacts at once to quinin therapy and that, conversely, failure in treatment positively disproves a diagnosis of malaria.

103 State Street.

MANAGEMENT AND TREATMENT OF CROUPOUS PNEUMONIA.

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In croupous pneumonia we have, I believe, a special and independent affection. Its frequent occurrence, especially during our winter and spring months, affords abundant opportunity for observing it in all its phases. And though these seasons have an undoubted influence upon its prevalence, yet from the tables of mortality we find it also occurs in the milder seasons and in every degree of latitude, wherever rapid changes of temperature with stormy winds take place, particularly with moisture. But in a climate similar to ours this is usually the exception. For it rarely makes its appearance before the colder seasons approach. But while we are conscious of the undoubted fact that these cold, moist seasons have a great bearing toward developing and spreading this affection, there are other important influences at work, which play a part in the inherent qualities of increasing its development, and these are chiefly intemperance of every kind, and poverty, especially if the individuals live in large and crowded cities, in dwellings having poor ventilation; also occupations involving exposure or over exertion, or indeed any other potent factor which might depress the vital forces of the system. as from fevers, etc. These are agencies which might be made subordinate to our surrounding conditions. Be that as it may, we find pneumonia attacking the rich and the poor alike, under every condition, favorable or otherwise, and both alike suffer indiscriminately from its toxic effect.

Now as to the nature and pathology of croupous pneumonia, it is pretty well understood to be more than a local affection or simple inflammation of the lungs. One's system may be greatly borne down by its ravages, accompanied with high fever, rapid pulse with nervous depression several days before any of the general physical signs of congestion and consolidation are manifest. In fact some may pass through an actual attack before the lesion is recognized; then danger is usually past. Besides. the smallness of the area of the lung involved, very frequently does not correspond to the ratio of the fever and the general depressing constitutional symptoms which attend it. Again, after the complaint has assumed or rather has become a local inflammatory affection, where we may have excessive cell formation, with fatty degeneration and liquefaction of the inflammatory products, with all the general physical signs and indications of purulent infiltration attending it, the constitutional effect of the disease, which usually consists of high fever, rapid or depressed pulse, great physical prostration and delirium, with other nervous symptoms, is very frequently, if not entirely, absent.

Realizing then that we have more than a local affection to contend against, a disease which I consider truly specific, infectious and constitutional in character, and which is usually of comparative short duration, and is generally ushered in with a severe chill, or followed very soon afterward with high fever, and, if complicated with either heart or renal trouble, with delirium and a general train of nervous symptoms, it clearly follows that the treatment should be directed, in the main, toward hastening the natural progress of the affection to a speedy close, so as to limit as far as possible its toxic effect on the great nerve centers, on which the strength and volubility of the heart depends to maintain life, using measures which have no depressing effect whatsoever, either on the nervous system directly or on the heart itself, thus assisting in controlling the excessive temperature, which really registers from the beginning to the close the actual termination of this fatal malady. This, in my mind. and I believe in the minds of many others of experience and observation, forms the basis of the present rational treatment of croupous pneumonia, whether complicated or not.

From this process of reasoning we are justified in assuming that there are two distinct pathologic conditions to be considered in the treatment of croupous pneumonia: 1, local disturbance, involving more or less lung tissue, with perhaps considerable structural changes, without much fever or general physical depression; 2, when the system is laboring under great nervous and perhaps physical depression, with high fever, without much local disturbance.

Now as regards the first pathologic condition, it may be laid down as a clinical fact, and this based on nearly 80 per cent. of cases, that the moment the morbific cause runs its natural course or subsides entirely, the laws governing the vital forces become active in repairing and restoring the diseased parts to their normal condition without any material assistance. But of course it is always necessary to carefully watch the local-morbid lesion, to note whether the exudation thrown out by the inflammatory act is remaining unabsorbed or the inflammation itself is becoming chronic or abscesses are forming or gangrene taking place. These and other complications are very exceptional. Interference then in such cases is not indicated or warranted, unless it be careful nursing, because the tendency is toward their own cure. For if we construe aright the morbid phenomena attending them, we will find they consist chiefly of a certain modified temperature and disturbance of the functions of the lungs by an inflammatory act, in which the former, owing naturally to its short duration and moderate amount of fever, is not sufficient of itself to cause alarm. And when it subsides the latter or local morbid process becomes completely insignificant, if not complicated.

The cases then which really demand the greatest attention, and in which material assistance becomes invaluable, are the remaining 20 per cent., the ones which are attacked very severely in the outset with prolonged rigors, and accompanied very soon with excessive fever and rapid pulse, in fact cases in which even from the beginning of the rigor great constitutional disturbance with a tendency to heart insufficiency, especially of the right side, are really anticipated.

Now then what should be the most rational form of treatment from the outset to the decline of this specific constitutional disease, judging it from its infectious nature? Can any constant or uniform method of treatment be adopted as being perfectly applicable in combating its specific properties, by mitigating its toxic influences on the great nerve centers and heart?

We thoroughly understand the chief danger arising from a severe malignant attack of croupous pneumonia. The excessive fever, labored respiration, coupled with nervous exhaustion; also the local inflammatory process, with its deposit of fibrous exudation interfering with the functional properties of the diseased section, rendering it almost impervious to the circulation, thereby increasing the impelling force of the right side of the heart, which is constantly endeavoring to limit as far as possible pulmonic retardation of the blood, are pathologic conditions always favorable to heart insufficiency, the danger to be avoided if possible. So in answer to the first question the expectant treatment presents itself, as it corresponds to the modern view of the pathology of this specific affection, by removing deranging influences- without using active therapeutic agents, unless the case absolutely demands it. And as to the second, no constant or uniform method can be adopted as sufficiently adequate in rendering material aid in cutting short the natural course of the disease, aborting its constitutional effects, unless it is by mechanical reduction of temperature, from which the expectant plan also claims some credit. But I am fully persuaded after careful observation—though this latter expedient has been extolled by eminent authorities—that such can not be accomplished. For the disease intends to and will run its natural course, no matter what one may do to arrest it, similarly to any other specific constitutional affection, as typhoid for instance. We can, however, control or reduce excessive heat by cold applications, and ease up, as often as it is applied, the one organ above all others that the system is most dependent on at this time, viz., the heart; but that only sustains and holds in reserve as it were vital energy which would otherwise be lost, should the struggle be continued unabated.

The treatment then in the management of croupous pneumonia, is best carried out in the large majority of cases, by the expectant plan already alluded to. And though the term expectant is somewhat misleading, in medical language it suggests the various means at our command, other than that of actual depletion or agents that consume the vital forces, viz., free blood-letting and the use of the general depressing drugs, as that of tartar emetic, veratrum viride, heavy doses of aconite, belladonna, etc. Hence, by adopting this system of treatment, apart greatly from the antiphlogistic plan, in the treatment of croupous pneumonia, it enlarges our views immensely, therapeutically and mechanically, allowing us to take advantage of every available means which our judgment suggests to alleviate and modify the course of the disease.

Since the heart is the chief organ upon which the burden of labor is thrown in pneumonia, it is necessary, owing to its increased functional duties, to sustain it from exhaustion, by every means possible. Now how is this best accomplished? First, let us look into the prime factor or cause of this increased exertion on the heart before the deposit of exudate in the lung exerts pressure on the blood vessels within the diseased area. From the very commencement of this affection the fever is a most constant symptom of the elevation of temperature, and it is not only constant, direct and persistent, but also appears to have a complete mastery over every physical exertion it makes. So to this excessive elevation of temperature it becomes entirely subordinate or dependent. This can be shown from the mere fact, that after the fever subsides partially or wholly, when the heart is already exhausted, feeble, but willing to pump, though the local disturbance in the lungs remain about the same, it gradually assumes its old wonted form, and excites within itself a healthy tone toward a normal action. Again, while the fever is still in the ascendency, after the exudate has been freely thrown out, and exerting pressure upon a considerable portion of the healthy lung tissue beyond the diseased section, which not only produces retardation of the blood and increases the muscular capacity of the right heart, preventing by that means the free escape of carbonic gas and other detritus which form very rapidly during fever, the very poisonous elements the system is most desirous of getting rid of, it throws additional labor on the left heart, and arrests, in a certain modified degree, the functional capacity of the respiratory muscles, and all due to the excessive fever, the chief resultant of this specific pulmonic trouble. The chief point of attack then, from the very beginning to the end of the constitutional effects of pneumonia, is the fever. But the management in the reduction requires the most careful and constant attention. To be over active and meddlesome is most injurious, and should be decidedly deprecated, while with prudence and judicious interference, it is not only possible to avert death, but even hasten recovery by sustaining the functions of the heart.

In respect to the reduction of excessive pulmonic fever, various notions and theories have been advanced regarding the best remedies at our disposal to accomplish it; but the one above all others, in my mind at least, is cold applications. And though it has long been extolled and practiced, especially by a few eminent German authors like that of Juergensen and Liebermeister, it has in great degree been held in bad repute and looked upon, in this specific disease, by the vast majority of physicians, especially in this country and England, as not only an extremely radical measure, but a foolhardy and dangerous one to follow. For my part, the experience which I have had has enabled me to save a number of lives by it, when their hearts were almost paralyzed from sheer exhaustion. Now the part which cold, judiciously applied, plays in the role of an anti-pyretic, is simply the gradual subtraction of excessive heat from the body while under the influence of pyrexia. It undoubtedly acts also, by this means, as a stimulant to the nervous system; for in all febrile conditions, destruction of the tissues takes place rapidly and they are changed into various substances of lower chemical composition. Thus through its stimulus on the great nerve centers, cold tends to eliminate these newly formed substances by the natural excretory organs, and in that way arrests its poisonous effects on the nervous system, the heart governor.

This can be clearly illustrated from the report of the following case, which recently came under my notice:

> Mr. M—, banker, aged 50, habits and general health good, was suddenly taken with several severe rigors followed soon afterward with a high fever, and though I saw him a few hours after the last chill, found him restless and delirious, with temperature of 105.5 degrees, pulse 130 and bounding. On examination I found at base of right lung slight modified dul ness, with few crepitant râles. Respiration hurried, but the characteristic irritant cough usually accompanied with tenacious rusty sputum, was still absent. He was given a full dose of calomel (15 grs.), after which cold wet compresses were applied. The action of the calomel was prompt and efficient, by disgorging the portal circulation, which necessarily relieved the blood stasis existing in the effected pulmonary tissues. Indeed, calomel, owing to its prompt action on the intestinal tract, is one of the best therapeutic agents at our command, in any of the acute infectious diseases. But I believe it is chiefly owing to its antiseptic properties in destroying the diplococci of Fraenkel, in the mouth and fauces, and the removal of the ptomains from the gastro-intestinal tract, that we owe so much to it. The result of the application of the cold wet compresses was highly satisfactory. They were applied assiduously every hour until fever was reduced 3.5 degrees. This took place after the eighth application, when they were discontinued. But whenever the temperature rose to 103 degrees they were resumed as before, and always with prompt reaction. The heart's action, after the reduction of temperature, was greatly modified, pulse fell to 100, but strong, full and regular. The delirium and restlessness, which he greatly suffered from in the onset of the disease, passed away and remained absent after the first reduction of temperature. No medicines were administered during the active stage of the disease, but when crisis ensued, which occurred on the seventh day after the initial chill, strychnia was used hypodermically (one-fortieth gr. every four hours with diluted whisky by mouth). They were discontinued after a few days for tonics and expectorants, until patient recovered. The effects of the cold wet compresses on the patient were, a clearing up of the mind, fuller and deeper inspirations, calmer countenance denoting diminished irritation of the nerve centers, sleep became more restful, and the skin and kidneys acted freer.

No doubt the constant application of the cold compresses on the surface of the body while the fever was in the ascendency, invigorated the nerve centers through the indirect stimulating influence they had upon the peripheral fibers of the skin—the latter always presenting a ruddy hue and being active in perspiration. Then the reduction of temperature lessened the amount of tissue destruction, and the vital organs, especially that of the heart and kidneys, received a rehabilitating influence from the toned-up nerve centers, which in turn resisted the toxic elements coursing through the circulation.

In the other malignant cases of croupous pneumonia, which happened to come under my immediate notice during the last three years (thirty-eight in all), and treated similarly to the one already mentioned, the temperature vacillated between 103.5 degrees and 106 degrees. In each case the organ of circulation labored hard and showed signs of exhaustion; but under this local anti-pyretic stimulant, behaved well. The cold wet packing in a sheet, and sponging the surface of the body with cold water, were the modes of application employed. This was practiced, on an average of every three hours, until the constitutional effects of the disease showed signs of waning. It usually reduced the temperature from 1.5 to 3.5 degrees, without producing the slightest discomfort—in fact the patients appeared to enjoy it. The usual temperature of the compresses was 60 degrees F.; and though pneumonia patients are as a rule very susceptible to the influence of cold application, the reduction of temperature being frequently marked after the third or fourth application, in some cases its action is not so prompt, requiring diligent and persistent effort in applying cold compresses, perhaps for hours before reduction of fever is noticed. But whenever the cooling process begins, the fever gradually continues to fall and appears to be under easier control, thereafter, than in the susceptible ones. The reason of this, no doubt, is owing chiefly to the more direct poisonous effect of the toxic elements on the sympathetic system or to its chief cervical ganglion; or perhaps to this heat-producing center being more impressionable or under more direct influence of the nervous system. But in either case, whenever the activity of the toxic agents are under control, their elimination is only a question of time when the danger mark is passed. I may be allowed to reiterate that I did not resort to the use of any direct or indirect anti-pyretic medicine internally, save the use of stimulants when cases demanded them. But while cough was severe and annoying, and pleuritic pains present interfering with respiration, I used morphia, hypodermically, in moderate doses from one-twelfth to one-fourth gr., every four to eight hours, until relief was obtained, when they were suspended. I also employed strychnia in the same manner, from one one-hundredth to one-thirtieth gr., and occasionally nitroglycerin in one one-hundredth gr. doses, when I considered the heart and circulation needed them. I used in a few instances, with good effect, hydrate of chloral in moderate doses, diluted freely with syrup and water, when patients were greatly harassed from want of sleep and rest. This drug, though considered an intense depressant upon the nerve centers at the base of the brain when given in full doses, causing more or less weakness of the heart's action, is quite different when administered in small doses. It acts more as a stimulant to these centers, and as a powerful and certain hypnotic to the cerebrum. I occasionally employed, when patients were suffering severely from either occipital or frontal headache, a combination of bicarb, soda, grains 2; acetanilid, 2; phenacetin, grains 3; codeia, grain one-sixth; one given every three hours until the desired effect was obtained, when they were immediately suspended. I consider the combination a useful adjunct. especially in some instances, in combating symptomatic cephalalgia, due to its sedative or quieting influence, without producing any depressing effects on the nervous system or heart. Also I invariably administered, as early as possible, a free dose of calomel, either alone or in combination with some mild cathartic, to start up the hepatic and intestinal secretions; repeated only when necessary. Indeed it is very important for several reasons that the functions of the stomach and bowels should be maintained, especially during the active stage of the disease. The lymphatic system is usually very active, during this time, in excreting from the blood all poisonous matters, and conveying them to the chief emunctory organs, viz.: the kidneys, cutaneous sweat glands, lungs, liver and the intestinal mucous membrane. But none of these excretory organs can be acted upon as readily as the latter during the pyrexial period, in excreting and eliminating the waste products of disintegrated tissues and other effete matters containing ptomains. If these secretions remained too long in the intestinal tract, they would naturally incapacitate the chief functional property of the stomach and bowels, that of proper digestion and assimilation, whose active duties we rely upon for nourishing support. I do not believe in too active catharsis, for it is too depleting, and tends to weaken the general system; only sufficient to cause two or three bowel movements daily. The sick room in each case was kept as well ventilated as possible, and at about 70 degrees. As far as possible, absolute quiet was maintained, with good attention to the regulation of the stomach and bowels, and the giving of good wholesome, plain nutritious diet in liquid form during the pyrexial period, and resorting usually about the period of crisis, to the use of alcoholic stimulants. I abstained from the use of all depressing drugs and cough mixtures, for from past experience I had found that they produced more or less gastric irritation, with intestinal disturbance. The hypodermic injections of the morphia salts appeared to better alleviate the pain and harsh cough.

Such, in a brief way, is the manner in which these cases were managed, suffering as they were from a malignant type of croupous pneumonia, and all but two made good recoveries without serious complications, a maximum saving of 94+ per cent., while under the old routine expectant régime I was exceedingly fortunate in saving 60 per cent. Indeed, by this plan of treatment I was able to reduce the excessive fever sufficiently to enable the heart to have some repose, which enabled it to withstand the severe muscular strain during the period of crisis. Yet I believe had I practiced the German or Continental method in the obstinate or erratic cases, that of placing them in baths and keeping them there from fifteen to thirty minutes, beginning first with a temperature of 90 degrees, gradually reduced to 68 degrees, there would have been more rapid and complete reduction of temperature and it would have remained absent longer than by the method employed.

I believe it impossible to reduce to any degree of satifaction the excessive fever in this disease by any other process without producing a tendency to heart insufficiency. The several derivatives of coal-tar products are all valuable, and perhaps in some instances reliable internal antipyretics, but they have a tendency to produce heart weakness when given in large doses, and as a consequence limit the eliminating process of the excretory organs. Salol and quinin are two very valuable remedial agents in abating pyrexia, but they too are not sufficiently potent to cause much reduction of temperature without exaggerating nervous symptoms and arresting the secretions. They are more adapted, along with the muriate, carbonate and iodid of ammonia, after the crisis has taken place and the disease become purely local, as stimulating alterative tonics; and as for any of the depressants I leave it for you to decide concerning their antipyretic virtues in cutting short or abating a true case of croupous pneumonia. For myself I have no faith in them whatever, because they are heart depressants, and when any drug assumes that particular therapeutic phenomenon, not only deficient elimination of the substances generated in excess by such excessive heat in both the tissues and blood occurs, but their retention or suspension in the system have a very deleterious or poisonous effect on the nerve centers and ganglia, and should the accumulation of urea, uric acid, carbonic acid and other detritus remain too long in the system paralysis of the vital organs would inevitably ensue and death result. Yet even several of our most prominent medical writers and observers, and indeed a very large proportion of general practitioners of apparent large experience, still cling to the old antiphlogistic plan of treatment, believing that not only better results can be obtained from its practice, but that by a sudden sharp reaction of the general circulatory organ, either by large doses of any of the selected depressants frequently repeated, or perhaps by blood-letting in plethoric cases, with the constant application of hot poultices, and perhaps sinapisms, they can abort or at least limit the inflammatory lesion of the lung to a very circumscribed area, from which little danger can be expected. This I believe is owing to their positive convictions, based on what I should term old pathologic fallacies, having for their ground work or argument that croupous pneumonia is purely a local manifestation and not the resulting pathologic lesion. If we look over the statistics, dwelling upon results obtained by the use of cold applications, coupled with the employment of some active alcoholic stimulant, as that of whisky or brandy, when actually needed, in comparison with the regular or uniform methods, viz.: By general internal medication in conjunction with hot applications externally, etc., whether in hospital or general practice we will be forced to admit, though we have to refer and rely upon Juergensen's reports compiled more than twenty years ago (for we ourselves have no such compilations of documentary materials to draw from of any account), that it had a greater saving of life by over 10 per cent. in its malignant form. Even as early as 1866 to 1876 the mortality decreased at the Basel clinic, and according to Liebermeister, in a given number of cases nearly 10 per cent. from the usual routine treatment practiced the ten years previous, a showing which is not only correct, but astounding, when considered how imperfect their practical knowledge must have been in carrying out the principles of treatment their minds suggested at so early a day, and in the face of public opinion or censure. Yet in the face of this it is equally amazing why the very laity in all our land should not only indulge in suggesting what the treatment in this subtle specific affection should be, especially when disease assumes a serious aspect, but persist in having us practice the old-time antiphlogistic plan, or the general routine treatment with hot applications, etc., when in their hearts they are forced to acknowledge they can not discriminate between the depressing effects of the one and the exhilerating virtues of the other. How this belief has become so thoroughly instilled in the minds of so many apparently intelligent persons is a mystery to me, unless it is from our own lack of self-independence and fear of public censure. But such is the fact, for I have experienced it to my full satisfaction in several instances.

Now in regard to the proper administration of diet. The food should be nutritious and easy of assimilation. Beef tea, beef, mutton or chicken broths, with eggs and milk are the most valuable articles and should be given at regular intervals and in definite quantities, four to six ounces every two hours, and if required, peptonized. And as to the use or employment of stimulants, their chief indications are the occurrence of delirium, a very rapid, weak or dicrotic pulse, especially when associated with adynamia or collapse with low nervous symptoms. They should also be given to patients who are old and feeble, who expectorate with difficulty on account of the excessive viscidity of the sputa. Blisters, hot fomentations, with or without anodynes and sinapisms are only useful for the relief of pain in the advanced stage of the disease. Dr. Beale claims that when the kidneys are in good repair large doses of either brandy or whisky may be given with good results; that owing to its direct action on the nerves of the stomach, it immediately stimulates the heart's action and thus promotes the capillary circulation. Also after the absorption into the blood it alters the consistence and chemic properties of fluids and solids and cuts short the life of rapidly-growing bioplasm, or causes it to live more slowly, and owing to its contractile influence it renders the walls of the vessels less permeable to fluids and checks the disintegrations of blood corpuscles. His opinions are well founded, but the employment of alcoholic stimulants should be used only when the case actually demands it, and that is usually about the period of crisis.

There are other symptoms pertaining to this affection which need considerable attention, but I am unable to dwell upon them now. They are all referable to the digestive organs and often cause great annoyance. Thirst perhaps stands most prominent. Cooling drinks agreeable to the patient's taste should be given freely throughout the pyrexial period.

Such then, in a brief way, is the treatment I advocate in the management of a malignant case of croupous pneumonia. I rely upon cold applications in the subtraction of excessive heat and the use of only such remedies as are adjuncts in alleviating annoying symptoms above all other measures so far advanced. Also I would advocate its use in the catarrhal forms as well and the regular cold bath in obstinate cases, as already stated, as a mode of application in preference to the other methods. I am sure it is the most valuable and reliable form of treatment at our command in combatting excessive temperatures in this disease, either in the home or at the hospital. All we want is courage and self-reliance, and good competent nurses, and unless the disease assumes a terribly malignant form, will yield to its stimulating influence and run its natural course without producing much damage to the patient.

DISCUSSION.

Dr. H. A. West of Galveston, Texas—The author emphasizes unnecessarily the purely mechanical effects of pneumonia, and leaves out of view the action of the toxins; he also emphasizes the elevated temperature unnecessarily. We do not know to what extent the high temperature may be a conservative process, and while the action of the cold bath may be beneficial, its action is probably to be explained by other facts than its mere influence upon the temperature, just as in typhoid fever its effect is upon the nervous system, stimulating the circulation, respiration and skin. So we should take into consideration the necessity for counteracting the effects of the toxins of the disease. Many patients with pneumonia are in a condition like that of a man who has been bitten by a rattle snake, and the same indication exists to counteract the toxins by stimulation. I believe there are a number of cases which can not be saved without stimulation by alcohol and by strychnin. When we come across such cases the indication is to keep the patient alive, to keep the vital powers going until nature has time to produce an antitoxin. We can do that most successfully by use of alcohol and strychnin, both given with a free hand. Many other patients will get well without any treatment at all.

Dr. **Wainwright**, Kansas City, Mo.—I believe that pneumonia requires the most scientific treatment of any disease which medical men are called to see; that more lives can be saved by the study of pneumonia and the proper application of drugs than in the treatment of any other fever. The indications for treatment so far as the heart is concerned are not, in my opinion, laid down in text-book literature. The average practitioner, when called to the bedside of a patient suffering from pneumonia, is unable to tell when alcoholic stimulants, strychnin or any cardiac stimulant is indicated. Why? We are taught to watch the pulse and study the first sound of the heart. The part of the heart to study in pneumonia is the right side. We have not exactly the same pathologic conditions present here in the right side as in hypertrophy of the left ventricle without pneumonia. In pneumonia nature makes an effort to compensate, but she has not time. If the time were long enough hypertrophy would take place in the right side of the heart in pneumonia. Then the question arises whether we shall give stimulants. In some cases alcohol and strichnin are positively and decidedly indicated, yet they are in some cases responsible for the death of the patient by causing exhaustion of the heart. When we give alcoholic stimulants it is at the expense of stored-up energies of the heart, and they ought not to be given until they are decidedly indicated. I claim that the indications for the use of alcohol and stimulants in pneumonia depend upon the state of the right side of the heart, which can be determined by careful study of the pulmonic element of the second sound. The right side fails first.

One other point relating to the pathologic condition which embarrasses the right side of the heart. In addition to the hepatized lung, there is vicarious emphysema in the healthy lung. In emphysema of the lung the right side of the heart is always greatly embarrassed.

Dr. E. B. **Borland** of Pittsburg—We have in pneumonia, not only a weak or partially paralyzed heart, but also a markedly depressed condition of the vasomotor system all over the body. Tho cold-bath treatment is in vogue both as a local and as a general treatment. The local cold treatment in pneumonia seems to me too much like imitating nature's way of chilling the body, and it is not nearly as efficient as the general cold bath in stimulating the vasomotor control of the vessels of the body.

Dr. **Campbell**—I did not have time to finish reading my paper. In reply to Dr. West I did dwell on the use of strychnin and alcohol when necessary. But what I wished to express fully was the influence of the nerve centers, the sympathetic system particularly, on the course of pneumonia. The toxins are absorbed and carried to the nerve centers of the cerebrum, and there cause paralysis, which affects the nerves, including the sympathetic ganglia, which Brown Séquard has shown to be related to the heat production of the body. Cold applications stimulate not only the vasomotor system but also the sympathetic system, getting rid of the toxins and the ptomains through the sweat glands, the kidneys and the bowels.

HOT BATHS IN PNEUMONIA.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY JOSEPH EICHBERG, M.D.
CINCINNATI, OHIO.

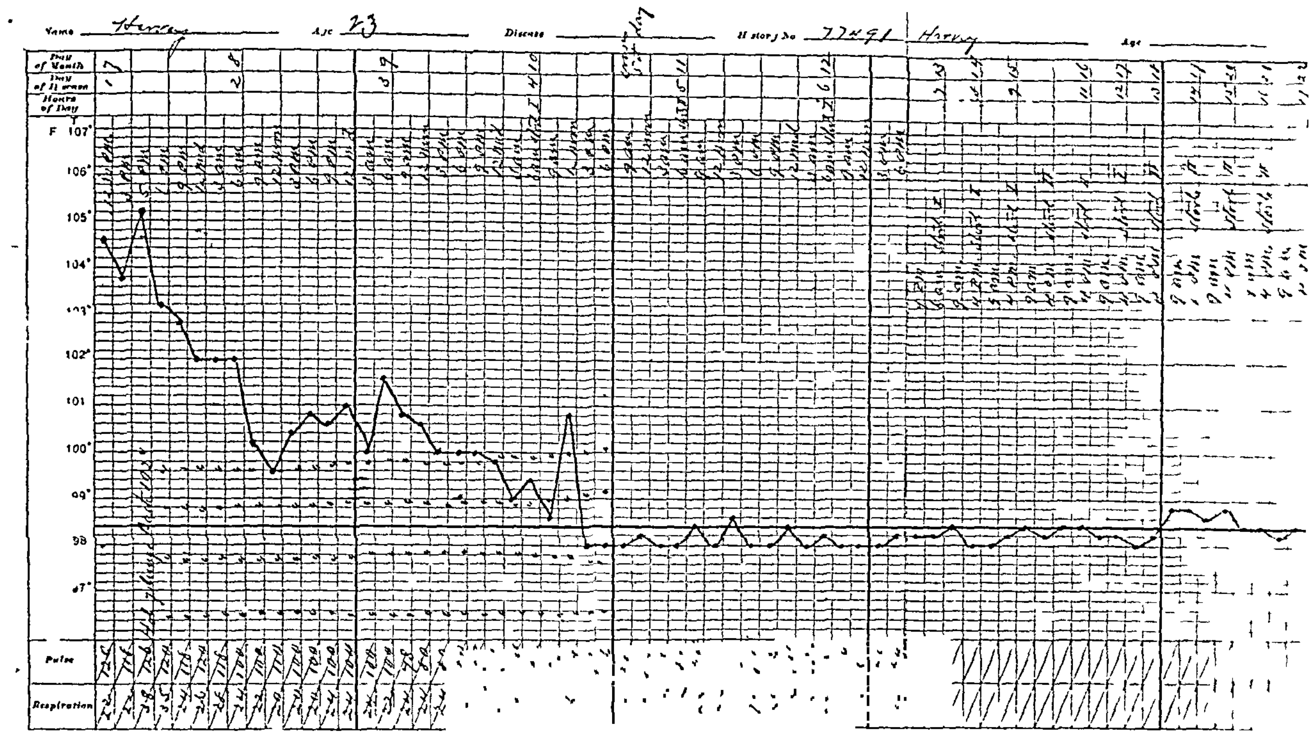
The hot bath, as employed at the Cincinnati Hospital, is given in pneumonia at a temperature of about 100 degrees. In the cases which furnish the material for this report the temperature of the water has been at times 95, at others 102 degrees; in a few cases a temperature of 110 degrees has been advised. Judged by results, no very great difference could be observed dependent upon the slight elevation of temperature in the water employed. A tablespoonful of whisky is given before immersion. The tub is moved alongside the bed of the patient and immersion of the body is complete, the level of the water rising to the chin. The stay in the bath is prolonged to ten minutes, during which time the face is frequently sponged with cold water. On emerging from the bath the patient, without previous drying of the skin, is wrapped in a warm dry blanket, in which he remains for half an hour. The bed clothing is then changed, the skin rubbed vigorously until dry and the patient left for the next three hours, when the process is repeated.

When first entering upon this plan of treatment, I thought of it only as an antipyretic measure, and the bath was advised when the body heat rose to 103 or 103.5 degrees. It was soon observed, however, that the good effects of the bath were to be found not so much in its antipyretic action, as in its influence upon the general comfort and well-being of the patient. From that time on, the bath was ordered wholly irrespective of the high or low degree of fever, and was given regularly every three hours.

I shall have occasion presently to refer to some figures. It is but fair to repeat what experience in hospital life has taught many clinicians, that in no acute infectious process are figures so likely to prove deceptive as in the case of this disease. Hospital cases of pneumonia afford, in the first place, the very worst material upon which to base working conclusions as to the value of remedial measures. Weakened by intemperance, exposure, privation or previous disease, the pneumonic process overtakes these patients at the lowest ebb of resisting power and speedily terminates a checkered existence.

Aside from this potent factor, which influences so greatly the percentage of hospital mortality, there is something in the type of the disease which makes its percentage of fatalities very variable. There are times when the number of cases received in public institutions is considerable enough to warrant the title of its epidemic prevalence; yet the number of recoveries is so great that too much is allowed for the operation of some particular therapeutic measure. In another series of cases the same plan of treatment signally fails. The startling figures of Petrescu with the digitalis treatment, showing a mortality of only 2 per cent. in upward of seven hundred cases, can be explained only in this way, since later experience has unfortunately failed to confirm the vaunted universal efficiency of this drug.

Taking all these factors into account, I am strongly inclined to the belief that we have in the hot bath a powerful adjuvant in the management of this disease; nor would I ascribe to it any secondary rank, believing it to be of almost greater importance



than any single feature of the treatment. The most powerful argument is found in the request of many patients for its repetition Strongly averse to its early employment, they soon experience so much comfort from its frequent application that in many instances patients have asked to be put in the bath before the time for its repetition had arrived.

This sense of greater comfort especially affects dyspnea, and thus strengthens tha impression now gaining ground that dyspnea in pneumonia is not dependent on the extent of pneumonic consolidation nor in any sense proportioned to it, any more than is pulse rate or temperature. It seems difficult to combat this old and at one time widely promulgated doctrine. On the day following the crisis, when the clinical picture has undergone so great a transformation, the physical signs remain unchanged. The dyspnea of the preceding period has wholly disappeared, yet there is quite as much consolidated lung as there was the previous day; and a considerable period may yet intervene before the affected lobe is wholly rid of inflammatory products. The dyspnea is to be interpreted as part of the intoxication due to specific infection, and resulting from the action of the poison on the mechanism of respiration.

It is just in this connection that the association of the skin with the mechanism of respiration deserves especial mention. Ordinarily, cutaneous respiration in the human being is of little consequence as far as the actual exchange of gases is concerned. Scharling and Hannover estimated that the exhalation of carbonic acid gas from the skin bore to the total amount the proportion of 1 to 130; Gerlach gives it as 1 to 200 So small a fraction as this could hardly influence the general well being. Much more important are the well-known experiments of Soskolow, Lang, Berne, Loschkowitz and others in suppressing the function of the skin by covering it, in its entirety or in limited portions, with a coating of some impervious material. As is well known, death promptly ensued when one-fourth or more of the skin had been thus treated; and death was not, as had been first believed, due to excessive cooling, seeing that the retention of the animals in warmed ovens only delayed, but did not avert, the fatal issue.

It could not be supposed that death was due to retention of excrementitious matter or auto-intoxication, for the blood of the animal that had thus succumbed was not toxic when injected into the circulation of another of the same species. The only probable inference was that death ensued as a result of the suppression of the respiratory stimuli emanating from the skin. The need for air, like the sense of hunger and thirst, is not a localized sensation, though referred to the larynx; all parts of the body participate in sending to the center the urgent message for more oxygen when the proportion falls below the minimum for actual consumption.

The temperature in some cases seems to be influenced but slightly by the bath, as far as immediate results are concerned, there being no strikingly rapid fall, though the general febrile course is certainly controlled in some measure; for there is almost always from the first day of the bath treatment a slight lowering of the daily average, which continues from day to day; so that the critical fall entails a drop of but two or three degrees, the temperature being nearly normal at the time of the crisis. At other times a striking improvement in the range of fever manifests itself: the accompanying chart may be fairly taken as a type of many that present an almost identical picture.

As an antipyretic, the hot bath is not less effective than many of the recognized aniline antipyretics. In my collection there is the history of one patient, a colored laborer aged 20, whose temperature on the second day rose to 105 degrees. He received 10 grains of phenacetin; one hour later another dose of 10 grains; the following hour a similar dose, the temperature still remaining at 105 degrees. When the infection is intense, no antipyretic measure is likely to be attended with very striking results. With the aid of the hot bath, many cases present a prompt decline. A laborer, aged 40, had an evening temperature of 104.6 degrees. The hot bath was given at 6, 9 and 12

.M. The temperature steadily declined until noon following day, when it was normal. It rose slowly 101 degrees on the third day, but never exceeded The crisis occurred on the fifth day. In another t after the sixth bath the fever declined from 04.2 to 99 degrees. Instances similar to these could multiplied.

The effect on the respiration, while not so striking, none the less certain. At times the change after bath is so considerable that the diminished frequency must be regarded as conservative, enabling e patient to husband his strength. In the patient ose chart is shown the frequency of respiration re the bath was 35 per minute; after the second it dropped to 24 per minute. In other cases the erence was less, amounting to 4 to 6 per minute; ven this improvement is not to be disregarded in a sease in which the resisting power of the individual s the balance for or against recovery. In another t one bath reduced the frequency of breathing 42 to 30 per minute. Two recoveries are note- rthy; one where the respirations were 80 per minute, other where for three days the rate was 60 per ie.

The greatest relief is experienced in the prompt pression of certain nervous symptoms of rather uent if not constant occurrence. Of these one of most distressing is a sense of "indefinable unrest," term employed by a colleague now passing through is convalescence from a pneumonia of the left lower be, and who, after his second bath, marveled at the idity and comfort experienced. Similarly, great efit is experienced in combating the insomnia hich enters very regularly into the early history of e attack. Delirium subsided promptly in all cases cept those complicated with alcoholism or menin- is.

It may have been mere coincidence, or it may have due to the bath, that many of our patients ed to void larger quantities of urine than did ose in the ward where this treatment was not regu- y employed. I am unwilling to express final judg- t until our observations shall have been more ly verified. It is not unlikely, however, that the il ation of the peripheral vessels following the bath y involve other small arteries in the systemic cir- ulation and thus allow of more ready filtration through e kidney.

The pulse is modified by the systematic use of the ot bath rather in its quality, than notably in fre- uency. The hard, bounding, vibratile pulse of what fathers called sthenic pneumonia, gives place to a ulse that is softer, more gradual, compressible, not in force, while wholly without the thrill con- ected with the earlier periods. In this respect the ot bath can be confidently counted upon to modify e pulse in the same manner observed after the for- regulation process of blood-letting. Indeed, the ot bath gives us the power of letting blood without sing it; by opening up the superficial arteries and pillaries, we obtain an action that equalizes the cir- on in furnishing channels other than the con- cted pulmonary vessels, to which the afflux would erwise take place. It may be that it is of no especial vantage to the patient to retain a blood undoubtedly rged with many toxic principles; but it is easier save it than to reproduce it and, as already stated, e power of resistance counts for much during a ocess essentially short and self-limited.

In how far the local process itself is influenced it might seem venturesome to say. On several occasions, four that I now recall, the first examination had shown impending involvement of an entire lung; dulness on percussion, increased resistance and diminished or absent breath sounds being found over an entire side. After the use of the bath the limitation of the process to a single lobe has been clearly evident, the unaffected lobe clearing up very promptly. This may have been occasioned by the relief of a collateral congestion which would never have advanced to consolidation, or the bath may have actually limited the distribution of the disease by prompt diversion of blood to the surface.

Still more difficult is the determination of any increased elimination of toxic material through the skin, in consequence of the bath treatment. That such toxic products exist may be inferred from the leucocytosis accompanying the disease, from the increased toxicity of the urine at the time of the crisis, as shown by Roger and Gramme; from the frequency with which death occurs by the heart at a time when convalescence seems established and acute symptoms have subsided, and from the actual discovery of the pneumococcus in the blood. Thus Kohn examined the blood in thirty-two cases with negative results in twenty-eight; eighteen of them recovered. Of the remaining nine, seven showed the pnuemococcus and died, the other two died from staphylococcus empyema. Admitting that such toxic principles probably exist, the patient's chances are only likely to be improved by stimulating the skin to further activity; the hot bath offers opportunity for doing this in the simplest manner.

Patients receiving the bath are allowed full, nourishing, concentrated diet. The bowels are moved regularly by enema. Medication has generally consisted of small doses of digitalis and strychnia. Expectorants were ordinarily not found to be necessary.

The hot bath may be given at any age. The oldest patient who recovered was 73 years old. It is universally indorsed for children, on the plea that the use of warm water prevents the nervous shock attendant on the employment of colder baths, such as are recommended for adults; but the adult patient with pneumonia also dreads his cold bath; and the necessary stimulation for the reflex respiratory act can be elicited equally well by bathing the face and head with cold water while the patient is immersed. The frequent repetition of the bath does away with the necessity for local dressings, while the interval of three hours has proven sufficient to allow for rest and sleep.

The number of baths to be administered will vary with the character and duration of the case. I can only repeat that the fever furnishes no indication for the use or repetition of the bath. The average may be given as five or six per day during the febrile period and one or two daily for several days thereafter. The largest number in my table, based upon carefully kept records of ninety cases, was given in the case of a butcher, aged 34, who had successive involvement of three lobes; each new attack supervened as the old approached the crisis, so that the acute period of his disease extended over twenty days. During this time he received 137 baths. The patient recovered. Another patient, a cigar-maker, aged 19, suffering from an old mitral regurgitation upon which the pneumonia supervened, received seventy-four baths in eleven days and recovered. A third patient, a fireman, suffering from an old caseous phthisis of both apices in addition to his pneumonia, received thirty-three baths in six days and completely recovered from his pneumonia.

Recourse to the bath from the earliest period of the disease is to be strongly commended. Naturally the diagnosis must often be deferred for three or four days, owing to obscurity in physical signs. When, however, the nature of the disease is no longer doubtful, the bath treatment should be promptly instituted. Experience has shown that the patient is thus kept in better condition and the course of the process influenced more decidedly than if the bath is given at a later stage.

Of the ninety cases forming the basis of this report seventy-one recovered and nineteen died. Four of these were moribund on admission, and of the others there was the usual contingent of chronic nephritis, pericarditis and tubercular diseases; six died quite suddenly, two on the fourth and two on the seventh day, while the remaining two succumbed when all danger seemed past, one expiring during a meal, the other just after he had answered that he was much better.

I believe that wider experience with the hot bath will but add to the conviction of its general utility in the management of one of the most fatal of acute diseases. In private practice the mortality is not so appalling, but in hospital life no other acute process claims so many victims. Where the bath can not aid in cure, it rarely fails to assuage, and it is not the least of the physician's duties to bring comfort to the sick.

DISCUSSION.

Dr. Wisner of Baltimore—I would ask the author whether there was free diuresis after the bath, and what was the temperature. I have had a considerable experience with the tepid bath in the pneumonia of children among poor people, especially among people not given to cleanliness. Repeated tepid baths, three or four a day, were sufficient in many instances without any other medication to alleviate the symptoms and hasten the cure in the cases where there was no constitutional taint to make the disease a mixed one.

Dr. F. S. Neveling of Clearfield, Pa.—I rise to favor the warm bath. With regard to the lancet, while years ago it was used too freely, I think that of late years some do not use it enough. In some cases of pneumonia especially it will give the greatest relief. I have employed it, in certain cases, more than twenty years and have never regretted it, except in one instance. I do not bleed in every case, but when I find a very severe one in the early stage the withdrawal of some blood gives almost immediate relief. I have treated no fewer than two hundred cases of pneumonia and of that number have bled, I presume, 25 per cent. It is contrary to the treatment laid down in the books and I always hesitate to say anything about it, but I have been so successful with it and it gives so great relief that I think it should be resorted to not only in pneumonia but in some other diseases as well.

In reply to an interrogatory when he used bleeding, Dr. Neveling said: When the temperature is high, the patient very restless, the lungs engorged, the heart's action embarrassed. Bleeding seems to stimulate the heart, the patient soon falls into a peaceful slumber and then perspiration breaks out. I order warm baths every three hours after that. Later judicious stimulation may be of benefit. I know that if the patient should die I would be told that I had killed him, but I have never yet lost one that I have bled.

Dr. S. Solis Cohen—What has been the influence of the baths on the urine? What about the temperature of the bath?

Dr. Eichberg—Very frequently, when the patient is taken out of the bath the amount of the urine is increased. He is wrapped in a hot blanket and left an hour without any drying, and is then dried only in case the skin is very active. As to bleeding, I felt sure that would arise in the discussion. One of the objects of the paper was to call attention to the fact that the bath took the place of the bleeding. The temperature of the bath is higher for debilitated patients. With regard to the cold water treatment, there was a man who, on sending his boy out into the world, gave him this piece of advice: "My son, honesty is the best policy. I know, for I have tried both."

CURABILITY OF PULMONARY TUBERCULOSIS.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY E. B. BORLAND, M.D.

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PITTSBURG, PA.

Evidence has been recently accumulating, which goes to show that tuberculosis is not only a universal but *the* universal disease. Postmortem examinations made in recent years, point to the probability that 25 per cent. is much too low an estimate of the total number of infections.

Schlenker made one hundred consecutive postmortem examinations on children and adults for this special purpose. He examined every part of the body, especially the cervical and mesenteric glands and apices of the lungs, and found 65 per cent. tuberculous. Caseous and calcareous degenerations were considered tuberculous but simple fibroid adhesions were not so considered. In over 4,000 successive postmortem examinations made in Breslau in 1893, one-third of the bodies contained gross tuberculous lesions. If the microscope had been used, probably enough lesions could have been discovered to make 2,500 infections.

Turning to pulmonary tuberculosis, Babes found lesions of the bronchial gland in more than one-half of his postmortems on children. Biggs could demonstrate characteristic lesions in the lungs alone, in 60 per cent. of his postmortem examinations. Grawitz found primary tuberculous deposits in the lungs in 152 out of 221 cases, being nearly 70 per cent. of all infections. Loomis found the bronchial glands infective to rabbits in eight out of thirty bodies apparently free from tuberculosis during life. Long before Koch discovered the tubercle bacillus, Louis laid down the rule, that if tuberculosis was found in any other part of the body it would be found in the lungs.

From the above observations, it will be a moderate estimate to say that nearly 50 per cent. of the human race are infected at some period of life with tuberculosis, and further that two-thirds of all infections are pulmonary. The greater frequency of the pulmonary over all other tuberculous infections is directly due to the inhalation of fine particles of dried sputum, containing tubercle bacilli and the pus-producing germs.

Large as the death rate (14 per cent. of deaths from all causes), when the number of cases which remain latent through life, is taken into consideration, the tubercle bacillus does not seem to be a markedly virulent germ. It requires, besides its own existence, two additional essential factors, viz., debility and abrasions, before infection is possible. Without the addition of septic germs, pulmonary tuberculosis would not in all probability, be the fatal disease it is today. The vile habit which American people have (for Europeans consider it an evidence of ill breeding) of expectorating on floors and sidewalks, has much to do with the transmission of septic germs as well as tubercle bacilli, to the lungs. All advanced cases are associated with streptococci.

While the bacillus is the keynote to the identification of tuberculosis, it has probably less to do with the fatal termination than was formerly supposed. When the blood and juices of the body contain pus-producing germs in eight out of fourteen cases, the septic germs must be held responsible for at least one-half of the destructive process.

Nature can wall up tubercle bacilli with bodies of leucocytes and connective tissue cells, for life, but can not imprison septic germs for any great length of time. If, as it seems probable, tuberculous lungs die mainly of the engrafted septicemia, then tuberculosis without sepsis or where sepsis can be avoided, is a disease capable of permanent relief. It is well known that hectic fever of the ulcerative stage, is mainly due to streptococci and staphylococci. The large proportion of cases dying of septicemia, probably explains the failures of tuberculin and tubercle antitoxins. Original investigation is always to be commended so long as there is a ray of hope, but since not a single antitoxin has been discovered, for any chronic disease, the scientific physician will do well to use, to the full extent of his ability, the older light which still shines clearly.

Tuberculosis uncomplicated with sepsis, may be considered a curable disease, in the sense that it may be held in abeyance, that is to say, kept in a latent condition for a lifetime, providing the vital resistance of the individual is kept up to the normal standard. Nature has been known to completely eradicate it in a limited number of cases. The scientific physician will endeavor to imitate nature as far as he can interpret her methods.

Investigations in search of an antitoxin have demonstrated that there is no immunity against tuberculosis when the three essential factors of infection, viz., [illegible]y, abrasions and bacilli are present. If there [illegible]s anything in the theory of immunity, a child born [illegible] infected mother ought to be less liable to infec[illegible]n after birth, other things being equal, on account [illegible] its being almost constantly inoculated with toxins during intra-uterine life.

The question arises, can tuberculosis be cured in all to all intents and purposes in its latent stage? It has been demonstrated that two-thirds of all infections either disappear or remain quiescent during an average life. If nature can accomplish so much under the reign of mainly empirical medicine, what will she be able to do when the physician concentrates all his energy on building up and maintaining the vital resistance of cell life, and keeping septic germs, as well as tubercle bacilli, away from the latent infection.

If latent pulmonary tuberculosis is to be taken proper care of and its curability further increased, it must be discovered promptly. This is too infrequently done at the present day. The early suggestive general signs of chronic indigestion, flushed cheeks, enlarged lymphatic glands, anemia, scanty or suppressed menses in the female, dislike for meats (especially fats) and the special early signs of a small localized area (in one lung) of harsh respiration which persists, usually in smaller bronchial tubes, jerking inspiration and prolonged expiration, impairment of the percussion note, especially in the apices, and a chest expansion of less than three inches, are over-looked when they ought to be discovered and their importance carefully weighed in the mind of the physician.

The curability of disease is not necessarily connected with the exhibition of drugs. In fact nature alone cures, while the scientific physician only aids her.

The hygiene of latent pulmonary tuberculosis must receive more attention if it is to be more curable. Moderately dry aseptic air containing as much ozone as possible is *the* matter of vital concern. Altitude itself has probably little influence. True, the lungs expand and unused air cells are ventilated at the expense of the life-giving element oxygen. The watchword should be, keep latent pulmonary tuberculosis as free from the death-dealing putrefactive germs as possible. Attention to the excretory organs, especially the skin, will materially aid in crushing out or keeping pulmonary tuberculosis latent. The skin throws off toxins promptly under circumstances when the other excretory organs are unequal to the task. Woolen clothing assists this excretory process; cotton checks it. Wool is a poor conductor of either heat or cold and is therefore always indicated. Nature clothes the lower animals with wool, while only foolish man insists on wearing woody fiber and as a result he suffers.

It is self-evident to any careful student of dietetics that the animal foods (except pork) require less digestive and assimilative force and elaboration, to build them up into physiologic tissue, than foods from the vegetable kingdom. Digestion may be regarded as the balance wheel and should be carefully guarded. Such agents as cod-liver oil, preparations of creosote, iron, phosphorus, strychnia or oil of cinnamon, may be employed when the vital resistance falls much below the normal standard.

Moderate pulmonary gymnastics have an important bearing on the individual's future prospects for life and health.

The author has nothing new to offer on the curability of the ulcerative stage, that is to say, the well developed mixed infection. Perhaps less than three per cent. throw off both infections and fully recover. In probably 20 per cent. the disease becomes quiescent, and remains for a number of years and is then lighted up again. The average life of the remaining 77 per cent. may be placed at two years.

Recent investigations in search of specific treatment have not discovered any factor of much value in the cure of the mixed infection. The posting and enforcing the placard "gentlemen will not, others who do not class themselves under this title, must not expectorate on floors and sidewalks," would do more to improve the prognosis of either stage of pulmonary tuberculosis than all the toxin or antitoxin treatments of the last decade, from Koch's original tuberculin down to his TA, TO and TR.

The belief that tuberculosis is inherited has done much to propagate the disease as well as to lessen its curability. Fortunately very few physicians now place much emphasis on heredity or question the contagious nature of the disease. Those who do, have not examined the almost incontrovertible proofs. Men who doubt the existence of a specific germ or question its power to do harm, are not only clogging the wheels of preventive medicine, but of curative measures as well.

Believing that pulmonary tuberculosis is a germ disease, frequently associated with the more virulent septic germs is a decided advantage in formulating a rational therapeusis. While no germicide has been discovered which will kill the germs without destroying the tissues in which they are planted, yet much can be done toward neutralizing and eliminating toxins, and even inhibiting the growth and multiplication of the germs themselves.

Too many medical men, with almost unused measures of relief within their grasp, are today lying supinely on their backs, hugging the delusive phantom of an undiscovered specific treatment, while the great white plague, with its insatiable, relentless and ruthless ally, is still destroying thousands of valuable lives which ought to be saved.

ANTITOXIC SERUM FOR TUBERCULOSIS.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY E. A. DE SCHWEINITZ, PH.D., M.D.

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In speaking briefly of the preparation and use of antitoxic serums in my laboratory, it may be of interest to note a few points which indicated the advisability of the method I have used for treating animals to produce the desired serum.

The preliminary experiments, published in 1894[1] on the production of an immunity or resistance to tuberculosis by attenuated cultures, have been continued and are confirmatory of the first results, showing the production of great resistance and in some cases complete immunity. A detail of two sets of these experiments may be given as an instance of their general results.

TABLE 1.—Two sets of experiments showing the average of results in experiments in which the guinea pigs were vaccinated with attenuated germ and then inoculating with virulent germ.

No.	Date of inoculation and amount of atten. germ.	Weight, ounces, October 24.	Weight, ounces, November 2.	Condition.	Date of inoculation and amount of virulent germ.	Weight, ounces. Dec. 16.	Jan. 7.	Jan. 19.	Feb. 2.	Feb. 8.	April 5.	April 19.
373	Oct. 24 1½ c.c. 50th generation.	12	14	O.K.	Dec. 9, 373, 375, 378 died from pneumon. 374, 376, 377 each received ⅛ c.c. 4th generation from rabbit.	. .	. .	. .	. . .	. . .	. . .	. .
374		10	11	. .		14	16	16	15½	16	16	14
375		16	15	O.K.		. .	. .	. .	. . .	. . .	. . .	. .
376		16	14½	O.K.		12	15	15	15	15	16½	18
377	Check. . . .	13	13¾	O.K.		12	13	12½	died	. . .	. . .	. .
378	1½ c.c. atten. germ . .	14	14	Thin.		. .	. .	. .	. . .	. . .	. . .	. .

No.	Dec. 21.	Dec. 26.	Dec. 2—oz.	Dec. 21—oz.	Feb. 12—oz.	March 8.	March 16—oz.	April 1—oz.	April 19—oz.	April 21—oz.
2	All but 10 and 11 (checks) received 1½ c.c. of sixty-first generation.	All given 1½ c.c. of sixty first generation except checks 10 and 11.	13	14	16	All, including checks, 10 and 11, inoculated with virulent germ, ⅛ c.c.	16	chlor	of'rm	ed
3			12	15½	14		17	17	19	. . .
4			15	16	17		20	21	20	. . .
5			13	15	16		17½	19	19	. . .
7			11	13	11		16	16½	18	. . .
8			15	15	16		17	16	18	. . .
9			12	13	11		11	15	16	. . .
10			. .	16	16	18 oz. Ch'ks (Mar. 6th.)	17½	14	12	dead.
11			. .	15½	16	17½ "	17½	dead.	. . .	. . .
12			16	16	16		18	19	19	. . .
13			14	15	16		18	17½	16½	. . .
15			15	16	18		18	14	. . .	. . .
16			15	15	17		18	18½	20	. . .
17			12	12	13		15	15	11½	. . .
18			15	15	16		16	17½	17½	. .
19			14	13	14		13	13	12½	. .
20			15	18	18		20	19	19	. .

The first effect of the injection of the attenuated germ was, in some instances, to cause a slight decrease in weight; sometimes a local swelling was noted at the point of injection, and occasionally an enlargement of the inguinal glands. This disappeared after some weeks. This local swelling is probably due to the mechanical action of the bodies of the germs on account of their high fat content and possible presence of a minute amount of the acid causing necrosis. It does not always result from a subcutaneous inoculation and an apparent immunity to this action is acquired by repeated injections. This is well shown in horses and cows submitted to treatment with the attenuated germ. From six to eight weeks after the date of the injection of the germ guinea pigs seem to be entirely well, and are then inoculated with the virulent germ. As can be seen from the table, the checks died within six weeks from date of inoculation while the others, vaccinated remained well four months afterward. It has appeared, from the many experiments, that, if the inoculation with the virulent germ is made before complete recovery from the treatment with the attenuated germ the resistance is considerably less. The inoculation of the animals with the virulent germ and subsequently with a single injection of the attenuated germ showed that the latter produced a slight resistance but no very material retardation of the disease.

The production of this partial immunity or artificial resistance by means of the attenuated germ suggested already in 1894 the availability of this same material for the purpose of treating animals for the production of a serum which would have some effect in curing tuberculosis. It suggested the idea further that possibly cattle could be vaccinated with this attenuated germ and made immune to tuberculosis.

TABLE 2.—Serum from horse injected with attenuated culture used on tuberculous guinea pigs.

No.	Weight—ounces.	Date and amount of virulent culture.	Dates and amount of serum injected—ounces. Nov. 6.	Nov. 17.	Nov. 25.	Dec. [illegible]	Dec. 8.	April 19.
431 ch.	10	Oct. 21, ¼ cc of virulent tuber. culture given to all. All except check received 1½ c.c. of serum.	10	8½	8	dead		
435	9		*9	*8	*8		9	20
436	11		*10	*9	*7	dead.		
437	14		*13	*11	*10		10	20
438	9		*8	*8	*6	dead		
439	8		*8	*7	*5			

*Plus 1½ c.c. †Alive and well

Two cows and one heifer were selected for the work which was conducted for us by Dr. Schroeder in charge of the Experiment Station of the Bureau of Animal Industry. One of these animals was originally tuberculous, the other two healthy. The tuberculous animal received large doses of tuberculin until it had received altogether 19,407 c.c. (19⅓ liters), and as much as 1,500 c.c. of tuberculin at a single dose, from November 1894 *to April 20, 1897. The other animals* received injections of the attenuated culture, the amount injected in fifteen months being 11,425 c.c. and 18,100 c.c. respectively, and by this I mean the liquid culture media *in toto*, including the germs, just as taken from the incubator without any further treatment. At first the injection produced a slight reaction and occasionally a local edema and abscess. After they had been continued for some time this effect diminished or disappeared. The serum of all of these animals was tested a number of times. *Guinea-pigs were injected* with the serum in quantities varying from 1.5 to 6 c.c., and subsequently inoculated, together with checks, with a germ sufficiently virulent to kill the checks within four to five weeks, or the pigs were inoculated with the virulent germ and treated by subsequent injetions of the serum. Without giving the details of the experiments we may say that the serum from the cow treated with tuberculin would cause in the pigs a slight resistance to the germs, the serum of those treated with the attenuated germ produced more resistance on the part of the animals or prolonged their life to some extent but not sufficiently as compared with the quantity of material injected to make the use of cow serum appear practical. The cow serum, although sterile, frequently produced abscesses in guinea pigs. This serum we expect to test again shortly, when it should be stronger.

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[1] Medical News, Dec. 8, 1894.

While these experiments were in progress two horses had been pressed into service. These were treated by injecting the attenuated cultures, culture fluid germ and all. The first injection of 5 c.c. caused a decided temperature reaction, local edema, stiffness, slight loss of appetite, and recovery after a few days. At first local abscesses were formed but healed fairly readily. After a time the abscess formation ceased. After eight months treatment the doses of the culture being gradually increased to 300 to 400 c.c., the total amount injected in fifteen months equaling 4,459 c.c.; the serum was used for testing. It separated out clear and well. Two sets of illustrations may be given to show its action on tuberculous animals. In one set the checks and two treated pigs died, the other two treated pigs are alive and in apparently perfect health, after a number of months. In another set the checks four in number died within four to five weeks, while the treated ones lived two or three weeks longer showing, on autopsy, much less disease in the lungs than did the checks. We endeavored, further, to isolate antitoxic substances from the serum by a slight modification of the Brieger-Boer method. We finally succeeded in obtaining a small quantity of a grayish powder, giving the biuret reaction, difficultly soluble in water, which was used for treating guinea pigs in the same way as the serum. The result was about the same as in the first instance. The pigs one-half pound in weight were inoculated with a virulent germ and treated by a single injection of 0.008 grams of this solid substance. They lived three to four weeks longer than the checks, the lungs again showing considerably less disease, while less necrosis was noted in the liver than in the checks.

The effect of the serum was also tried in preventing the rise of temperature in tuberculous guinea pigs and in saving them from a fatal dose of tuberculin. The injections of ¼ c.c. of diluted tuberculin and at the same time of ½ c.c. of the serum; either caused a decided reduction of the temperature or prevented a characteristic tuberculin reaction in animals weighing 500 grams. This is the way (at present) of gauging the effect of the serum.

The result of all this work leads me to the conclusion that the injection of the live culture produces substances antitoxic to the disease in tuberculous animals, that the quantity of this substance can be increased gradually, that the treatment of tuberculosis is and will be for some time in the experimental stage. One point, however, must be remembered, viz., that while it may be difficult to cure the disease in a guinea pig where its course is very rapid, a virulent germ requiring only from four to five weeks to kill, it might be much easier to check the disease when more prolonged in action, as in the majority of cases in man. Again, in addition to some form of specific treatment for the disease, man usually has the advantage of being placed under the best possible surroundings as to diet, climate, etc., and every effort is made to aid the improvement of the patient, while with experimental animals the conditions are different. The results obtained undoubtedly lead to the conclusion that while the treatment with antitoxic serum is still in the experimental stage and should be as yet used only in sanitariums and under the best conditions, we are on the road to success and nearer our goal than ever before. In an experimental way, the antitoxic serum as prepared in my laboratory, has been used by Dr. Stubbert at the Loomis Sanitarium, and some by Dr. Trudeau at Saranac Lake, as well as by Dr. C. W. Richardson in this city. Dr. Richardson has reported beneficial results and improvement in his patients from the use of this material. Dr. Trudeau has found that the serum causes a remarkable reduction of temperature, and Dr. Stubbert records satisfactory results. Two of Dr. Stubbert's cases will serve to indicate its general effect.

Serum from U. S. Department of Agriculture, Bureau of Animal Industry, Biochemic Laboratory, used at Loomis Sanitarium, Liberty, N. Y. Age, 14 years; American; school boy. Treatment began Feb. 23, 1897. Feb. 23, weight, 90 lbs.; general condition good; consolidation slight; no cavities; no râles; very little cough and expectoration; no tubercle bacilli; temperature normal; serum injection, 10 minims. Feb. 27, weight 91½ lbs. March 1 and 7, no tubercle bacilli: temperature normal. March 9, weight 94½ lbs; cough and expectoration less. March 15, no tubercle bacilli; temperature normal. March 25, no cough or expectoration; no tubercle bacilli; temperature normal. March 29, weight 95 lbs. Result: Gained in weight and general condition until discharged.

Serum used at Loomis Sanitarium, Liberty, N. Y. Age, 20 years, female, German, nurse. Treatment begun March 1, 1897. March 1, weight 119 lbs.; general condition good; consolidation, incipient stage, infiltration; no cavities; râles, sibilant and sonorous right lung apex to base, left lung at apex; cough bad at times, expectorates very little; temperature normal. March 13, no tubercle bacilli. March 23, no tubercle bacilli. March 29, weight 129 lbs., general condition good, no cavities: sonorous râles, second interspace, left side. April 1, no tubercle bacilli. April 7, weight 130 lbs.; râles *only on deep inspiration*, very nearly disappeared. April 13, no tubercle bacilli. Result: The patient's general condition was good when the series was started. Tubercle bacilli were present on admission in December, 1896, but had disappeared in February, 1897. There has been no unfavorable reaction from the use of serum; the rales and other physical signs have improved; she has gained in weight, coughs less and does not expectorate: she is able to take long walks and other exercise.

It may be noted that the serum used in these cases was from the same animal as the serum which cured the guinea pigs recorded above. While these results are exceedingly encouraging and there is a possibility of obtaining a serum for tuberculosis which if not specific may be very beneficial, I do not believe that investigators are warranted in recommending for general clinical use with lurid promises as to its wonderful results, a material which has not in each and every instance been tested upon experimental animals and had its efficiency actually proven.

Maragliano, Babes, Behring and Paquin are the other principal workers in the preparation of antitoxic serums. Maragliano (*Revue de la Tuberculose*, Juillet, 1896, p. 131) gives the method he has used for the production of antitoxic serum, and notes that there is present, in the cold filtered cultures of the tuberculosis germ, a substance which causes the reduction of temperature and another not destroyed by heat, which causes the rise of temperature. In all probability, without isolating the principle Maragliano was using solutions of the same substance we described in a paper before the

American Physicians, May 6, 1897. While this is not destroyed by heat, as he seems to think, it does undergo some change by probably combining with the albuminoid matter in the media and thus losing its distinct property as a temperature-reducing substance. The serum which he claims to obtain from his treatment of the animal has some effect in reducing the temperature and apparently improving the disease.

In the *Zeitschrift für Hygiene* (Bd. 23, Hft. 3), Babes, in reviewing a portion of the work on the treatment of tuberculosis with serum, comes to the conclusion that he is the first individual to have discovered any antitoxic properties in this serum, that there is an antitoxic substance present in treated animals, but that it has not yet been brought to a sufficient development to warrant general use.

Our experiments lead us to conclude, that while the injections with tuberculin produce in healthy animals, a serum containing antitoxic material the amount of this is small; and that the injection of the live culture is the proper treatment. We can not agree with the statements that horses are unsuitable for the work. Mules and donkeys may perhaps give quicker results but horses seem to be entirely satisfactory. At no time have we found that the horse serum produces toxic effects, although these have been noted from the cow serum. If the antitoxic serum treatment for tuberculosis could be freed for the present from its commercial aspect, and careful systematic experiments continuously conducted in numerous hospitals and sanitariums, this or a similar modified method of treatment could be looked to for good results. When tuberculosis can be uniformly cured in guinea pigs, as certainly as diphtheria, then does the commercial aspect become a fair and legitimate one. In the meantime the laboratory worker desires the intelligent coöperation of the clinician who will be desirous not only of curing his patient, but of advancing the theory as well as the application of those principles which, with the expenditure of many years time and often at great personal risk, have been made intelligible.

INTERRUPTED RESPIRATION; A STUDY OF CERTAIN PHYSICAL SIGNS OF DISEASES OF THE CHEST.

Read by title in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

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The very unsatisfactory condition of our knowledge, as presented in our text-books, regarding the causation and significance of those physical signs grouped under the general head of "interrupted respiration," has led me to study these signs with considerable care for some years, and I present today some of the results of this study.

It is apparent at the outset that, by different writers, several totally different signs are considered under the general terms, "interrupted, cogwheel and wavy respiration," including irregular inspiration from weakness of the respiratory muscles; irregular action on account of painful affections, as pleurisy, pleurodynia and intercostal neuralgia; cardio-respiratory murmur; irregular inspiration from excitement, affecting either the respiratory mechanism itself or the heart, producing a systolic interruption in the latter case, covering the whole chest in certain cases; interruption from the presence of swelling of the mucous membrane of the bronchi; from the presence of gelatinous mucus in the smaller tubes; from outgrowths of tubercles into the caliber of the tubes; from compression of vessels of the lung by contracting pleurisy, or by fibroid or other contractile processes in the lung itself; from pleural adhesions, and possibly from other causes.

In order, then, to arrive at a proper conception of its real value, we must define more narrowly what we mean by interrupted respiration, for it is obvious that some of the phenomena we have spoken of have no pathologic significance. Let us investigate the different matters we have mentioned.

Flint, Powell and others speak of irregular rhythm heard over the entire chest in perfectly healthy persons of very nervous, excitable temperament, due to irregular or spasmodic action of the muscles of respiration, as in crying children or sobbing women The mere mention of this form of irregularity will suffice, since it has no importance in diagnosis or pathology.

The disturbed rhythm caused by the painful affections just mentioned should be so obvious as to its causation as to present nothing of interest in this connection, for it has no known connection with any pathologic condition of the lung tissue proper.

The interrupted respiration from weakness of the respiratory muscles, mentioned by Liebermeister, is of importance only because such weakness would probably predispose to the development of tuberculosis, since decided inactivity of the lungs must follow as a result. I have not recognized this form of respiration.

Many writers have spoken of systolic interruption, ordinarily as occurring on the left side only, especially in front, and upon inspiration, the inference, avowed or not, being that it is due to the compression of air in the lung, and consequent displacement of that in the bronchial tubes, directly by the heart's action (the so-called cardio-respiratory murmur). The fact that such a condition exists upon auscultation over the entire chest during excitement, occasionally, would lead to a consideration of the possibility of its being due to an unusually forcible current of blood passing through normal arteries in the lung tissue, possibly thus changing its volume, by unusual filling of the vessels, so as to influence the air contained in the tubes. The possibility of such a phenomenon from aneurysm or dilated aorta, must also be borne in mind.

It is much more common, I think, to find systolic interruption of respiration in cases of fibroid phthisis, especially upon the left side, in which decided contraction of the affected lung has occurred. The description of a recent case of my own, in which this phenomenon was exceedingly well marked, will answer for that of the group in general:

W. P., male, 26 years of age, of good heredity, had pleurisy with effusion six years ago, and developed a slowly progressing phthisis. At the present time he has a decided retraction of the left apex, the shoulder being one and a half inches below the right, and the heart being so much drawn upward and to the left that its apex is found in the fourth space, slightly to the left of the nipple. Much of its anterior aspect has been uncovered by the retraction of the lung, giving rise to increase in its dulness. Over the left lung above the fourth interspace are found decided dulness, loud bronchial respiration, bronchophony and occasional coarse moist and leathery râles, the latter with a creaking character. Interrupted respiration has existed in parts of the left lung for some years.

At present, most markedly over the left back, between the left scapula and the spine, where there is a fair resonance, and somewhat below this area, may be heard, when the patient takes a slow inspiration, a systolic interruption of inspiration so marked that the heart's action may be observed with as much ease, so far as the estimation of its frequency is concerned, as over the precordial area. During expiration the interruption is less marked, but still easily heard. The sound is exactly that obtained by pressing with the bell of the stethoscope over the subclavian artery in many tuberculous patients, excepting that it is fainter and less distinct. It certainly has to me every appearance of being caused by the forcing of blood through arteries narrowed in caliber by pressure from without. In this case such narrowing might have been caused either by old thickening of the pleura, or by fibroid contraction of the lung with resulting compression of its contained arteries, or by both processes acting in conjunction. It seems probable that the branches of the pulmonic artery are the ones involved, because of their much greater size.

If this phenomenon were due to displacement of air in the bronchial tubes (as mentioned by certain authors), by the expansile pulsation of the heart, it should be much more common than it is, and in this case should be found near the heart in front, as well as in the back. Under either hypothesis, however, we may account for the fact that such interruption is often found on the border of the contracted lung, where there is but slight if any dulness, for the sound might be as easily propagated in the tubes as in the blood vessels.

Sahli and others have thought that in certain cases interruption of respiration occurs from the presence of gelatinous mucus in the smaller tubes, yielding slowly to the in-coming current of air, a theory accounting more satisfactorily than any other, I believe, for those cases in which the interruptions are not synchronous with the cardiac pulsations, and in which the sign under discussion is confined to a region bordering upon a localized area of tuberculous infiltration, particularly in the apex of the lung. To my mind, the chief objection to the explanation lies in the fact that the sign is more constant in a given case than such an origin as that mentioned would lead us to anticipate.

Some cases are thought by Sahli to be explainable upon the ground of a swelling of the mucous membrane lining the tubes, yielding in a valvular manner to the advancing air current; but probably not to the expiratory wave, we should be obliged to infer, because of the comparative rarity of the phenomenon in expiration. It seems that some of the cases, presenting what to me sound like two or three distinct suction sounds during the course of inspiration, are best explained upon this hypothesis.

Musser mentions stoppage of the current of air by outgrowths of tubercle. While certainly possible at times, such an explanation could scarcely apply in any great number of cases, since the sign is too often seen in the chests of patients in whom, from the history and the physical examination, there can be no grounds for the belief in the existence of such tubercles.

Powell once saw the most marked interruption of respiration in a case in which autopsy showed a cavity with a small aneurysm near its margin. The signs of a cavity were also present. This is obviously an exceptional case.

There seems to be reason in the suggestion made by Walshe, that possibly interrupted respiration may occur "from textural disease in the lung itself, causing a want of uniformity in elastic and expansile power." In some cases, Walshe believed that pleural adhesions might act in similar manner to prevent the regular and uniform expansion of the adjacent lung tissue.

I can not understand how subpleural nodules could cause a friction sound so resembling the sign in question as to deceive the experienced ear, although Ruehle apparently thought so. His theory of the compression of the bronchi by nodular growths, which might certainly interfere with the passing air current, seems tenable under certain circumstances, however, these acting in the same way that outgrowths of tubercular tissue or swelling of the mucous membrane may act.

I think we may reasonably conclude, then, that interrupted respiration may originate in so many different ways that but little importance should be attached to the sign excepting as a confirmatory one, especially in conjunction with more reliable ones, such as bronchial râles, dulness, bronchophony, bronchial respiration, and particularly broncho-vesicular respiration. The presence of the sign should always warn us to seek more carefully than otherwise for further signs of respiratory disease; while in certain cases, in which one could possibly decide with reasonable certainty that the interruption was due to some particular one of the several causes mentioned, he would be justified in basing his judgment of the case to a certain extent upon this factor.

IMPROVED METHOD OF COCAIN ANESTHESIA.

BY J. F. OAKS, M.D., PH.C.

CHICAGO.

My apology for the following polemic on a brief article entitled an "Improved Method of Cocain Anesthesia for the Nasal Mucous Membrane," which appeared in the JOURNAL of May 22, p. 976, is the fact that the general use of so dangerous a drug as cocain demands our scrutiny of the various methods of its employment. In the article referred to Dr. Anderson gives his method of local anesthesia, which consists in a preliminary use of a one-tenth per cent solution of cocain as a spray to the nasal mucosa, which after being repeated in thirty seconds is followed by the use of a 25 per cent. solution on a probe, armed with a whisp of cotton.

The object of this kindly criticism of Dr. A.'s method is to check any tendency the article might create to the too bold and free use of that dangerous drug.

The "preliminary spray of a one-tenth per cent. solution" may appear to some to be unnecessary, yet it is believed by some authorities that the preliminary generalized use of cocain in the nasal cavities insures a better and more satisfactory anesthesia, where it is followed by the local application of a stronger solution, and that this result can be obtained with a less amount of the drug. It should not be forgotten, however, that a special spray apparatus or tip should be used for cocain- solutions. The Davidson sprays so commonly used throw too coarse a spray, and in the absence of any control of the compressed air supply the spray is distributed too freely and that beyond the nasal cavities into the post-nasal space, which is not only unnecessary and undesirable, but quite discomforting to the patient. After the "preliminary spray" Dr. A. uses a 25 per cent. solution "by rubbing the probe, on which is arranged a small amount of cotton, back and forth gently, but continuously, allowing the cocainized cotton to reach every desired part of the membrane," intimating in the same paragraph that "anesthesia will take place in from three to five minutes."

Many of us who have had some experience of a not very pleasant kind, even from the use of solutions much weaker than a 25 per cent. solution, would not be so likely to follow Dr. A.'s "method," but "there are others" who would be specialists, that might realize the danger too late, especially in the case of an individual with a peculiar idiosyncracy. Therefore I must warn such against so free a use of so strong a solution of cocain in the nasal cavities.

In summing up the advantages of his method Dr. A. claims a saving of time, "not requiring more than three to five minutes, while the tampon method is fifteen to thirty minutes." The latter statement is contrary to the experience of most nose and throat specialists. Although time and space will not permit me to either defend or condemn the so-called "tampon method," suffice it to say that when correctly used (*i.e.*, by placing in contact with the mucosa a thin layer of cotton fibers moistened with a 5 per cent. solution of cocain covering a little more than the operative area, thereby limiting absorption and controlling toxic effects) is all sufficient for cautery and the various intra-nasal operative procedures. Dr. A. asserts that by his method a small amount of cocain is used, yet it is to be supposed that the rubbing of the probe charged with cocainized cotton back and forth continuously for from three to five minutes would permit the absorption of a sufficient quantity of the drug to produce decided toxic effect in persons only moderately susceptible to it.

He also asserts that the equal distribution is more desirable than the localized effect, for cautery, etc., which is true only in part, as explained in the first part of this communication. He furthermore asserts that "the admixture with mucus does not dilute nor lessen the anesthetic effect." Granting this latter statement to be true, the argument would be in favor of the method he incorrectly calls the "tampon method."

The suggestion of Dr. A. "to arrange the patient in the prone position, as for general anesthesia," is entirely gratuitous, since it is neither necessary nor convenient, in view of the difficulty to obtain hemostasis in operative procedures within the nasal cavities. It is a fact that the free hemorrhage so usual in intra-nasal operations makes the upright position imperative.

In conclusion, I would reiterate the statement that a 5 per cent. solution of cocain will be found all sufficient to secure the desired anesthesia of the nasal mucosa. In endolaryngeal operations, however, and in the post-nasal vault the careful use of a 10 per cent. solution is more satisfactory. I consider a 25 per cent. solution either in the nose or larynx to be recommended in exceptional cases only.

126 State Street.

A CASE OF BENIGN CICATRICIAL STRICTURE OF THE ILEUM.

OPERATION, LATERAL ANASTOMOSIS. EXHIBITION OF SPECIMEN REMOVED FIVE YEARS AFTER.

Read at the meeting of the Chicago Pathological Society, April 12, 1897

BY M. L. HARRIS, M.D.

Professor of Surgery, Chicago Policlinic.

The patient from whom this specimen was obtained presented the following history: Mr. C., age 57, American, married. Family history good. His health previous to the present trouble had been good. I could obtain no history of a former intestinal trouble such as dysentery, severe diarrhea, typhoid fever or any illness likely to have been attended by the formation of an ulcer or ulcers in the intestinal tract. He could date his present trouble back about three years. It began very gradually with symptoms of indigestion or dyspepsia, and for a long time was supposed to be due to his drinking habit, as he was a man who indulged rather freely in intoxicants. The symptoms, however, continued to increase in severity, unrelieved by medication. The bowels became constipated, with periodic attacks of diarrhea. His appetite failed and he wasted greatly in strength and flesh.

When seen by me Dec. 10, 1891, he was in an extremely miserable condition. He had wasted to a mere skeleton, weighing but 85 pounds. He was unable to retain nourishment, as he vomited everything put into the stomach. The ejecta were very offensive and semi-fecal in odor. Nothing had passed the bowels for several days.

An examination of the abdomen showed it to be somewhat distended. Large coils of small intestine were distinctly outlined through the abdominal wall and the peristaltic contraction was plainly visible. During these peristaltic waves, which were intermittent, the patient would experience severe griping pains. I have never seen coils of intestine so distinctly outlined and the peristaltic wave so plainly visible as in this case. Upon palpation an indistinct sense of resistance could be felt deep in the lower part of the abdomen, a little to the right of the mid-line. With the finger in the rectum this was more distinct, yet a tumor could nowhere be defined. The urine was normal except for the presence of a large amount of indican.

A diagnosis of chronic intestinal obstruction was easily made. Its location in the lower portion of the small intestine seemed likewise quite clear. Whether malignant or benign, however, was not so easily determined. His age and great emaciation spoke for malignancy. The length of time, fully three years, during which distinct symptoms had been present, the rarity of carcinoma in the small intestine and the absence of a tumor in an emaciated abdomen easily palpable, spoke more in favor of a benign stricture.

With this in view I determined to operate at once and form an anastomosis around the obstruction. The operation was performed Dec. 11, 1891. Upon opening the abdomen, the seat of obstruction was fortunately quickly reached and the loop drawn out. A linear mass of cicatricial tissue about 1.5 cm. in width, apparently involving most of the thickness of the gut wall, encircled the intestine, and by its contraction had almost completely obliterated the lumen of the canal. It did *not* extend at all on to the mesentery, which was perfectly free. It was evidently a simple, benign cicatricial stricture, and was located in the lower part of the ileum. The intestine below the stricture was very small, flat and empty, while above it was remarkably dilated, looking like a distended colon, its wall, from hypertrophy, being as thick as that of the stomach. A lateral anastomosis was made between the loop above and the one below the stricture, about 30 cm. being excluded from the intestinal current. Senn's large size decalcified bone plates were used in the operation. The recovery from the operation was rapid and without incident. He regained his health at once and made the most remarkable gain in weight, from 85 to 190 pounds in eleven months.

He continued in good health for about four years, when the effects of chronic renal and cardiac disease, aggravated or perhaps superinduced by his habits, began to show themselves, and from this time on the usual course of these diseases was passed through—general anasarca, ascites with repeated tappings, etc., and finally death in December, 1896, exactly five years after the operation. At no time was there any trouble with his intestinal tract after the operation. The specimen still shows the thick cicatricial mass forming the stricture and allowing but a small probe to pass.

The loop of intestine which was excluded has shrunken or atrophied to but a few cm. in length. The anastomotic opening is of good size, having contracted but little, and permits a free unobstructed passage of the intestinal contents. The great dilatation of the bowel above the stricture has all disappeared, the gut being now of uniform size. This is, so far as I am aware, the oldest specimen—five years—of a lateral anastomosis on record.

The cause of the stricture was in all probability cicatricial contraction following an intestinal ulcer, but the history of the patient gave no clue to the primary trouble, and no examination of the body or intestines was permitted after death.

A CASE OF DEFECT IN THE VENTRICULAR SEPTUM AND STENOSIS OF THE PULMONARY CONUS IN A MAN THIRTY-TWO YEARS OLD, WITH DEMONSTRATION OF THE HEART.

Read at the Meeting of the Chicago Pathological Society, April 12, 1897.

BY JOSEPHINE E. YOUNG, M.D.

CHICAGO, ILL.

October 2, 1896, a patient, 32 years of age, entered Cook County hospital, Chicago, with evidences of an acute, febrile disease. He gave the following history: When 2 years old a consultation of physicians was held—the child always having been so delicate that it was necessary to carry him about on a pillow, at that time being very poorly nourished and developed, unable to walk, and having at frequent intervals attacks of marked cyanosis. The consultants told his mother that he could not live to maturity. At the age of 17, Prof. Lyman of Rush Medical College demonstrated the case in his clinic as one of cardiac disease. During his entire life, upon marked exertion or excitement. the patient had attacks of pronounced cyanosis.

Upon entrance to the hospital, physical examination revealed the following: General development and nourishment good, clubbed finger ends, color ruddy, no evidence of cyanosis at this time. The pulse was full and regular, later becoming irregular and distinctly subingual. *Heart:* percussion, relative dulness *right border* to the right of the right sternal line, *base* third rib, *left border* left mammillary line. There was increased dulness when the patient leaned forward. One month later the dulness extended two cm. to the left of the left mammillary line. Palpation: upon entrance there was distinct fremitus over the entire precordia. The apex beat was strong and regular. One month later there was marked arrhythmia. Auscultation: a very loud systolic murmur could be heard over the entire thorax, anteriorly and posteriorly, the maximum intensity being at the junction of the third rib with the left border of the sternum. The murmur was heard very distinctly along the entire left sternal border. There was no accentuation of the second pulmonic tone. Notwithstanding the fact that for eighteen days the temperature remained at or near 103; there was never any cyanosis. The urine was negative, both as to albumin and morphologic elements. Other findings bear no especial relation to the cardiac lesions, the diagnosis of the acute disease halting between acute endocarditis and typhoid fever. Dr. James B. Herrick at this time made a diagnosis of congenital heart disease.

The patient was discharged Nov. 24, 1896, after recovery from the acute attack. Dec. 12, 1896, he reentered the hospital with facial erysipelas.

The heart and lung findings were as before. In a few days, with a temperature of 104 degrees, cyanosis became a marked feature. The heart was very arrhythmic, the pulse correspondingly irregular and compressible. The spleen extended five cm. below the left costal arch, the liver one and one-half cm. below the right costal arch and in the mammillary line. Examination of the urine showed albumin in rather large amount and granular casts. The extremities were not edematous. Two days before death the dyspnea was extreme and respirations increased to fifty-two. The patient's critical condition and constant right decubitus prevented a thorough examination of the right lung, which later showed evidences of pneumonia. He was rational throughout.

Death occurred Jan. 12, 1897, after one month's illness, during which time the temperature was frequently 104 and 105 degrees.

The clinical diagnosis was facial erysipelas, acute splenitis, nephritis, pneumonia (?), general septic infection, and congenital heart disease. The autopsy was mrde by Dr. Ludwig Hektoen, Jan. 18, 1897.

Anatomic diagnosis: healed facial erysipelas, lobar pneumonia, embolic abscess in the left lung, acute splenic tumor, chronic and acute nephritis, chronic gastritis, pigmented Peyer's patches, hypertrophy of the heart, chronic and acute endocarditis of the tricuspid and pulmonary valves and the wall of the right ventricle, stenosis of the pulmonary conus and congenital defect of the ventricular septum.

The bacteriologic examination of the organs showed staphylococci pyogenes albus and citreus to be present everywhere.

The cardiac findings more particularly are the following: The hypertrophy is rather marked; the heart weighs 400 grams; the apex is composed equally of the right and left ventricles; the wall of the right auricle measures 4 mm. in the thickest part, that of the left auricle 3 mm.; the wall of the right ventricle averages 1 cm. in thickness, that of the left ventricle 1½ cm.; the circumference of the aorta at the valvus is 5.7 cm., that of the pulmonary artery is 5.4 c.m.; the ductus Botalli is closed; the arrangement of the pulmonary artery is normal, that of the aorta, which communicates only with the left ventricle, is normal also. Four cm. below the upper margin of the pulmonic semi-lunar valves there is a stenosis of the pulmonary conus, due to fibrous tissue. The lumen of the conus measures 1 cm. in its largest diameter; the foramen ovale is patent, admitting a lead pencil through its orifice; a sickle-shaped valve covers it. Directly below the semi-lunar valves of the aorta there is a defect in the ventricular septum which measures 2.6 cm. in the horizontal diameter, 2 cm. in the vertical diameter. This defect corresponds to the septum membranacum, or undefended space, the last part of the ventricular septum to close, composed normally of a thin layer of fibrous tissue covered with endothelium. The pulmonary valves are thickened; the free margins of the posterior segment are covered by large polypoid vegetations. These spring also from the ventricular surfaces of the valves and from the wall of the pulmonary artery. The free margins of the tricuspid valves are thickened. Here then are distinct polypoid vegetations. The orifice admits four finger-tips easily; the right auricular appendix shows some irregular masses; the aorta valves are free from thickening; the aorta shows no atheroma; the mitral valve is normal, admitting four finger-tips snugly; the myocardium, except at the stenosis of the conus, is normal. Microscopically, the striæ and nuclei of the fibers are normal, but there is a general segmentation.

The clinical diagnosis of congenital heart disease was based upon the history, the cyanosis, hypertrophy of the right heart, position of the systolic murmur and thrill at the junction of the left third rib with the sternum, the intensity and widespread transmission of the thrill and the weak second pulmonic tone.

As to the formation of the lesions, Fraentzel, Bamberger and Oppolzer support the Hunter-Morgagni theory, a myo- or endo- carditis occurring before the eighth week of fetal life is the cause of the stenosis of the pulmonary artery or its conus. This greatly increases blood pressure by preventing the proper escape of the blood from the right ventricle, the blood necessarily forcing its way into the left ventricle through the undeveloped septum. If the opening in the septum is sufficiently large blood pressure in the right heart is compensated for—there may be no opening (in the septum) of the foramen ovale. If not large enough there will be hypertrophy and dilatation of the right ventricle, stasis in the right auricle, with passage of blood through the foramen ovale, which remains patent.

The case is of interest not so much from its rarity as from the following points: The patient had reached the age of 32, was a strong, well-developed man doing the ordinarily heavy work of a laborer, had passed through an acute febrile attack of eighteen days' duration without any evidence of cyanosis, had resisted for a month profound erysipelatous and septic infection and had entirely escaped pulmonary tuberculosis, a condition frequent in these cases, owing to the diminished supply of blood sent to the lungs.

A Progressive Potentate.—The young Emperor of China, with a lost faith in the traditional remedies of his people, has dispatched to the medical centers of Europe a large number of students. London, Paris, Berlin and Vienna have already received a respectable installment.

ADAPTATION AND INSERTION OF AN ARTIFICIAL EYE; ENUCLEATION, SYMPATHETIC PHENOMENA, ETC.

BY WILLIAM B. MEANY, M.D.
MEMBER OF THE AMERICAN MEDICAL ASSOCIATION, ETC.
SAINT LOUIS, MO.

The exercise of a little care with "troublesome" cases in the taking of a caste—either with dentist wax or with superfine dental plaster-of-paris—of the tissue walls of the orbital cavity resulting from the removal of an eyeball, and the artificial eye to be inserted fashioned on the lines of the "model," may overcome the difficulties complained of by advocates of dangerous substitute proceedings for the benign operation of enucleation.

An artificial eye should be fabricated to meet the requirements of the anatomic conformation of the orbital cavity, rather than the adaptation of the tissue walls to a misfit or bespoke eye—which has never been known to vary from its present shape for half a century or thereabouts.

By the adoption of this plan of procedure hazardous and unwarrantable "operations" that permit the retention of a portion of the structure of an eyeball that has become or is liable to take on disease at any moment, and thereby incite sympathetic phenomena, will be avoided; and the present unsatisfactory process of "grinding down" of the shop (stock) eye be dispensed with.

The insertion of an artificial eye is very simple and is soon learned by the patient. It must first be steadily pushed beneath the upper eyelid and held there while the lower lid is brought around its lower edges.

Its removal is readily facilitated by depressing the lower lid so as to expose the lower edge of the artificial eye, when it usually slips out by its own weight, and should be caught in a handkerchief or permitted to drop out upon a bed. An artificial eye should not be adapted or inserted until the cicatrix of the conjunctiva and other tissues of the orbit become firm, quiet and free from ulceration or inflammatory discharges. By selecting an artificial eye somewhat smaller than the remaining or sound eye, the distorted or over-exaggerated appearance is avoided. The eye should not be worn continuously—that is, never during bedtime.

ENUCLEATION.

This operation or excision of the eyeball is usually performed as follows: A fold of the conjunctiva on the inner or nasal side of the eye having been seized with the forceps is divided with a scissors at the corneo-scleral juncture along its entire circumference. The tendons of the muscles caught up with a strabismus hook and divided, the globe turned firmly outward and forward; the scissors (those curved on the flat being used), introduced either on the nasal or temporal side of the eye as the operator may elect. the blades of the scissor being separated so as to straddle the optic nerve, permitting of easy division. Care should be taken to excise the nerve some distance from its ocular attachment.

The globe being brought out of the orbit, the oblique nerves and vessels are divided. The cavity is then carefully syringed with a cold boric acid or a 1 to 10,000 sublimate lotion, or both: the slight hemorrhage that follows the operation is usually arrested by the "syringing" of the cold antiseptic solutions

A suture uniting the superior and inferior margins of the conjunctiva introduced; a rondelle of antiseptic cotton wool previously moistened with distilled water is inserted between the lids and a compressive bandage applied, and permitted to remain for twenty-four or thirty-six hours.

The stitches uniting the superior and inferior margins of the conjunctiva are generally removed on the second day following the enucleation.

The following operation has been suggested a decade or more ago and appears to possess the important advantages derived from the operation of enucleation with none of the disadvantages of that of evisceration, as proposed by Mr. Mules, or other "operations" that do not materially differ from evisceration other than as to the method in removing a little more or less of nerve tissue, and the dangers arising from sympathetic trouble being almost *nil* when compared to the so-called surgical interferences that permit the retension of a portion of the structures of a globe that has already become or is liable to take on disease at any moment.

The operation is similar or in fact is practically identical with that of enucleation with the addition of a sterilized hollow glass sphere (to avoid the dangers of a sphere becoming fractured one made of silver or aluminum has been suggested as a likely substitute) is inserted into the cavity of Tenon's capsule and the conjunctiva stitched firmly over it; a temporary catgut drain will have to be used in conjunction with the operation.

When the eyeball is entirely removed as in this operation there is no likelihood of disease being propagated and thereby displacing the questionable practice commended by a writer in an article of a late date, of the "ingrafting" into the tissues of the orbital cavity portions of so dangerous a substance as the "deadly" sepsis-generating sponge, to act as a "support" for an artificial eye.

Advocates of "substitutes" for enucleation who, for reasons of their own, appear unable to obtain a proper support for an artificial eye following their enucleations, will find a useful and movable support, as the muscles of the eyeball are attached upon the sphere inclosed within it; as Tenon's capsule is attached to the conjunctiva in front, when this is sutured the capsule is rendered tense and becomes accurately adapted to the selected sphere. This operation, however presents some disadvantages.

The operation of enucleation is wonderfully benign and if carefully performed does not in the least interfere with the adjustment of an artificial eye, whose motility will be as perfect as if resting upon a shrunken globe, besides being free from the dangers of a shrunken remnant of a lost eye, acting in the same prejudicial manner as an injured or diseased eye before having parted with its contents or a portion of its structures. A most happy effect is gained by enucleation, in arresting and subduing the *irritation* which threatens to develop into *destructive* inflammation of the sound eye.

Enucleation at an early stage should be insisted upon where eyes have been crushed by blows, that are the *site* of neoplastic growths that may prove malignant; eyes that have been penetrated by foreign bodies which are not removable, which belong to patients who can not be trusted to take either proper care of themselves or to return if they are threatened with sympathetic *irritation*.

When the exciting eye is evidently rendered useless by the wound or from consequent inflammation, that is when its vision amounts to perception of light, and when there is no probability that sight will improve without incurring the risks of the sympathizing eye, the exciting eye should immediately be excised. If the sympathizing eye is only suffering from *irritation* and presents no symptoms of *inflammation* the removal of the exciting eye will be followed by immediate relief of the irritation and no symptoms of inflammation are likely to appear; hence the necessity of an early enucleation of useless eyeballs from persons in whom one sound eye remains as a prophylatic measure. Advocates of such "operations" as abscission, neurotomy, optico-ciliary neurotomy, exenteration or substitutes of a like character that permit the retension of a portion of a diseased globe, can hardly advance any claim to merit, save to afford *only* temporary relief from sensitive and painful eyeballs without offering the least safeguard to the prevention of sympathetic phenomena or destructive inflammation of the sound or remaining eye.

The operation of enucleation should alone be practiced, and the "substitute" procedures adopted and advocated every now and then by some youthful or experimental surgeon, inhibited by law.

3907 West Belle Place.

A NEW SPLINT FOR NASAL FRACTURES AND DEFORMITIES.

Read at the Third Annual Meeting of the American Academy of Railway Surgeons, held at Chicago, Sept. 23, 24 and 25, 1896.

BY JESSE HAWES, M. D.,

DIVISION SURGEON ON THE UNION PACIFIC, DENVER AND GULF RAILWAY, GREELEY, COLO.

This splint is intended for cases of nasal fracture in which there is a drawing upward of the point of the nose or of the alæ. Permit me to describe it by the narration of a case in which necessity demanded it

C. W., boy aged 10 years, was brought to me, having been kicked by a horse several days before. The toe of the animal struck the nasal septum at its junction with the upper lip. The blow cut the septum loose from the lip. A wound extended through the septum from the point of union with the lip directly upward for three-fourths of an inch.

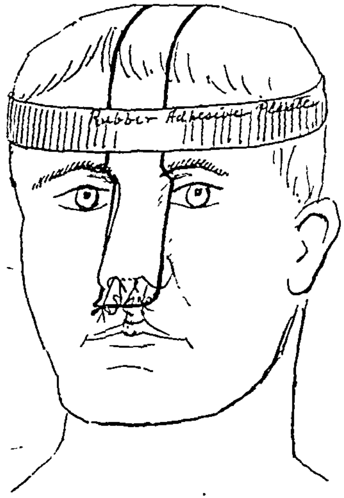
The detached edge of the septum was rolled up into the nose; both alæ were forced upward; the nasal bones were detatched from the maxillary and driven upward, and small pieces of the maxillary were broken on each side of the nose. The contractions of the levators of the nose held the soft and hard tissues where they had been driven by the kick. The point of the nose was far above its normal position; the right ala was much higher than the left.

The first step toward repair must be to bring down and fasten the septum in its position, the next to replace the fractured bones, the last to bring down and retain in position the upturned nose. To fasten the septum by stitches was simple; the nasal bones were easily pressed into their normal position, but slipped outward as soon as manual pressure was removed. To bring down and *retain* the point of the nose in its proper place was impossible.

The best suggestion I could get from "the books" and experience was to draw the nose down by grasping its point, then to transfix the lower end of the septum antero-posteriorly with a long, stout, steel needle, the point of which was driven down in the palatal process of the superior maxillary. (See illustrations in Roberts' Surgery.) While this partially held the point of the nose from being drawn upward, it did so very imperfectly; the upward dislocation of the alæ was corrected but very little. The quite recent editions of Bryant, Keene, Ashhurst, Stephen Smith, Wyeth, Roberts, Ashhurst's Cyclopedia, Hamilton's Fractures, Holmes, Gross and Stimson offered no helpful suggestion.

After several days of chagrin over my inability to control the deformity, the very simple nasal appliance which I here present suggested itself.

It consists of a piece of No. 15 spring brass wire of suitable length, bent first into the form of a rectangular letter U, the arms of which are about an inch apart and long enough to extend from the center of the upper lip to the crown of the head or beyond that point; opposite the supra-orbital ridge a sharp angle is formed; this angle is to permit the splint to enter the orbital cavity just beneath the orbital ridge; this angle is a means of fixation of the splint against the supra-orbital ridge and is one of the most essential features of the appliance. The lower end of the splint — i. e., the transverse portion — is carried forward, away from the lip, the distance of a half inch.



A continued narration of the case will best illustrate the application of the appliance: Having formed the wire splint to fit the head, forehead and nose of my patient it was applied to these parts; a folded piece of lintine was placed between the wire and the orbital ridge to prevent painful pressure at that point; the splint was held firmly in contact with the head with a broad strap of rubber adhesive plaster carried across the forehead and completely around the head.

The nasal bones, which could only be held in position by continuous pressure, were easily retained by pads of lintine placed between the splint and the side of the nose. A large, strong silk suture was carried through the septum near the point of the nose, the nose was pulled down by tying the ligature to the transverse wire beneath. The mucous membrane and cartilage (but not the skin) of each of the alæ were pierced by similar ligatures, and when drawn down to their proper positions the ligatures were fastened to the wire beneath.

The result in my case was eminently satisfactory though not perfection and was far better with this splint than it could have been by using any splint that has preceded it; indeed there *is* no appliance, so far as I can learn, that *can* perform the office of this.

I have recently added to the appliance a means of elevating depressed portions of the nose and permanently retaining them in position. It consists of a wire of spring brass, bent so as to elevate the depression to the normal position by pressing upward from the inside of the nose. The wire should be covered with soft-rubber tubing; the stiffness of the wire should ordinarily be less than that of the outside splint. Each intra-nasal wire can be firmly fixed to the lower angle of the splint by a simple mechanical arrangement. This permits the intra-nasal wire to be removed from the nose and from the splint when necessary to change its form or pressure. I have experimented with these intra-nasal attachments and believe that when properly fitted to the inner surface of the nose they will raise the depressed part and retain it in position more satisfactorily than any other device heretofore offered. The splints are manufactured by Chas. Truax & Co., 75 Wabash Avenue, Chicago.

Let me recapitulate the advantages of the appliance:

1. They are simple; the first described appliance can be made in a few minutes by any surgeon who has the wire and a pair of suitable forceps.
2. It is easily applied, remains permanently in position and permits the organ to be inspected during the progress of recovery.
3. It holds a compress firmly to the side of the nose when such are needed to correct deviations, an important matter in some cases.
4. It will draw down the point of the nose or the alæ and hold them firmly in their normal position. No other appliance for accomplishing this has heretofore been presented to our profession.
5. The intra-nasal wires, when used, remain where placed, a statement that is not true of the intra-nasal plugs ordinarily used, such as cloth-cotton, rubber tubes, etc.
6. I suggest the use of the intra-nasal splint in restoring the normal esthetic shape and overcoming the deformities of noses long previously fractured, after vicious adhesions and unions have been broken up.

DISCUSSION.

Dr. E. M. DOOLEY, Buffalo—I think, as I have served as a lay figure for the demonstration of this apparatus, it is my privilege to speak on this subject, and I would like to state for the benefit of those who have had no experience with the splint, that my experience was extremely pleasant; in other words, it was quite comfortable as long as I had it on—but whether the inside is as comfortable or not I have my doubts. But I think from my experience with broken noses, and owing to the locality in which I live I have had a great deal of experience with broken noses, and I have often been at a loss to have a splint that would do in any and all cases, and I feel very thankful to Dr. Hawes for exhibiting this splint, and I shall use it in the next case where I think it will be of service.

Dr. KIBLER, Cory, Pa.--Just one matter that occurred to me in connection with the splint, and that is—I am glad that Dr. Dooley testifies to the fact that the splint is a good one--could that part that enters the nose be made of hard rubber? It could be made more thoroughly aseptic and I believe give less danger to the mucous surfaces than you could have from the brass wire.

Dr. HAWES—It probably slipped your attention that that is covered with a soft rubber catheter.

Dr. LEMEN, Denver—As this originated in my neighborhood, Dr. Hawes being a neighbor of mine, and I was being occasionally asked to treat broken noses, he insisted that I use it, and I have used it in a number of cases and am very much pleased with its application; it holds the position of the bones perfectly. If the surgeon's apposition is properly attended to, the same is continued by the application of the splint.

Dr. COLE, Helena—It strikes me as being an extremely ingenious device. In the entire field of accidental surgery in minor matters there is nothing more troublesome, perhaps, than fracture of the nose with displacement, and to get a satisfactory result is sometimes exceedingly difficult, and if I understand rightly the application of this apparatus it should be a practical part of every surgeon's paraphernalia.

Dr. W. J. MAYO, Rochester, Minn.—I was very much interested in the splint of the Doctor, the external part I have never seen used in this connection. My brother, Dr. C. H. Mayo, has used a somewhat similar intra nasal splint in the elevation of depressed nasal fractures, and also a method of his own for the relief of sunken nose caused either by fracture or specific disease. In sunken nose he cuts obliquely through the septum and the depressed tissues behind and inside of the nose with a heavy chisel or cartilage knife, and elevating the septum introduces the splint, which allows sound union at a high level. In these cases the results have been excellent and continued so. The bevel of the cut surface enables the sliding upward of the depressed portion. The splint used by him consists of a similar piece of brass wire bent by a single turn into a coil, the two projecting ends being introduced into the nostrils, one along the floor, the other sprung up beneath the depression; the tension of the spring thus formed gives the necessary upward curve, one splint thus constructed and covered with iodoform gauze being introduced into each side and left for a number of days.

Dr. BRYANT, Omaha—I think this invention of Dr. Hawes for holding down the nose after an injury, not only the best splint I have seen, but the only one. I have never seen one for this particular purpose. The difficulty in a majority of the cases where injury to the nose has been received, is not to hold the nose down, but to raise it up—probably 90 per cent. or more would have a depressed nose, instead of an elevated nose; but this seems to be an all round splint, not only to hold it down but to elevate it. If I were to criticise this I think it would be in the portion that enters the nostril, and that criticism is not anything of value, it simply would be this: In many cases, make it larger in order to keep it in, and that could be done by winding the copper with thread or string and then using soft rubber over that. I believe soft rubber is the best thing to prevent irritation of the mucous membrane, and I think this [indicating] might be uncomfortable after using it any length of time—that is, I think it would.

Dr. HAWES—In making some remarks upon the comments that have been made I come first to the comment that the inside appliance is uncomfortable. Any man that has ever had any experience knows that nothing is very comfortable in the nose; whenever you push up there a lot of cotton or cloth it is uncomfortable—but that has hardly ever been an objection during the years it has been practiced; it would be customary to use a wad of cotton, which is a thousand times more uncom- table than the other, which is much more efficient. One of e other criticisms was on account of using a hard brass sub- that was liable to corrode. That I reply to with the statement that in the paper it was stated it should be covered with a soft rubber catheter. I want to call attention to another fact, that I have presented to you two splints, the second is an outgrowth of the first; the second can be used for all purposes that the first was used for, the first can not be used for the purpose for which the second is. The first is intended to draw down the nose when it has been drawn upward; the second is intended to raise the nose from the inside, which is wholly outside of the field intended as the proper field of the first. Dr. Mayo speaks of a method which I was not aware of; I have never seen it mentioned in the books. It is very evidently an excellent method of raising these depressed noses. This one of mine, while I have never had an opportunity to raise depressed noses, I have no doubt will do exactly what the other one does. The person who is using the splint should have some knowledge of the anatomic form of the inside of the nose, and should then bend his wires so that they should fit that form in particular, and raise the nose to its normal and esthetic position. The comment of Dr. Bryant that it should be larger can be very easily attained by using a larger catheter instead of the little catheter—I peeled off and threw away the rubber that I had on the outside when I began to talk, to show you the wire. By using the larger catheter you can adapt it on the inside to a nose of any size that you desire. Another of our members inquires. Where can I get these splints? I have stated in the paper that all you have to do is to get a piece of wire and a pair of pincers. If you want something better you might go down to any of the instrument makers, or even to the common tinsmith, and by giving your ideas, you might get it made in a very few minutes—if you go to the instrument maker it will cost you a dollar and a half; if you go to the tinsmith it will cost you ten cents. That is all.

THE PRESIDENT—Can the surgeon readily make that second splint?

Dr. HAWES—I made one; I am not a tinker or son of a tinker, but I made one in a bungling sort of way. This I took to the tinker and asked him to make it, and he made it rather better, shapelier far than I can; you would have to take that second one to the tinker or tinsmith or instrument maker. I do not think it is wholly perfect, but that it is an embryo of a valuable instrument, a valuable appliance.

Dr. REINEKING, Sheboygan, Wis.—I would like to make a suggestion in regard to the enlargement of the intranasal portion. I think that can be done and made comfortable by winding around absorbent cotton and dipping that in melted parafin which can be impregnated with an antiseptic solution; a backing of cotton cloth can be built up on the intranasal splint; the parafin is hard enough to make sufficient pressure.

Dr. HARNDEN, Waverly, N.Y.—I think it would be in order that a vote of thanks of this Academy be extended to the Doctor for bringing to our attention the valuable instrument.

Motion seconded and unanimously carried.

REMARKS ON THE TREATMENT OF FRACTURES.

Made at the Third Annual Meeting of the American Academy of Railway Surgeons, held at Chicago, Ill., Sept. 23, 24, 25, 1896.

BY R. ORTEGA, M.D.

CHIEF SURGEON TO THE MEXICAN INTERNATIONAL RAILWAY,
CIUDAD PORFIRIO DIAZ, MEXICO.

I want to talk about a treatment or practice which gives the patient entire relief at once from pain and puts him in good condition for work as soon as the fracture is solid. As soon as a patient breaks a bone I make massage from the lower part of the fractured limb to the upper part; we commence to do the massage very gently just on the skin, with anything, oil, or soap and water, salve or vaselin to allow the hand to rub without hurting. Ten or fifteen minutes afterward we do the massage on the muscles, always from the end of the member up, never making pressure; in ten or fifteen minutes after the pain is gone and we can reduce the fracture without chloroform or pain. As soon as the fracture is reduced we roll it in a simple flannel bandage, from the end of the member upward; if it is in the arm we put the arm in a simple handkerchief from the neck; if it is in the upper arm, the weight of the arm is enough to keep the fracture in good position. And the next day we do the same treatment, a little massage and a little movement in all the joints of the broken limb. I have done this treatment for a year. I have had but few cases as my practice is very small. One boy about 18 years old, had a wheel from which he fell and broke his right arm in the middle with a compound fracture, the upper end of the humerus projecting through the skin. Dr. Lord reduced this fracture, put on a good dressing and an apparatus, and he called the next day to see the patient; the patient wanted to cross the river. I saw the boy with Dr. Lord; we took off the apparatus, the wound was in good condition, aseptic because the doctor had put a very nice and good dressing on. I told him I was going to take off the apparatus as soon as I brought the boy over the river. I did so and then applied a bandage, and made motion in the elbow and other joints and in fifteen days this boy was at work as before the injury. There was a compound fracture of the humerus and simple fracture of the ulna, and in fifteen days later the boy recovered and worked as before, all the bones completely healed. I had one day two cases: one a small boy about 6 years old, broke the humerus of the right arm, not a compound fracture; I applied massage at once, and in ten days this little boy climbed trees and did almost everything. The same day in the shop, a workman broke his humerus in the middle, and the fracture was displaced, I did massage and put the fracture in position and rolled it in a bandage, and I left this arm without an operation; I did massage every day and about 20 days afterward this patient was in good condition. I do not remember the details of other cases, but I want to call your attention to this treatment. It gives a little more trouble to the doctor but that does not count; the patient does not suffer and is able to work very soon. My company does not give wages to people when they are sick and I think this treatment is very good because it does not keep patients two or three months without working; they can go to work in 15 or 20 days.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

VIII.—PROFESSORS OF SURGERY AND PRACTICAL SURGEONS (WUNDAERZTE).

(*Continued from page 29.*)

In October, 1765, two Germans traveling for study reached Leyden together. With the greatest kindness, their celebrated countryman, Albinus (born in Frankfort on the Oder), whose anatomic works and drawings surpassed anything which had hitherto been done in descriptive anatomy, opened to them his invaluable storehouse of specimens. The two young men, who here formed a bond of friendship which lasted through their whole lives, became later the best teachers of surgery, A. G. Richter and *Carl Caspar von Siebold.* The latter, who was six years the elder, was born (1736-1807) in the little town of Nidecken, where his father was a surgeon, and at the age of 16 he entered the school in Cologne, in order to study philosophy. There he made such good progress that he was enabled to take part in public disputations. In 1755 he returned to his father, who gave him instruction in surgery. When the "Seven Years' War" broke out Caspar entered the French army, which marched against the Hanoverians in Jülich. For three years he remained in the French field hospitals, where he had opportunities to perform operations. While in winter quarters he attended the lectures which were given by some French surgeons, according to official requirement. In 1760 he was stationed in Würzburg, became acquainted with the professors there, gave up his appointment and became assistant to Stang (later his father-in-law), who had been chief surgeon in Julius Hospital since 1731. Here he also attended theoretic and practical lectures for three years and then took his doctor's examination. The conferring of the degree was postponed, as the bishop-prince gave him money out of the university funds to enable him to travel. Siebold went to Paris (1763), remained there eighteen months, attaching himself chiefly to Morand, in the Invaliden Hôtel. He heard Sabatier, de la Faye, Bordenave, A. Petit and Levret, industriously practiced lithotomy on cadavers under Moreau, and visited the Hôtel Dieu. In 1765 he visited Le Cat in Rouen, and resided with him a long time in order to learn better methods in lithotomy. Then he went to London. There W. Hunter, Pringle and the operations of Pott, Bromfield and Hawkins engaged his attention for three months. From there he went to Leyden and visited Albin and Gaub. In 1766 he turned back to Würzburg, where three years later he received his degree. He assisted the professor of anatomy, surgery and obstetrics, Huber, and the chief surgeon Stang, who now retired. After their death he filled the two offices of city and country obstetrician (1779). He refused a call to Berlin as professor of surgery, and surgeon in the Charité. The battle of Würzburg, in which Archduke Charles forced the retreat of the French, brought many wounded Austrians into Julius Hospital, and these were cared for by Siebold and his sons. As a recognition of his untiring activity, Emperor Francis II raised him and his descendants to the nobility of the Holy Roman Empire (1801). Soon after the bishop-prince advanced him from private-surgeon to private-physician, and the court councillor promoted him from professor to privy-councillor. Siebold's activity in the various faculties was very extensive, yet he managed affairs with great energy. In the winter he lectured on anatomy, conducted the experiments in preparations, at first without a prosector by his side, lectured on operations and gave a course in operations. In the summer he lectured on bones and bandages. After New Year's he gave instruction to the midwives and frequently gave private lectures on the theory of obstetrics and diseases of the eye. He was also engaged in making a collection of surgical specimens and conducted the surgical clinic in Julius Hospital every day. For his relief he gave up obstetrics (1790) and had his son, J. Barthel, appointed extraordinary professor of anatomy and surgery (1797), who had had the special instruction of treating the patients in Julius Hospital with his father. When, in 1802, the government of the bishop-prince was abolished and the Bavarian kingdom set up in its place, a reorganization of the university, henceforward called Julius-Maximilian University, was effected, and the chair of anatomy was separated from that of surgery. Carl Caspar and J. Barthel were appointed professors of surgery, and the former acted as director of the anatomico-surgical institute.

With C. C. von Siebold there began for Würzburg a new and brilliant epoch, such as the university had never before experienced, insomuch that at the end of the century Würzburg was considered one of the first universities in Catholic Germany. Aside from the successes which Siebold achieved in behalf of his little fatherland through the founding of the surgical clinic, the improvement of obstetrics, through his active part in the organization of Julius-Maximilian University, and through the elevation of the surgical profession in the eyes of physicians and of the public, it was especially upon his eminent qualities as a teacher that his reputation in Germany rested. After Göttingen came Würzburg, which had the advantage of possessing over the first mentioned and over other universities, a very large and beautiful hospital—the principal school for surgeons. Siebold attracted a great number of students, among them many foreigners, and he distinguished himself before his colleagues through the fact that he trained up a large number of academic teachers from his body of assistants. Among these, besides his sons, were Professors Weidmann and Fibig in Mainz, [illegible] in

Bamberg, Brünninghausen and Hesselbach in Würzburg, Markard, Adelmann and others. Many of his countrymen considered Siebold as one of the greatest surgeons of his time, and his copper-plate portrait bore the inscription "Chirurgus inter Germanos princeps." Sometimes the reputation of an eminent man is depreciated by envy, but in this case it was exaggerated by enthusiasm. Only the crucible of time brings out the true merits, and history has moderated that judgment. Doubtless Siebold was one of the best surgeons of his time, but he had no very great scientific importance; surgery was not advanced by him. He was a good operator and was honest enough to regret that he had never become skilled in cutting with his left hand, and he advised his pupils to early learn to cut and saw with the left hand, in the dissecting room. For the first time in Germany (1778) he performed the synchondrotomy with success, for which the *Académie de Chirurgie* in Paris made him one of its members. He also several times ventured upon the extirpation of the *scirrhous parotis*, yet he adhered to the principle of Celsus against too great a readiness to operate: Never lay a hand on one whom thou canst not save, then thou wilt not be thought the murderer of those whom thou couldst not save.

We can get a clearer picture of Siebold's intellectual bent if we allow him to speak for himself. After he had reviewed, in the preface to his surgical day-book, the difficulties with which he at first had to contend in Würzburg in order to elevate surgery and the profession of the surgeon, he says: "Often my labors were not entirely unrewarded, but I have found the greatest reward within myself, and in the abiding consciousness that I have neither utilized nor called forth all that might be achieved in the realm of the profession, in its extreme limits. . . . As chief surgeon of Julius Hospital I was in a position to practice the profession to my heart's desire, and to put its principles into the completest execution. I always consider the hours which I devote to visits in this place as the best and most pleasant of the whole day. . . . Almost from the first hour of the practice of my chosen profession I have taken the opportunity daily write down faithfully and circumstantially all or early all the cases which have come before me, together with their progress and result, because I would be so completely absorbed in many cases that conversation with colleagues of sterling worth was impossible to me. Literary work was not at that time a part of my intentions, and indeed could hardly have been so, as I was expected to remedy ills with the knife and not with the pen. This note book I kept up every day, and I do not know whether one of my natural functions or the keeping of this so-called day-book is now the more natural to me. I noticed at the same time a subtle influence upon my own development, and encouraged my young colleagues to undertake a like system with their cases, for the sake of their own progress and for the refining of their powers of observation, which demand training just as much as any other of the faculties. . . . Many observations I turned to good account in disputations . . . but in the eyes of my friends I was no writer. At times I indulged in enthusiasm: I had illusions, and saw in the most vivid colors huge volumes before me, with which I should shine in the world of letters; many a time I wrote half the night (for the days left me no time). . . . Sometimes all desire for the life of a writer forsook me; at times the greatest indifference overcame me; such was my fate for twelve years, in which sometimes I would be a writer, again I would not. A few friends, indeed, addressed themselves to my conscience, and said that the "not yet writer" committed a sin of omission which I (they flattered me!) with my scholarly career took to heart. . . . My friends were not entirely wrong; I will resolve to seat myself and sharpen my pen for a literary life. I resolved, yet long remained undecided, for all kinds of difficulties confronted me; the greatest was my ever-increasing practice. Then I found that it is not so easy to establish one's self as a writer; it is one thing to settle a matter with the knife and quite another to do so with the pen. . . . I finally resolved to all earnestness. . . . In my fifty-fifth year I entered upon my literary career. But once more (rief ich ihm unter der Hausthure), supposing the effort should not meet with applause or should fail. My friends vouchsafed me scarcely a glance, I was obliged to pluck him by the coat and extort an answer from him. 'How can you have any doubt of it?' said he, 'your business is truth, and it is the business of humanity.' . . . My readers will see that to me, or rather to my temperament, which I can not change, it is a hard matter to become an author, a career upon which many cheerfully venture before they know anything, whereon they can write, and carry a pencil in their trousers pocket, and suppose themselves to be writers before they even have at hand material enough for a single letter. . . . I began to break off many pleasures, to sacrifice myself, and gradually to become accustomed to sitting, in the face of former habits of long duration. Now the time for action had come. . . . But from all this my readers will see that I was not born a writer. . . . I have often observed in young surgeons, and, if I may be permitted to say so, also in older ones, that the most ordinary things, or rather their proper handling, seemed the greatest rarity. Accordingly I consider the most valuable those of my notes of which the intelligent reader can make the most use. It is not my purpose to dispense so-called observationes rariores, yet I will let such go with the rest; let anyone use them who can. I have employed the chronological order, and a kind of disorderly order, which also appears in other writings of the kind which have passed unscathed through the hands of good critics. . . . I lead my friends through a blossoming meadow; let every one pluck and read and carry away what pleases him, and leave the tree and shrub standing; that which appears to him unfruitful perhaps he may take to his colleague. . . . Pardon me, worthy masters, that I can not appear in your uniform; I have the misfortune to be a man who finds himself continually on the road in behalf of his science and of mankind, and one who can not possibly find time to change his traveling clothes in order to present himself in a literary garb. . . . My intention is to use and not to publish. . . . Elegance of diction is no part of my business, and still less is literary adornment, yet I have not been careless in seeking for the greatest possible accuracy of expression. Should many an inaccuracy have crept in, I request that the honorable police court of the language, charged with the keeping of the purity of the *German* tongue, do not exceed the bounds of its jurisdiction, and for the sake of a small twig uproot the whole tree. What would be said of such a forester? . . . I believe I have observed a certain kind of punctuality in the applying of the bandages and the use of the instrument, even in cases of minor surgery, so-called against my comprehension and wish, for I consider such just as little beneath the dignity of a surgeon as the greatest and most celebrated operation, because in all cases a man can be a great or a small surgeon. Truth, I repeat, is the stamp which I wish above everything to incorporate in my observations; I have accordingly not only related my successful cases, but even my mistakes, and have acknowledged myself as the author of a mistake when I either misunderstood the language of nature or anticipated it in too hasty a manner, and all with the best intentions! I have also striven, as appears to me to be the duty of an honorable man, to present all sides, even at the expense of my own vanity. . . . I make the honest confession to my readers that I have felt just as much delight when I could endorse an old method for the benefit of the profession as when I saw something new gained for it. I have, therefore, never affected a love for innovation. I have cheerfully been the last to take up a new theory, and have accordingly gained thereby. . . . . . So I confess that in the confirmation of an old principle throughout a number of uniform experiences I count it as much to my credit as in the discovery of a new and unheard of case, which is often the result of accident, and in need of further confirmation. Yet my readers will find, least of all, that I condemn what is new, for I believe myself to have kept up with the spirit of the times. Only in difficult operations do I follow the old methods to which I have been most accustomed from the time of my first instruction. For instance, I have never attempted a lithotomy in any other way than according to the method of my teacher and guide, Le Cat. . . . I have preferred a safe cure, approved after long trial, to any unsafe attempt, even if its color of novelty was ever so alluring. . . . I will now see how it is to be an author. If I meet with misfortune my friends who persuaded me to this step will have to answer for it. Literary vanity and fondness for writing were never, I repeat, the happiness of my life. But if success comes, and this effort results prosperously, then a continuation will soon follow. . . . But nothing can come of it if my critics go too far."

A number of Latin dissertations preceded his masterwork, "The Surgical Daybook," (1792). In this there are a hundred case reports, which cover a period of one year, and are given in chronological order; brief, clear and sharply outlined pictures, unfortunately without the diagnosis in every case. They show an experienced practitioner, but very little science. Siebold wrote on lithotomy (1778), on the cutting of the os pubis (1778), castration (1802) and several lesser articles for academies and periodicals.

Carl Caspar was the father of an illustrious family in medicine. Four sons devoted themselves to it; the eldest, George Christopher (died 1798) received from his father the professorship of obstetrics in Würzburg; the second son, Damian, was a medical counsellor; the youngest, Adam Elias (died 1828), after his brother's death became professor of obstetrics and teacher of midwives. He founded the lying-in hospital in Würzburg and also in Berlin, whither he was called. The third son, *John Barthol von Siebold* (1774–1814) after his studies in Würzburg and Jena, became assistant to his father, as has been mentioned before. He gave anatomic demonstrations, lectured on osteology and bandaging, and in every semester taught theoretic surgery. He prided himself on being the first of the Würzburg professors to lecture on pathologic anatomy. He was appointed ordinary professor of surgery, and, upon the death of his father. took the position of chief-surgeon in Julius Hospital, The hospital fever, which during the war proved fatal to so many physicians (eighteen in the Grand-Duchy of Würzburg alone), caused his death. Barthol's scientific accomplishment, like that of his father, is of minor importance, yet he possessed a talent for teaching and skill in operating, kept a day-book, and published annual reviews in the *Würzburger Gelehrte Anzeigen*. Some of his notes were scattered through the dissertations of his pupils, and in different journals. He established (1805) a new periodical, the *Chiron*, and took charge of a collection of rare surgical observations.

At the same time, in Würzburg lived *H. J. Brünninghausen*, one of the best pupils of C. C. von Siebold and A. G. Richter. He was general staff-surgeon of Würzburg, professor and chief district-surgeon; he gained much credit for his treatment of fractures of the lower limbs (1789) and of the collar-bone (1791), invented a machine for club foot and an artificial foot for use after the amputation of the lower limb. The Würzburg collection was greatly enriched through him. At the same time Würzburg possessed *Friedrich C. Hesselbach* (1759–1816), an able demonstrator who turned his attention especially to surgical anatomy. Untiringly active in his lectures and in the conduct of pathologic dissections, he amplified the anatomic cabinet in such measure, that under his direction it came to possess 680 dried specimens, and 501 in alcohol. In consideration of this service, the faculty made him a Doctor. It is to him that we owe the first distinction between the two forms of inguinal rupture, which he accurately described together with thigh-rupture (1806), and a statement of the various positions of the Art. epigastrica in internal and external rupture (1815). He also distinguished the anterior inguinal ring from the posterior, and showed that both were ends of the inguinal canal. The value of these researches is only appreciated when one considers that in Heister's time, the difference between inguinal and crural rupture was not at all understood, and that even A. G. Richter had no conception of the anatomy of the inguinal canal.

Surgery in Berlin, in the second half of the century, was chiefly represented by the military physicians Bilguer, Schmucker, Theden and Mursinna, to whom, as the best physicians of their time, we will later devote a special chapter. *J. Frederick Henckel* (1712–1779) lived in Berlin, first as military; later as civil surgeon. Born in Prussian Holland, he studied surgery, first with his father, then with surgeons in Königsberg and Danzig. In 1731 he went to Berlin to visit the colleges and the Charité under Eller, when he engaged to serve three years in the Kleist Infantry Regiment, as company surgeon. He became surgeon to the Potsdam Grenadiers; then was advanced to pensionary surgeon, and in 1739, King Frederick William I sent him to Paris for two years, where he studied under le Dran, Ferrein, St. Yves, and became acquainted with La Peyronie, Petit and Winslow. As regimental surgeon of the prince's regiment he treated the king during his last illness, was with him at his death and present at the embalming. When Henckel returned from the first Silesian war, he held private lectures and demonstrations for students in the Royal theater, and gave courses in bandaging, which subjected him to much ill will and envy. Senff and Neubauer were at the same time exposed to similar annoyance. Receiving his doctor's degree in Frankfort (1744) he entered the second Silesian war, took part in the battles of Striegau and Sorr, and then forsook the military service in order to devote himself to study. In 1750 he became a member of the Paris Académie de Chirurgie and was appointed professor of surgery and midwifery at the Collegium Chirurgicum and surgeon-in-chief in the Charité. Henckel was very industrious. He encouraged the publication of practical experiences, insisted upon autopsy, inspected surgical preparations himself, and showed so much enthusiasm that he offered from his own pocket, ten Friedrichs d'or to the scholar who should write the best chirurgia medica, Henckel himself being the judge. Unfortunately, he was hampered by the want of a good education, as is shown by his dispute with A. G. Richter, and his abuse of other critics. He opened his literary career with a collection of medical and surgical treatises (8 St. 1747 –63). His most important work is, "Directions for better surgical bandaging" (with fourteen tables and 102 copper plates, 1756), which ran through many editions, and was indeed, for half a century, the most popular work of its kind in Germany, in so much that seventy-three years after its appearance, it was re-edited by Dieffenbach. Henckel decided, when the suggestion had been made to him after he had lectured on bandaging for twelve years, to re-edit Bass's work on bandaging. According to his own confession he essentially followed this, and indeed, like Heister, frequently copied it word for word. It is seldom that the development of a science can be followed so clearly as that of bandaging. Dieffenbach revised Henckel, Henckel based his work on Bass, and Bass on Verduc, who wrote in the year 1703, covering a period of twenty-six years. Henckel's works, indeed, suffered from a superfluity of obsolete bandages, but what he wrote was clear. brief and practical. His treatise on fractures and dislocations (1759) is worthless. His treatises on surgical operations (8 St. 1770 –76) were cursory and without importance, written without order or consistency, and were completely exploded by Richter's critique. In his later medical and surgical sketches (two collections, 1769–72) there were good notes from the Charité and also in his last work, the medical and surgical notes (1779) which were for the most part read in the Royal Academy of Sciences and Fine Arts in Berlin. Henckel was also an active writer on obstetrics and was the first German to perform the Cæsarian section in the linea alba (1769), which operation was, moreover, successful.

Among other Berlin civil surgeons, Professor *A. Frederick Pallas* (1731–1812), son of Simon Pallas, made himself known through his "Surgery" (1764); for the most part he was faithful to the doctrines of his time, but was so superficial that. for example, he devoted only thirty pages, in the tenth part of his book, to the discussion of wounds. His colleague, *J. G. Zenker* (1759–1807), was professor of surgery in Collegium Medicum Chirurgicum and was famous as a good teacher and operator. He wrote little: his most important production dealt with the injection of equal parts of water and wine in cases of hydrocele (Theden's Neuen Bemerkungen," 3 Th., 1795).

Surgery was taught at the Universities of Jena and Halle by a very active man and industrious writer, *J. Christian von Loder* (1753–1832). Born in Riga, he studied in Göttingen and was there made doctor by his future father-in-law, A. G. Richter, as "a young scholar of no ordinary promise." In the following year (1778) he became ordinary professor of anatomy and surgery and director for the lying-in-hospital in Jena, where we have already had occasion to visit him in his medico-surgical institute. He taught here for twenty-five years. He gave up his position as body physician and privy councilor in Saxe-Weimar, and went to Halle (1803–1810) and from there to Moscow, as professor of anatomy and surgery, where he was ennobled. In the war of 1812 he conducted several large field hospitals built by him and took an active part in the establishment of the great military hospital at Moscow, of which he was for three years the head. In 1819 a new anatomic amphitheater was built there according to his plans. He died two years after the outbreak of Asiatic cholera in Moscow in the midst of his activity. Loder was more of an anatomist than a surgeon. As such he recognized, as did his father-in-law, that the true value of a surgeon lay, not alone in skill in operating, but above all in the knowedge of so-called medical surgery, by which a man learns to avoid operations. Among his works should be mentioned in this place his medico-surgical notes made in the hospital in Jena (I. 1794), in which he, among other things, appeared as a spirited champion of the Alanson method of amputation. Soon after Richter had called him to act as co-editor of the *Chirurgische Bibliothek* he began to publish (1797) his own journal of surgery, obstetrics and medical jurisprudence. The "Elements of Surgery" (1799), so popular at that time for use in lectures, must not be left unmentioned. An early death claimed a very hopeful student of Loder, namely *J. V. H. Kohler*. He had accompanied his teacher in scientific journeys through France, England and Holland, and was assistant superintendent of the lying-in house and the hospital in Jena. When he died, in his 22d year, he was court surgeon and privat docent (1796), and had already published a good introductory work on bandaging and described a part of Loder's physiologic and pathologic specimens.

Two students of Richter—*Just. Arnemann* (1763–1806) and Wardenburg—lived with him in Göttingen. The former came from Lüneburg and at first studied philosophy then later medicine in Göttingen. That university appointed him a professor in 1787 and he went on a two years' journey to Berlin, Vienna, Pavia, Paris and London. The Society of Sciences in Manchester and Joseph's Academy in Vienna, both made him an honorary member. After fifteen years' residence Arnemann left Göttingen, whether on account of Himly who had just been called, or Langenbeck who had just settled there, is unknown. He moved to Hamburg, where he soon took up his residence. Arnemann was full of zeal for his science. Aside from an essay on fatty oils, which won a second prize during his student days, he conducted very successfully an experiment in regenerating living animals. In his first book, devoted to the regeneration of the nerves (1786), after many experiments on dogs, rabbits and goats, he believed he had proven beyond doubt the impossibility of regeneration and held the former demonstrations as untrustworthy and incomplete. The nerve sheaths were said to extend on both sides over the *marrow* extravasation and when a firm junction was formed, which he found only in the nerves of the forelegs, in the cruralis and tibialis, the adjacent cellular tissue contributed most largely thereto. In the second volume followed experiments with the brain and spinal column. Arnemann's relation to Richter appears to have been unfriendly from the beginning; this is shown by the fact that besides founding a clinic of his own in Göttingen, when a very young professor he ventured to publish a *Bibliothek für Chirurgie und Praktische Medicin* (Library of surgery and practical medicine) in 1790, at a time when Richter's *Bibliothek* was most popular. He did not once mention Richter's work and thought that in spite of all the journals a new periodical would not be entirely superfluous, because all the others, as everyone complained, were considered either much too lengthy or too brief for practitioners. It was also a fact that the student never contended against his teacher, but almost never quoted him or praised his work. His *Bibliothek* was discontinued after three numbers. Soon afterward a new experiment was made with the *Magazine for Surgical Science* (1797). Not satisfied, the undismayed editor founded for a second time a *Bibliothek* for medicine, surgery and obstetrics (1799) which was chiefly to give general critical reviews from the mass of special periodicals. It lived but two years, while the *Magazine* held out until Arnemann's departure from Göttingen. We have besides, from his pen, a discussion of surgical instruments; a practical treatise on medicine, a treatise on surgical remedies, a hand book of practical medicine and finally a system of surgery (2 Bde., 1798–1801). Like Richter, Arnemann also protested against every one-sided system of medicine; the best operations always seemed to him a reproach to the science. As progress in surgery stands in inverse proportion to the necessity for operations, so the unusualness of an observation is inversely as its value.

His colleague, *G. Wardenburg* (176?–1804), born in Varel, studied in Göttingen, then became Richter's assistant, and went for a year and a half to Paris, where he made friends with Bichat. Appointed professor extraordinary in 1800, he remained in Göttingen only three years, leaving there to become body-physician to Prince Sanguszko in Volhynien. His translation (1799) of the surgical inaccuracies of Desault, published by Bichat, made the principles of the great French surgeon generally known in Germany; that is his service. His letters ("Letters of a Physician written in Paris, and with the French Army, from May 1796 to November 1797;" 2 Bde., Göttingen, 1799) are very interesting, giving a glimpse of French surgery. *Christian Frederick Michaelis* (1754–1814) was born in Göttingen. He studied under Richter and afterward in Strassburg, Paris and London. When the hostilities broke out in North America he became general staff physician in the Hessian corps stationed there in 1779. After the war (1783) he received the professorship of medicine in the Colleg. Carol. in Cassel, and three years later accepted the same position in Marburg. His doctor's dissertation (de angina polyposa sive membranacea, 1778) was the first detailed work in Germany which recommended tracheotomy in croup. He gives an especially interesting account of J. Hunter's experiments during his own stay in London in regeneration of nerves, and asserts that not only severed nerves but even large pieces cut from a nerve could, after a few weeks, be made to grow together through simple cellular tissue or real nerve substance, and the grafted piece would again exhibit motion and feeling. ("Richter's Bibl. und Brief an Peter Camper.") Arnemann disagreed with this view. Michaelis reported the methods of treatment of various physicians and surgeons in London and New York ("Richter's Bibl.") as Pott's results in spondylarthrocace, the use of opium in mortification, the treatment of croup among the Americans, gunshot wounds, observations during his stay with J. Hunter and the effect of common salt in internal hemorrhage. (Before 1766 Dr. Schiel had brought to Philadelphia this discovery of an Irish woman; since then common salt had become a general remedy in America for hemorrhage.) Michaelis investigated the difference between suppuration and matter allied to it, described instruments for compression of the art. pudenda comm., for injection in the tuba Eustachii, to check hemorrhages of the art. epigastrica, tourniquet for art. subclavia, etc. ("Progr. de instr. quib. chir. Marburg," 1801.)

There is great temptation to linger over the works of C. J. M. Langenbeck in Göttingen and B. N. G. Schreger in Erlangen, following after A. G. Richter, the most illustrious of German surgeons, but, lest we overstep too far the limits of our work, we must pass them both, since their activity fall entirely within the century.

The other professors of surgery in Germany were quite unimportant. Rougemont in Bonn, through his *Bibliothèque de Chirurgie du Nord*, made the French acquainted with the best German works. The Erlangen anatomist, *Isenflamm*, wrote on diseases of the bones; *Weidmann* in Mainz on necrosis and declared that necrosis is an exostosis, which should be treated not with corrosive but with mollifying remedies; he also opposed the abuse of cutting off gangrenous bones with hot iron, which was then practiced. *Metzger* of Königsberg had for twelve years collected material for his handbook of surgery, but its excessive brevity and superficiality rendered it worthless; his system of medical jurisprudence received greater applause. In Brunswick *Sommer* instituted collections of the choicest and newest works for surgeons, in which he included the best writings of foreigners, translated into German; his great industry resulted in twenty-seven volumes within sixteen years. Emmerich's Academy in Erfurt had a demonstrator, *Löber*, whose elements of the science of surgery was even at that time abandoned as one of the most transient of compilations and completely useless.

Kurt Sprengel, who was professor in Halle from 1789, deserves especial credit for his historical studies. A man of the widest learning, a general historian in the best sense of the term, who was equally proficient in the ancient and the modern languages, he wrote a history of surgery and operations (1805) which, in spite of many one-sided presentations, has not yet been superseded.

Ernest Platner, principally known as an anthropologist and a champion of Stahl's system, and whose opinions on medical jurisprudence were of great value, wrote appendices to his father's "Surgery" (1776), based on a masterly knowledge of literature and so excellently gotten up that one must regret that Platner could not have chosen the career of a practical surgeon. When he said that a practical surgeon would consider one single cure of more value than this whole book, by reason of his literary studies—a view which he would endorse if he were a practitioner—he only reflected the low state of the culture of his countrymen, and the often falsely understood judgment of his best contemporaries. He translated le Dran's and Morand's surgical writings.

The number of *practitioners* who distinguished themselves in surgery, whether physicians or surgeons by profession, is exceedingly small; and yet what little good was accomplished in German surgery a hundred years ago is due to some of them. Among the results are the tenotomy of Thilenius; Brückner's mechanical compression in case of aneurysm; Vogel's resections and Eckoldt's esophagotomy. That was real progress, of which many German professors of surgery could not boast at all; and if those achievements did not receive due honor at that time it was chiefly because of the meager education of the people. The name of the modest city and district physician of Lauterbach, *Moritz Gerhard Thilenius* (1745–1809), will never be forgotten in German surgery. Although a physician, yet it was he who for the first time, on March 26, 1784, in a case of club foot, had the surgeon Lorenz cut through the skin and the tendon of Achilles, thereby accomplishing a cure. The case made no stir at that time. Richter himself included it in his *Bibliothek*, with other notes of the author concerning a comb (Med. u. chir. Bemerkungen," 1789). *August Brückner*, who was a court physician, died in Gotha (1791) in his twenty-eighth year, had a similar experience. He was the first to accomplish a cure of a true case of aneurysm (art. poplitea) by indirect compression; besides this, he invented a ring tourniquet, and was fully aware that this treatment was the principal remedy (Loder's *Journal*, 1797, I, 248). This observation was also forgotten and modern surgery has yet made little use of the opinions and work of Brückner. He was one of the first in Germany to devote himself to the treatment of club foot. *J. A. Ehrlich* (born 1760) was eminent in Leipzig as an intelligent surgeon with thorough knowledge and operative skill; he was sent upon journeys by the magistrate of that city and later took part in the war and published his surgical notes (2 Th., 1795–1815). In an interesting manner he relates what he had seen in London with Hunter, Earle, Cline, Wathen, Abernethy and others. With him in Leipzig lived *J. G. Eckoldt* (1774–1828), whose name is known to this day through an instrument invented by him for the extraction of foreign bodies from the esophagus, and also through his method of esophagotomy ("Concerning the Extraction of Foreign Bodies from the Esophagus and Windpipe," 1799). *A. Frederick Vogel* (1746–1785) in Lubeck was a good surgeon who, from Richter's school, went upon a three years' journey through Germany, France and England at the expense of the senate and then published his surgical observations (1778–80), which were written with great clearness. He earnestly defended the ligature for the stoppage of blood-flow, therein opposing Agaricus, and was one of the first German surgeons who made resections. The Saxon surgeon, *L. E. Schneider*, in Mitweyda, wrote twelve volumes ("Surgical History, with Theoretical and Practical Comments," 1762–88), containing quite interesting cases, with useless comments and in frightful German. *J. Christian Jäger* lived in Frankfort-on-the-Main, as jury surgeon, after he had completed his studies in various barber shops, and had been employed in Bremen and Hamburg; he left to posterity five volumes of practical surgical precautions (1788–97). Like him *G. H. Fielitz* was the son of a surgeon who, after attending the surgical school in Dresden, had been established since 1773 as city surgeon, in Lukau in Niederlausitz, and contributed various notes to Richter's *Bibliothek*. He paid great attention to all kinds of plans for furnishing the state better surgeons and midwives. *J. Frederick Bottcher*, a practical physician in Berlin, wrote the first complete work since Petit's time on bone diseases, and also a work on selection of surgical bandages (1795), in which only the most necessary were recommended. *Hofer* in Dillingen produced a similar work ("Bandagenlehre," 1790). The Saxon mining surgeon, *J. G. Bernstein*, was also an industrious writer known through a very popular, alphabetically arranged, handbook for surgeons (4 Bd. 1790), a history of surgery and works on luxations, fractures and bandaging. There are a few other physicians and surgeons whom we will meet later in special surgical diseases: *Hagedorn* in Dessau, *Ficker* in Paderborn, the dentist *Serre* in Vienna, later in Berlin, *Lange* in Luneburg, *Greding* in Waldheim, and others.

Among oculists in the second half of the last century, we have already mentioned A. G. Richter as the founder of ophthalmology. In this department of science, as in surgery, he gathered the seed in foreign lands and planted it in German soil. Until then the principles of Boerhaave had prevailed but they were now broadened in all directions; indeed, for a quarter of a century, Richter gave to ophthalmology its specially characteristic type. *Joseph Barth* (1745–1818), who has the honor of having introduced ophthalmology into Austria, trained himself independently of Richter; since that time this science has been fostered with great care in the Vienna school. Barth was born in La Valletta in Malta, and studied surgery there and afterward in Rome, and was introduced to Störk and Leber in Vienna. Ophthalmology could hardly be said to exist in Austria at that time. Rich men suffering from cataract went to Paris to be operated on, or sent there for an operator. Barth devoted his leisure hours to this science and in the sojourn in Vienna of the celebrated French oculist Wenzel, who, upon van Swieten's invitation gave private lectures there, he found an opportunity to make himself thoroughly acquainted with the technique of operations on the eye. His first experiments as a practicing oculist, were attended with so happy results that in 1773, in recognition of his special skill in treating diseases of the eye, and in higher anatomy, Maria Theresa appointed him public teacher of ophthalmology with a salary of 800 guilders. He took the place of professor of anatomy and assumed the duty, connected with this office, of caring for the anatomic specimens presented by van Swieten. In 1774 he became ordinary professor of anatomy and ophthalmology, with a salary of 1,500 guilders, which was soon increased to 2,000 guilders. He established a private sanitarium for his ophthalmic patients. When the General Hospital was founded he was given two wards, in which during May and June he operated upon poor patients with cataract who, through an advertisement in the Vienna newspaper, were invited to Vienna from all the provinces of the empire. Emperor Joseph, whom he successfully treated in a dangerous disease of the eyes, was personally attached to him and appointed him imperial court oculist. In 1786 he accepted the chair of physiology. His anatomic work expanded in a brilliant manner when he received the means to build in the new university an anatomic amphitheater for three hundred students; the state bought his specimens for 2,000 ducats. His activity as a practical oculist was just as marked. From far and near patients streamed into Vienna to be cured by him—the only one. His private sanitarium had long been inadequate, and the collegium, made vacant by the suppression of the Jesuits (1773), and the Spanish hospital were opened to him. In 1787 over three hundred cataract patients were operated upon.

In order to preserve his experience to the State for future times, the sick Emperor, four weeks before his death, ordered that for a salary of 1,000 guilders, Barth should instruct the two demonstrators, Ehrenritter and Adam Schmidt, in ophthalmology, for which A. G. Richter's works were taken as a basis. But he could not have possession of the money until both men should prove their skill through six successful cataract operations, a test which was brilliantly established the following year. When Joseph II. died, Barth's love for public activity weakened, with a stain upon it; in 1791 he had himself pensioned. He now gave himself up to the study of antiques, and was recognized by the greatest artists of his time as a genuine connoisseur. His collection of intaglios was unique of its kind. The malignity of public attacks upon him made him exceedingly diffident and unapproachable. Except a small treatise on cataract operations without assistance (1797), and a work on muscles, he wrote nothing. His pupil, *A. Schmidt* (1759–1809), became professor of ophthalmology and teacher of anatomy and surgery in Joseph's Academy. After the "Bibliothek," published by him and Hunczovsky, was discontinued, he and Himly, in Göttingen, founded the ophthalmological Bibliothek (3 Bde. 1802–7). His name is immortalized in music, because for a long time he treated Beethoven for deafness, who out of gratitude dedicated a great Trio to him (op. 38, 1801), and expressed the desire in his holy will and testament that after his death Schmidt would describe his sickness. A second student of Barth lived with Schmidt in Vienna, Professor *G. J. Beer* (1763–1821), who as professor, author and practitioner, contributed very considerably to the advancement of ophthalmology. Students flocked to him from all countries and there were at that time few oculists who did not have him to thank for their training. Professor *Lobstein* in Strasburg and Professor *Jung* in Marburg, are well-known; and also *Siegerist* in Gratz, *Willburg* in Gemündt, and *Hellmann*, city surgeon in Magdeburg. The last mentioned was a skilful oculist of no mean reputation; he performed fifty operations for cataract within seven years (32 successful, 10 partially so, and 8 unsuccessful. "Gray Cataract and its Extraction," 1774). While Richter was a professor in Göttingen, *Hellmann* was called to Hanover, where he operated in the presence of Zimmermann.

(To be continued.)

SOCIETY PROCEEDINGS.

New Jersey State Medical Society.

Proceedings of the one hundred and thirty-first annual meeting held in Atlantic City, June 22, 1897.

PRESIDENT T. J. SMITH, M.D., Bridgeton, called the session to order at noon. It was opened with prayer by Rev. W. M. WHITE.

The Address of Welcome was made by Mayor F. P. STORY, and after some routine business, the report of Committee on Legislative Action on Bovine Tuberculosis was read by the Chairman, Dr. J. W. STICKLER. "The number of cases of bovine tuberculosis examined since the last report is about 1,200: Tested with tuberculin, 214; condemned by the test and physical examination, 159; total sum paid for condemned animals, $3,849.74; an average of $23.57 per head, including registered." The above is quoted from the Commissioner's report. Considering the great prevalence of tuberculosis in cattle in our State, especially in the southern section, in Morris and Essex Counties, from 6 to 10 per cent., I am told by competent authority—the Commission is not accomplishing as much as the emergency demands. Again, the State Board of Health reports 3,758 deaths from consumption during the last year, which is 417 more than the average for the past eighteen years. In other words consumption causes about one-eighth of all deaths in New Jersey. It is in view of these facts that the New Jersey State Society wishes thorough work to be done by the Commission already formed, or by a commission which we as a special committee of the State Medical Society would like to form. One obstacle to the proper performance of the work of the Commission is the very small appropriation made by the legislature. It is to be hoped, however, that in time, when the great importance of the work shall be recognized, all hindrances will be removed and the State amply protected.

After a recess, Dr. WM. H. ISZARD of Camden reported on

APHORISMS IN MEDICO LEGAL TESTIMONY.

He said that an expert in medicine depended mainly upon skill and experience, An expert witness is one whose opinion in medical points is valuable for his accurate knowledge of the subject under consideration. An expert in law is one who is experienced, skilful or having peculiar knowledge of the certain subject or in certain matters, in other words, a scientific witness. Testimony is used more frequently in the Bible by writers than either in medicine or law. It is defined as evidence of a witness under oath or affirmation. All medical testimony is expert testimony in a qualified sense. Expert testimony is that which is usually denominated by the term corroborative testimony. Many lawyers object to expert testimony because so-called experts differ in opinion and statements and will endeavor to break the testimony of good medical men because of this fact. It must be admitted that such witnesses do often differ, and we find them backing their opinion in heated discussion as to the cause of disease. Thus in typhoid fever and insanity legal proceedings are instituted against a city or corporation, for providing unhealthy water; death has occurred from typhoid fever in a family. Men are found who testify that the water does contain specific germs, and thus impress the jury that the water is full of them. In the same court, the other side, by scientific testimony, prove the *contrary, viz.*, that the germs found were the effect not the cause of the disease. Both are equally honest and sincere, hence it is no wonder that lawyers who are not schooled in medical science (and few are) should attempt to prejudice the jury against the reliability of medical testimony. *Insanity:* Hamilton says, especially on the question of insanity, whether civil or criminal *cases, we are to determine the influences that may destroy* responsibility of an individual, and should always bear in mind that the offices of the physician are only those in which he is warranted in forming an opinion relative to the enfeeblement of the mind through disease. The question of law should not concern him and the courts do not permit him to express more than what he knows. He should always remember the dignity of his calling, never lose his temper, no matter what or how much he may be galled by the impertinences of counsel, who are not always gentlemen. He should never be flurried, give hurried answers, but should demand time and not allow himself to be choked off or interrupted. He should never show eagerness to testify or too much enthusiasm in the cause of the side on which he is called. Testimony should be given in a cool impartial manner. He should be on the alert and avoid being trapped by his opponent. A favorite plan with lawyers is to put a hypothetic question and demand an answer to isolated parts, possibly to get a truthful negative answer to many real elements of insanity: thus, when a man is slovenly or careless in his habits, is this a sign of insanity? An infallible sign? The reply is "No." Yet this and other indications may be an important element of mental disease. Therefore the physician should be on guard and refuse to answer, save in a qualified manner. Remember all dodges will be resorted to. Thus the physician is asked whether he has read certain works, he replies in the negative. Yet these works never existed. Avoid being drawn into a discussion on various other subjects which are foreign to the case. Refuse to answer any abstract questions not strictly medical. Do not pose as an expert in other fields. It is not wise to pose as a radical and *one of more* than ordinary ability. Do not tincture an answer with anything extraneous; the witness declares himself an agnostic, he injures the case and renders himself ridiculous. One is not warranted in ventilating, before a jury, any views that he can not maintain. A flippant witness is sure to injure his case, by trying to cause a laugh or by repartee. An old lawyer bides his time and turns his remark against him and creates an opinion not complimentary to him in the minds of the jury. In other words, thoughtless answers destroy the weight of all the sound testimony given before. Keep all the facts before you. Never attempt to give information except what is absolutely demanded. Never explain or enlarge upon something of which you know practically nothing. You may be able to theorize, but before a court you must know practically what you are saying. Called as an expert, theory amounts to nothing. You can not swear by theory. The stenographer notes the testimony, every word is recorded. It is not very complimentary when the stenographer reads his notes to the witness to have it shown that his evidence is absolutely contradictory. Learn the lesson then, be on guard. If doubt crosses your mind let the answer or evidence always be, as far as permitted by the court, given in a qualified sense. There is a growing sentiment in favor of judicially appointed medical and chemic experts. Judge Garrison of our supreme court believes there is a need of medical experts employed by the court so as to do away with the apparent discrepancies between medical experts due to answers on hypothetic questions by counsel. A bill has been introduced into the Minnesota Legislature and one in New York, bearing on this subject. The central idea is that the expert witness should be judicially selected and properly qualified and not depend upon their remuneration from one side or the other. This would be a great improvement on the present system, where medical men hire themselves to testify in criminal cases to suit counsel rather than the unfolding of the truth.

Dr. CHARLES YOUNG, Newark, reported upon

SURGERY.

He gave a brief review of the progress made during the last year. He mentioned the results obtained by Murphy in end-to end union of blood vessels. These were united by continuous suture; in one case, after five weeks, where suppuration had occurred and hemorrhage from the sloughing point, he had to ligate the artery above and below, and resect the damaged vessel; recovery occurred without, disturbance of the circulation of the limb. In another case the vessel much torn by a pistol ball, the artery was secured by a clamp and the vein sutured with excellent results; no blood escaped, and the circulation went on. He quoted a new mode of ligation so as to remove the ligature without cutting. The operator places under each tie-loop silk to be used as tractor. The first loop is designated by one simple knot; next with two knots; next with three knots; and so on. When it is desired to withdraw the ligature, that with the largest number of knots is seized and drawn upon a see-saw motion, till at last it slips away, the loop is withdrawn, and the process repeated with the loop having the next number of knots till the last and the whole is easily removed. The device is simple and far more efficient than any other known plan. Especially is it serviceable in deep seated ligatures for stumps or pedicles and after removal of abdominal tumors. Intravenous saline injections, in cases of extreme shock, had been found of great value. They give a respite from death, during which the organization may recover from the shock, or throw off septic trouble. Local anesthesia in Schleich's method was advocated for preparatory operations; the cocain solution was thrown into subcutaneous cellular tissue. Caution, however, is of great importance as when the tourniquet is removed, the cocain may suddenly be carried into the circulation and to the heart, with serious results. Loosen the tourniquet slowly, say for three or four seconds, then tighten and gradually permit the blood to resume its course. The treatment of tetanus with biniodid of mercury baths and antitoxin, had resulted in recovery. The bath should be 1 to 5000, and followed by no salivation, but great amelioration of all the symptoms. Serum therapy is still *sub judice*. Results vary. Its main utility is as a prophylactic. *Hernia cerebri:* One hundred and nine cases had been reported. The causes were various, and there was great need of prevention of sepsis. Gunshot wounds of the head and trephining had occupied much attention in surgery. The operation is indicated when there is considerable arterial hemorrhage and symptoms of lateral paralysis or spasms. Later, when fever comes on and paralysis, or the presence of the ball is known, the operation may be employed. Wounds of the air passages demand great care as to antisepsis. Chloroform may be used if necessary. We should close the wound in the air passage completely: if the wound be large, in the trachea or larynx, a tube is demanded. Silk makes the best suture for the larynx or trachea; all the sutures must be introduced before any are tied; then the posterior one tied first. Divided muscles must be sutured and when bringing the skin together correct any inversion. Drainage is generally necessary. Wounds of the heart and pericardium have been treated by exposing the site of injury by freely dividing and laying back the walls of the thorax above, so as to obtain free access to the wound of these organs. Then the large vessels above and below the wound are closed by gut, the walls replaced in position, and in certain cases good recovery occurred. Wounds of the liver demand prompt exploration. Employ laparotomy to know what the injury is and to repair it. Use blunt needles for sutures through the hepatic tissue. Tie sutures tightly but slowly. In rupture of this organ, an unusual quantity of blood has been seen to flow into the abdomen. Here flushing was carried on till the part was cleared of the blood, and fragments of liver were seen floating in it. Suture being impossible, the hemostatic effects of hot water were relied on; all foreign matter was removed by irrigation, drainage by glass tubes was employed and good recovery followed. In several cases of gastric ulcer, excellent results were obtained by laparotomy, and suturing. Perforating typhoid ulcer may be thus relieved. Of all diagnostic signs of ulcer, the most reliance can be placed upon an attack of severe continued abdominal pain with nausea and vomiting and increase of the white blood corpuscles. There are no contraindications to the operation. Lateral anastomosis by Senn's operation was mentioned as having been performed on dogs, producing complete end-to-end union. The indication in operation for appendicitis was considered. Continued frequent progressive acceleration of the pulse, in the absence of other dangerous symptoms. Local pain was valuable when sudden and with a chill. Increase of the temperature is third in importance. A gradual subsidence of these symptoms is a legitimate reason to postpone the operation. He spoke of intestinal anastomoses, etc., and then of fractures treated with the ambulatory plan. The plaster appliance enabled the patient to walk about on the sole of the apparatus. It promotes the formation of callus and even enables one to attend to business. This plan is still being improved upon. Massage and mobilization of the part are liable to cause danger as producing scanty callus. Many very interesting cases were quoted from various authors.

Dr. HENRY MITCHELL, Secretary of the State Board of Health, reported upon

STATE MEDICINE AND HYGIENE.

He said scientific investigation has been industriously pursued during the past year. We have acquired a store of new facts. Bacteriology yields many treasures to the student. Protective inoculation is destined to be successfully applied in many ways if not to all diseases. Immunity as obtained by Koch against rinderpest and diphtheria has stimulated work in this manner. Vaccine bacteriology has been worked at by several and Klein and Coplin describe small bacilli in vaccine and variolous lymph, which they think is the true bacillus of smallpox. The typhoid bacillus has not yet been found to induce the disease experimentally, but the diagnosis of this disease by observing the reaction of the addition of serum from a typhoid case to the blood, has attracted much attention, a reliable method of diagnosis although thus far not much certainty has been obtained for want of more experimentation.

The investigation in England, by the local government board, on oysters and infection from sewage, shows that the typhoid bacillus and that of cholera may live in salt water for two or three weeks and thus the oyster may be a source of contagious disease. Oysters and other shell fish from polluted beds may convey both typhoid fever and cholera. Sanitary supervision of the oyster industry is demanded and the sale of that which is doubtful should be prohibited. Formaldehyde as a disinfectant, has caused a revival of interest, among sanitarians, concerning methods of purifying premises when infected with disease. Test culture has rendered it possible for health officers to prove their work, and show the efficiency of the cleansing. Steam as a disinfectant can perhaps never be supplanted when properly applied as a germicide, but it is not always practicable. As a germicide a solution of formaldehyde is excellent; not being poisonous, capable of destroying the bacilli with great certainty it is warmly welcomed, and its use is extending with remarkable rapidity. A novel device for purifying sewage has been introduced by M. D. Cameron, Exeter, Eng., the septic tank system. Raw sewage flows into the tank, from which all light and air are excluded to favor the development of putrefactive organisms which are believed to be the cause of rapid changes in the sewage. Fermentation follows, and causes the suspended organic matter to be thrown into the solution; the overflow is odorless and comparatively clear. The effluent is still further treated by passing it through coke breeze filters, when it is discharged as a clear sparkling fluid, without smell.

The mortality among infants, during the summer of 1896, was unusually small in the cities of New Jersey, and the commonly accepted explanation is that many mothers and nurses have learned the value of pasteurization of the milk; hence we have reason to expect that infant mortality will be further decreased in the future. Applied hygiene has made gratifying progress in schools. Boston has for several years had daily medical inspections by the sanitary authorities, to check the spread of disease, especially diphtheria. The result has been so satisfactory that the measure has been adopted by the city as a regular system for promotion and protection of public health. New York City has recently adopted the same plan. All show the great value of this branch of the service. The medical inspectors of the schools report many cases of disease kept out of school. There is need of coöperation of the Boards of Education and the Health Inspectors, then, without waiting for the passage of a law such inspections can be thorough in all New Jersey. Closing of schools is undesirable and should only be resorted to to prevent the spread of infectious disease.

The Sanitary Convention of Venice, in February and March 1897, to prevent cholera from India and other eastern countries, marks a progressive step. Since 1851, the first sanitary convention, there has been a gradual yielding to the view of inspection, isolation of the sick and disinfection, as a substitution for the long and vexatious quarantine. Commercial interests always dominated in maritime quarantine and the necessity for relief to trade led to attempts in Europe to prevent the spread of infectious disease, so as to avoid this delay. In the twelfth century, the republic of Venice, after being devastated by repeated epidemics organized a system of inspection and detention of vessels from infected ports of Asia, and established a *lazaretto* to which all passengers, grew and cargo were committed. Thus began by slow degrees the maritime quarantine which has prevailed for five hundred years in the western hemisphere. The national tendency is to modify the harassing features, as advancing knowledge of disease will permit. The port of New York has kept pace with the best service abroad, and the facilities for disinfecting passengers and baggage is unsurpassed.

Measles has demanded considerable attention from health officers, because of varying views. Hitherto it has been allowed to go without isolation, hence we have reaped with exasperating regularity an epidemic every three or four years. This could be wholly prevented by isolation of the early cases. The difficulty is almost insurmountable. It is exceedingly infectious in the pre-eruptive stage, and thus persons not immune are exposed. In the prevention of tuberculosis great activity is shown everywhere. The New York Board of Health has been led to place it among the list of noticeable diseases. In our State no measures like this have yet been possible; but the people will soon demand progress in this as well as other matters: in fact we may say the demand is even in advance of the sanitary authorities. The relation between the health boards and the people is in strong contrast with the conditions existing several years ago. We believe that official inactivity is due to the inadequate supply of trained employes. Instruction is provided for every other profession, but none for sanitary officers, either by the State or private plans. Hence Boards of Health are compelled to entrust the enforcement of health laws to the unskilful. The Medical Society of New Jersey has led for one hundred and thirty years in many good works. Why not give us reform in the selection and education of health inspectors? Last year we took action which resulted in placing on a permanent basis the State Bacteriological Laboratory, and without doubt the same influence could, if exerted, establish in the State, a system for training health officers. This would give us a class of men capable of intelligently applying the arts of hygiene now being promulgated with almost daily additions.

In the evening the President delivered the annual address, his subject being "The Problem of Dependency." The address was devoted to an appeal in behalf of the insane, and the feeble-minded and the society was so impressed by his arguments that a committee was appointed to consider the subject, and granted power to act, with the view of obtaining an act of the legislature which will aid in the care of these unfortunates.

Dr. L. Faugeres Bishop of New York, then read a paper on

SOME IMPORTANT POINTS TO BE CONSIDERED IN THE TREATMENT OF ACUTE LOBAR PNEUMONIA.

He thinks we are still seeking the best method of treatment, but that there is a tendency to overfeed. It is questionable whether in the acute stages of this disease with the undoubted accompanying congestion of the abdominal organ, whether harm is not often done by stuffing the stomach with milk, to the production of large quantities of gas and upward pressure on the diaphragm. Now and then a feeble voice is raised against overfeeding, but we have learned too well the lesson of support. The lesson of feeding in other febrile diseases causes us not to consider the shortness of the attack of pneumonia. There are undoubted benefits in restricting the diet in so acute a disease. Overfeeding means a consumption of physiologic force in the digestion and assimilation of food; it means the diversion of so much energy from the repair forces of the body to the digestive forces; it means the throwing into the circulation of a quantity of crude food that must be taken care of; it means the presence in the intestinal tract of the waste matter of the food that must be gotten rid of. The patient dying in acute pneumonia does not die from a lack of more remote reserve force, such as might be produced by a system of stuffed feeding, but rather from the failure of the development, when needed, of the latent force already existing. If by a system of overfeeding, such as would produce this more remote force, part of our stock of immediately available energy is used up, more injury than good is done. It is just as if the captain of a ship with an important and pressing commission should stop to replenish coal supply on the wharf when he should be on his journey, burning the supply in his well filled bunkers. Diet should be bland and moderate in quantity. It would seem that only a misconception of the conditions of pneumonia lead to stuffing in a disease in which it is more important to discount future events. An acute delirium in an alcoholic patient, when fully developed, frequently means death. The feeble power of drugs to control this delirium short of paralyzing the patient with dangerous doses, is too well known. If at the outset of pneumonia in an alcoholic patient, we foresee that the day of delirium is bound to come, we can, by the free use of safe sedatives avoid, or at least limit, the delirium of the latter days. If such a patient, from the beginning of the disease, is brought under the influence of bromid in efficient quantities, the use of the more powerful sedatives at a later period may be avoided. After delirium is once thoroughly established bromid is a drug too mild to be useful. It should be begun at the outset, given freely so that the patient gets half an ounce to an ounce in twenty-four hours. Lives have thus been saved. The next point in this disease is the value of hydrotherapy. The great problem is the maintenance of the circulation in spite of the obstruction in the consolidated lung. We must regard the circulation as a whole, not concentrating attention upon the heart or the lung or the system, always remembering that what benefits a part benefits the whole. The stimulation of the heart and the use of vaso dilators to relieve the burden have been briefly considered. Hydrotherapy is not frequently enough employed in combatting the symptoms, prostration and blood stasis. The difficulties and prejudices to be overcome before it can be generally adopted in pneumonia are so great that it is with difficulty one undertakes to break the ground. It has been so much the property of men who have prostituted medical science to personal profit, that much of value has been lost to conservative practitioners. No one who has witnessed the splendid results of systematic cold bathing in typhoid would ever be willing to be cut off from this resource in a severe case. So in pneumonia, hydrotherapy properly adapted to the condition of the patient would reduce mortality as much as in typhoid. Its value extends far beyond the limits of mere reduction of temperature. The effect is a general tonic to the nervous system. To accomplish these results the temperature and duration of the bath must be properly adapted to the case and conditions present, but there is one element in this application that is of so much importance that we are almost tempted to alter our terms and speak of the treament as "tub-rubbing" instead of tub-bathing. While in the bath the patient must be rubbed properly on every part of the body by a number of trained attendants. Without the rubbing, the bathing in an acute disease is a fearfully dangerous procedure. The direct care of the heart is equal in importance to the attention to the delirium and the destructive forces of the high temperature. Every one who has watched a patient with pneumonia, from the onset to the termination, has felt that the heart was the organ upon which the brunt of the battle had fallen. No question is of equal importance or greater difficulty than that of heart stimulation.

We approach this problem with humility because there are so many points where definite facts are not known. The mechanism of the heart and circulation are admirably adapted to fulfill their functions. The heart has its wonderful nerve supply, both from the central nervous system and also from the ganglia within itself. The blood vessels are governed by the vasomotor system acting as a system of regulators. In health the slightest mental or physical exertion is followed by increased effort of the heart and respiration. When disease or obstruction to the circulation or breathing occurs, the heart responds by increased labor to overcome the obstruction, and the lungs work even to a greater degree. Hence the question of stimulation resolves into an inquiry as to whether we can with advantage supplement the natural stimulus. We may have unsafe stimulation and exhaust the natural resources. We can not control the action of the heart and conserve its forces to calm the stimulation of an excited nervous system and thus reserve the force required to tide over a critical period. Nutrition of the heart is also of great importance. Hence we may conserve the forces early by controlling delirium by using a proper antipyretic, but at the same time tonic bathing and such drugs as will relax general circulation and diminish hyperactivity of the heart. The aconite group affords very valuable properties. Faith in the value of hydrotherapy is more the growth of time and thought. Its literature is meager. To carry out this method requires courage, skill and apparatus. Until an antitoxin is discovered, the treatment of pneumonia must be expectant in its analysis; protect the patient from harm, and support him to resist the disease. Judgment is the great need.

Dr. EVANS of Morris Plains Insane Asylum exhibited a variety of articles taken from the stomach of a patient who, after swallowing this vast load of stones, spoons, etc., died of starvation.

The Society reassembled on Wednesday morning, and Dr. R. NEWTON COLES of Montclair read

A CRITICISM OF MODIFIED MILK AND PRESENT DAIRY METHODS.

The Doctor said that when we consider the fact that the present science of lactology, if he might coin the word, is only about twelve years old, the progress that it has made is a matter for congratulation and a promise of much better things. He greeted with approval Professor Corsi's prediction that "within ten years the discoveries in bacteriology will produce a complete revolution in almost every branch of the dairy industry."

His subject offered so many and such varied phases for discussion that he was obliged to confine his remarks to the dietetic value of milk from the clinician's standpoint. Systemic writers all agreed that cow's milk must be more or less modified before it can be used for infant food. He objected to the stand taken by some writers, that the milk of cows can be so satisfactorily modified as to make it undesirable to experiment with the milk of asses, goats or mares, and alluded to the fact that the Kurds drink mare's milk made into koumiss and that phthisis is never known among these people. He also spoke of the experiments made in Paris in 1883, in which sickly children nursed asses directly and 70 per cent. of them survived, whereas of these cases heretofore all had died.

The ass is a docile, hardy and long lived creature, and less liable to tuberculosis and similar diseases than the cow. Schwartz, who prefers goat's milk for infants' and invalids' food, was quoted, and the establishment of dairies that would furnish asses' and goats' milk as required for use was advocated. The doctor said that it is an exceedingly encouraging sign of the times that the dairymen themselves have set to work to improve their own dairy products. He believes that there is very much yet to be done, and spoke at considerable length of the poison known as tyrotoxicon, which is probably the chief cause of cholera infantum. The presence of this poison in milk is not perceptible to any of our senses. Hence its great danger. Fortunately, it will not be found in properly aerated and cooled milk. The antitoxic property of fresh milk then engaged attention, with a number of interesting observations which prove that all fresh milk has certain germicidal properties. This shows that the general assertion that milk is a perfect culture medium has several limitations. It is evidently very desirable to retain this antitoxic quality in the milk as long as possible, as it is doubtless one of the reasons that nurslings are less susceptible to infection than older children. The study of this newly opened field offers great promise to investigators. Next he considered the reaction of the milk and showed the great advantages likely to follow if dairy milk could be kept alkaline for considerable periods without the use of chemicals. He quoted Rotch, who says that ten pounds of Austrian sugar beets fed to milch cattle every day will keep the milk alkaline, and also that cattle pastured on limestone lands, or the blue-grass regions of Kentucky, will give milk that will remain alkaline for a long time.

A number of facts are given to show the exquisite sensitiveness of milk to any change in the animal's diet, surroundings, care or treatment, and particularly in the way the process of milking is carried out. As to the bacteriology of milk, the limits of this paper prevented its consideration. Two years ago over two hundred varieties of bacteria had been demonstrated in milk, and each species produced its own form of fermentation. This phase of the subject opened another important and as yet only partially explored field. The writer then quoted from Mr. Ernest Hart's recent address on the "Conveyance of Contagion by Milk" and alluded to our ignorance of some of the most important facts connected with this means of infection. He also showed that the most carefully handled and Pasteurized milk might entirely disagree with infants and quoted cases to prove his point, dwelling particularly upon the bad effects of agitation and movement of milk and also upon certain occult but as yet irremediable changes which occur in milk, merely from lapse of time, which impair its dietetic value. He dwelt upon some important facts which investigation had brought out in reference to the spread of tuberculosis among dairy cattle. Professor Bang, Dr. Theobald Smith and Dr. E. A. de Schweinitz have done much to show that tuberculosis rarely appears in small herds of cattle, and also by sterilizing the milk fed to the calves of tuberculous cows and by a strict isolation these calves will grow up non-tuberculous. The danger of tuberculous infection in neat cattle increases in geometric progression with the number of cattle kept together and the number of hours during the twenty-four in which the cattle are housed. There seems to be no reason why Alvord's excellent suggestion, not to milk cows in the stables but in an airy, light and disinfected place kept free from excrement, flies and dust, should not be generally adopted by our dairymen. The Doctor concluded his paper with the following: "Fortunately the day of rationalism in medicine has begun to dawn and the clouds of superstition and ignorance are fleeing away. Whatever unsanitary evils can be prevented by scientific knowledge and hygiene we are today struggling to get rid of. We rely less upon drugs than did our ancestors, but more upon common sense as exemplified in sanitary science. In the words of the honored secretary of the Society: 'It is only by removing or obviating the causes of disease in general that medicine will make any real advance.'"

(To be continued.)

Chicago Pathological Society.

Regular Meeting April 12, 1897.

The President, Dr. JAMES B. HERRICK, in the chair.

Dr. EMIL RIES read a paper on "Papilloma and Carcinoma of the Fallopian Tube." (See JOURNAL, Vol. 28, p. 962.)

Dr. H. A. BRENNECKE reported a case of "Measles Complicated by Diphtheritic Conjunctivitis." (See JOURNAL, Vol. 28, p. 1221.)

Dr. M. L. HARRIS read a paper on a case of "Benign Cicatricial Stricture of the Ileum. Operation, Lateral Anastomosis. Exhibition of Specimen removed five years after." (See JOURNAL p. 117.)

Dr. J. E. YOUNG presented a specimen of "Defect in the Ventricular Septum." (See JOURNAL p. 118).

Dr. EMANUEL J. SENN read a paper entitled "Inflammation of Joints in Gonorrheal Patients."

SELECTIONS.

The Administrative Treatment of Undefined Cases Certified as Scarlet Fever.—Drs. Frederick Dittmar and Brownlee, both of them formerly or at present attached to the Glasgow Health Office, report on the above subject as follows: "In this communication we intend giving an account of the management of the undefined cases admitted to the Glasgow Fever Hospital, Kennedy Street, from November, 1895, to November, 1896. Prior to the former date there was an arrangement for the special observation of cases of this nature. The hospital, which is exclusively employed for the treatment of scarlet fever, consists of fourteen wards built on the pavilion system, and has accommodation for about 320 patients. The pavilion chosen for the purpose of isolation consists of three divisions separated one from another by brick partitions which extend from floor to ceiling, while each division has a separate communication with the outside. Two of them have a capacity of 16,500 cubic feet each, and the third of 8,000 cubic feet. The last has also separate latrine accommodation and bathroom.

"The patients sent to the pavilion were of three classes: 1, cases in which the appearances on admission did not justify a positive diagnosis of scarlet fever; 2, cases where the symptoms and appearances suggested some other disease, *e.g.*, tonsillitis or non-specific erythema; and 3, cases of undoubted illness where the symptoms were obscure, but suggestive of some other infectious disease, *e.g.*, enteric fever. Cases in which some other infectious disease was frankly present were immediately transferred to the Belvidere Fever Hospital without admission to the wards.

"The two larger divisions were used for the first two classes, and the smallest division for the third class of cases. The whole pavilion was under the supervision of a very careful and experienced charge nurse whose powers of observation could be relied on, while each division had its special staff of day and night nurses. During their residence in the ward the patients were carefully observed for signs of scarlet fever, the urine being examined twice daily for albumin and evidence of desquamation carefully looked for. As soon as desquamation became definite or scarlet fever complications showed themselves the patient was transferred to a scarlet fever ward, where he completed the statutory period of eight weeks in hospital. Cases which did not turn out to be scarlet fever were kept in the isolation ward for a period varying with the nature of the case, but as a rule were not dismissed under four weeks, which we considered long enough for any such definite evidence as desquamation or nephritis to develop. None of the cases dismissed from the isolation ward were sent back to hospital with evidences of scarlet fever. The main objection which we have heard raised against the kind of arrangement adopted by us is that now and again patients who ultimately prove to have scarlet fever are mixed with those who do not, and thus may infect the others. Our experience seems to show that this fear is more or less baseless, as no case of scarlet fever occurred in the isolation ward. We tried to minimize the risk of infection by putting the patients at as great a distance from one another as possible and allowing at least 4,000 cubic feet of air space to each. We also cautioned the nurses to take special care when attending a patient the subject of any inflammatory secretion by which infection might be carried.

"The number of cases observed by us amounted in all to 45, and they fall into the following groups, of the more important of which we give typical examples. Of the 45 cases observed, 11 (24.4 per cent.) ultimately proved to be cases of scarlet fever, 6 (13.3 per cent.) belonged to the class of doubtful scarlet fever, and 28 (62.2 per cent.) were not scarlet fever. The last class was made up as follows: Tonsillitis, 11 cases; non-specific eruptions, 4 cases; dermatitis, 2 cases; cellulitis, 2 cases; measles (?), 2 cases; röthein (?), 1 case; bronchopneumonia (one complicated with marasmus), 2 cases; gangrenous ulceration of throat, 1 case; general tuberculosis (?), 1 case; and not classed, 2 cases.

"The cases which proved to be scarlet fever may be dismissed with the remark that the certifying practitioner, having seen the case earlier, had probably more definite and specific signs on which to found his diagnosis. We would call attention to a patient in which no desquamation was observed, though the child suffered from well-marked scarlatinal sequelæ, viz., enlarged cervical glands, rheumatic pains in the joints and albuminuria.

"Of the cases of doubtful scarlet fever there was a fairly typical example. A brother admitted at the same time probably had scarlet fever. He also was considered doubtful at first, but was after a time transferred to a scarlet fever ward on acccount of desquamation on the legs. He was dismissed from the latter after five weeks' residence without having contracted scarlet fever.

"As regards cases of tonsillitis no great difficulty is experienced when they occur singly in a family none of the other members of which are suffering from scarlet fever; but when they arise in a family in which one or more of the members are suffering from scarlet fever they are a cause of great anxiety to the physician in attendance. Attacks of this nature are considered by many authorities to be specific and infectious, and yet they do not seem to confer immunity on the person attacked. We have a good example of this in the family the case of one member of which is reported *in extenso*. On the same day a younger brother was admitted. A day or two later an elder brother and a sister were also sent to the hospital. The history in each case was similar, and on admission there was nothing observed but a tonsillitis. The sister and two younger brothers were transferred to the isolation ward on Dec. 7, 1895, and were dismissed well on Jan. 1, 1896, nothing having occurred to warrant the diagnosis of scarlet fever. The third brother was left in scarlet fever ward, and after twenty-six days developed a typical attack of scarlet fever. Similar cases with a like sequel have been observed by ourselves and are doubtless familiar to anyone who has had charge of scarlet fever wards for some time. We have classified such cases under the heading of tonsillitis, though one might be justified in considering them as cases of aborted scarlet fever. The class of non-specific eruption includes, beside the case of which a synopsis is given above, one case of urticaria and two where an erythema of an indefinite character was present, but where neither the history nor the cause of the case led to any reasonable suspicion of scarlet fever.

"Of the unclassified cases, one patient was hysteric and the other was sent in from a public institution along with another child who was suffering fram scarlet fever. She, however, neither had that disease on admission nor did she contract it."
—London *Lancet*, April 3.

Analysis of Two Hundred Gallstone Operations.—Dr. Kehr of Halberstadt, has in six years performed 209 laparotomies for the relief of cholelithiasis. The mortality in this series was seventeen cases, or 8 per cent. Where the stone was in the gall bladder, and was removed either by cystotomy or cystectomy, the mortality was practically 0 per cent. The highest fatality occurred in those cases associated with some grave complication, as carcinoma of the liver or pancreas, etc. The most remarkable results were obtained in the operations on common duct, where there were only two fatal cases in thirty operations, or 6.6 per cent. This is in marked contrast to the results heretofore obtained. Kehr collected eighty two cases from the literature, in which twenty-six died, giving a mortality of 31 per cent. These results should interest physicians, because, while medicine may be said to have not advanced the treatment of gallstones a step in five years, during the same period operative treatment has made great strides in the hands of the surgeon. From 1890 to 1896 Kehr performed his 200 laparotomies on this behalf. These were performed on 174 patients, some having been operated on more than once. Of these, 23 were males and 151 females. Of the latter, 133 were married, 117 of whom had borne children, and 18 were single. The operations are divided into five groups: 1. Those in which the gallstone was situated either in the gall bladder or cystic duct. Under this group there were 127 operations, with only 1 death. The fatal cases occurred in a man, 64 years of age, who had emphysema and arterio-sclerosis. 2. In twenty-one cases a cystectomy was performed, owing to obliteration of the cystic duct or to fibrous contraction of the gall bladder, rendering the latter functionless. The gall bladder was accordingly excised. Only one case died. 3. In thirty cases the stone was situated in the common duct, and was so large that it could not be forced either into the duodenum through the papilla or through the cystic duct back into the gall bladder. In these cases a choledochotomy was performed, the stone being removed through an incision into the common duct. Of this group only two cases terminated fatally. 4. Under this group were included seventeen cases, in which, instead of the suspected gallstone, either some other disease-process (as ulcer of the stomach, echinococcus of the liver, or wandering kidney) was found, or the gall bladder, being free from stones, was, however, adherent to the omentum, stomach, intestine or abdominal wall. Two of these cases died. These cases demonstrated to Kehr, first, that in some instances an exploratory incision is necessary to make a diagnosis; and, secondly, that adhesions between the gall bladder and adjacent structures may produce colicky pain indistinguishable from that produced by a gallstone. 5. The last group included cases in which, in association with gallstones, there existed various complications, as carcinoma of the liver, stomach, common duct, or head of the pancreas, suppurative cholangitis, syphilis of the liver, or liver cirrhosis. This group comprised nineteen cases, ten of which terminated fatally, while nine obtained relief from their symptoms for periods of from one and one-half to ten months.—*Arch. für klinische Chirurgie.*

Variation in the Size of Drops of Even the Same Liquid.—The great variation in size of the drop furnished by different liquids is well understood, but the large divergence in the size of drops yielded by the same fluid, even under ordinary conditions, is not so fully appreciated. Pharmaceutical literature acknowledges the unreliability of the drop as a method of measurement, yet with singular unanimity gives approximating numbers of drops to the fluid dram for similar liquids. This would leave one unfamiliar with the facts to infer that the number of drops to the fluid dram of any given fluid is fairly constant, which is far from being the case, unless much more than usual attention is paid to the proper conditions to secure what might be called the recognized drop of any given liquid. The use of the drop as a means of measurement is on a par with that of the pinch and handful, and all three are quite unsuitable for potent drugs.

The number of drops of water to the fluid dram is usually given by various authorities as about sixty, and similar figures are accorded to such watered preparations as Fowler's solution and dilute hydrocyanic acid. Our attention was first strongly called to the great ease with which the size of drops can be varied under ordinary circumstances, by being consulted by a prominent physician, in regard to the number of fluid drams of dilute hydrocyanic acid to be used in a prescription, where he wished to secure a certain number of drops in each fluid dram of the finished product. Upon inquiring of him the size of the drop desired, it developed that the physician thought that a drop of dilute hydrocyanic acid always represented a minim. In reply to this, forty drops were dropped from the one ounce glass-stoppered bottle holding the dilute acid, into a small narrow-lipped, thin-edged graduate and they were found to measure one fluid dram. The graduate was then elevated and turned until drops began to fall directly from the lip, without the intervention of a guiding-rod, stopper, or any other aid whatever, and one hundred drops were secured from the original forty. In one case the drops were 50 per cent. larger than he expected, and in the other they were only six-tenths of the size anticipated. The larger drops were two and a half times the size of the smaller ones; yet either method of dropping would not be considered unusual.

To show how widely drops of the same liquid will vary in size when obtained under different conditions experiments were made with water, which is much used as a menstruum, and fairly represents several powerful preparations. A fluid dram was dropped under the varying circumstances noted below with a yield in drops as stated:

From the bottom of a ten ounce evaporating dish, the number of drops was 18.

From a two pint funnel, choked with cork for dropping, square, thick end, 24.

From the bottom of a five ounce beaker, 25.

From a six ounce funnel, choked with cork for dropping, square, thick end, 28.

From a large glass stopper, two inches in diameter, 30.

From a five ounce lipped beaker, with guiding-rod, ⅛ inch in diameter, 31.

From a ⅜ inch guiding-rod, taking supply from two ounce dropping funnel, 32.

From a four ounce glass stopped bottle (half full), stopper kept partly in neck, 33.

From a two ounce lipped graduate, offhand, without guiding-rod, 45.

From a one dram lipped graduate, offhand, without guiding-rod, 47.

From a two ounce funnel, choked with cork for dropping, slanting end, 52.

From 3 16 inch diameter guiding-rod, taking the supply from two ounce dropping funnel, 62.

From a 3-16 inch diameter guiding-rod, taking the supply from one dram graduate, 96.

From a ⅛ inch diameter guiding-rod, taking the supply from two ounce dropping funnel, 96.

From a five ounce lipped beaker, offhand, without guiding-rod, 100.

From a five ounce lipped beaker, with guiding-rod, 3 16 inch diameter, 120.

From a pointed guiding-rod, 1-24 inch diameter at point, from two ounce dropping funnel, 160.

From a pointed guiding-rod, 1-40 inch diameter at point, from two ounce dropping funnel, 600.

The drops which were obtained with the very small guiding-rods and from the bottoms of the vessels were abnormal and are only given to illustrate what is possible under certain conditions. The list, however, shows quite plainly how easy it is to obtain drops of water under ordinary circumstances, varying from 33 to 120 to the fluid dram.

There are several factors which cause the drops of the same liquid to vary in size, among which are the adhesion of the fluid mass to the solid which it bathes, the cohesion of the molecules of the liquid to each other, the gravity of the fluid, the temperature, the rapidity of dropping, and the area and shape from which the drop falls. The adhesion of a liquid is greater for some kinds of solids than for others. If a liquid does not wet a substance, it is because its adhesion for such a material is overcome by the cohesion of the liquid. Films of grease covering a dropping surface, in part or completely, have a decided influence in altering the size of the drop. A fluid dropping from such a non-wetted surface has principally the adhesion to overcome, as it is weaker than the cohesion which holds the liquid particles together. When the solid is wetted, cohesion is stronger than adhesion and it is the cohesion which has to be overcome before the drop can fall.

The gravity of any mobile body determines in a considerable degree, its ability to cling to different surfaces and results from certain surfaces for one liquid are not necessarily proportionately correspondent for a fluid of different gravity.

Differences of temperature cause variations in the viscosity of fluids and in this way influence the size of the drop. In liquids which readily become viscid, at not unusual degrees of cold, this factor is most marked. In liquids like water, whose mobility is but little effected by ordinary changes of temperature, the size of the drop shows but slight variation from this cause. As an illustration, water from a two ounce dropping funnel gave 44 drops to the fluid dram at 0° C., 47 drops to the fluid dram at 22°C., and 47 drops to the fluid dram at 100° C. These indentical results were obtained in each of three trials at the three different temperatures.

Rapid dropping furnishes smaller drops than when the dropping is done slowly. This is due to the momentum of the liquid, which as the velocity of its flow is increased, enables it to more readily overcome causes which tend to produce a larger drops.

The area and shape of the surface from which the liquid drops, probably causes the most important differences in the size of drops from any one liquid. The larger the surface to which the fluid can cling and from which the drop mass can secure material at the period of its segregation, the greater the drop will be. Small guiding rods give smaller drops than larger ones, and guiding-rods of similar size with conical ends yield smaller drops than those whose ends are globular. Rounded or globular surfaces are well adapted to illustrate the great influence which is exercised upon the size of drops by the area of the surface from which the drop actually falls. Plane surfaces are not suitable, as it is almost impossible to prevent the dropping from occurring at the edges. In the case of water, above illustrated, the size of the drop steadily increased from the rounded surface 1-40 inch in diameter up to the one ten inches in diameter. At certain diameters for different liquids, a point is no doubt reached, where, from conditions being carried to extremes, a drop is obtained of equal size to that which is possible from the under side of a perfectly level plane surface of unlimited extent.

Where wild guessing is not permissible, fluids should not be dropped, but should be measured. The minim or 1-10 c.c. should be used for describing small quantities of liquids, and in cases where it is absolutely necessary to use drops, but little dependence should be put in their estimated sizes, but an actual trial should be made of the material in the way it is intended to be dropped, that one may know what part of a fluid dram this particular kind of a drop actually represents.—GEO. F. PAYNE, M.D., in *Druggists' Circular.*

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SATURDAY, JULY 17, 1897.

MEMBERSHIP IN THE ASSOCIATION.

That the ASSOCIATION is growing in membership at an unprecedented rate is perhaps not known to all the members. We therefore take great pleasure in informing them that 763 names were added to the membership list at the Philadelphia meeting.

The books show an increase from June 1, 1896, to July 1, 1897, of 1,500 names. For the same period, our books show an increase of an even 500 on the subscription list.

These are gratifying evidences not only of the sincere desire of the medical profession to organize under the ASSOCIATION banner, but that its JOURNAL is fairly satisfactory. It will be the aim of the present management to make the JOURNAL more and more useful to our colleagues with each succeeding issue.

This is an appropriate occasion to invite members to do their part toward increasing the membership. Help us pass the ten thousand mark before the close of this year. Every one can help. Blank applications for membership can always be had by writing to this office for them. "Be not weary in well doing."

THE ROLE OF THE SPLEEN IN INFECTIOUS DISEASES.

Other than that the spleen plays some part in the destruction of old blood-corpuscles and the generation of new, little is known concerning the function of this organ. That it is somehow affected in the course of many of the infectious diseases is apparently shown by the frequency with which it undergoes enlargement of size in conjunction therewith. Various hypotheses have been propounded as to the nature and the purpose of the alterations that take place, but none has thus far withstood the tests of experimental inquiry. It is therefore a source of satisfaction to note that the subject has recently been taken up and given consideration on a generous scale by BLUMREICH and JACOBY (*Berliner klinische Wochenschrift*, May 24, 1897, p. 444) at the Second Medical Clinic of the University of Berlin. These observers made a careful and scientific study of the influence exerted upon the susceptibility of guinea pigs to infection by bacteria and their toxins respectively by reason of the presence or absence of the spleen. After a little skill had been acquired in the technic of the extirpation the animals operated on speedily recovered and gained in weight.

Diphtheria bacilli and active diphtheria toxin were first experimented with. Twenty-four animals were taken and the spleens removed from twelve. Of each group six animals were now inoculated with the bacilli and six with the toxin. Those of each kind treated with the toxin presented like symptoms, all dying at about the same period; while of those inoculated with the bacteria the six from which the spleens had been removed resisted fatal doses longer than the control animals, the latter dying on an average after 34½ hours, the former after 47 hours.

Fourteen normal animals and twelve from which the spleens had been removed and all inoculated with virulent anthrax bacilli died at about the same time; only one animal deprived of its spleen recovered. These observations with regard to anthrax bacilli are practically in accord with those of others, apparent variations being due to differences in degree rather than in kind. Between animals with and those without spleens treated with pyocyaneus toxin there was little or no difference, although of fifteen from which the spleens had been removed two died (one through an accident) and thirteen recovered, while of twelve normal animals treated similarly eight died and a ninth was made very sick.

Again of eighteen animals without spleens treated with cholera bacilli four died and fourteen survived, while of fifteen normal animals similarly treated thirteen died and two were made very sick.

It would thus appear that guinea pigs deprived of their spleens possess an increased resistance to infection by the bacilli of diphtheria, pyocyaneus and cholera, but not to their toxins. To determine if this peculiarity is dependent upon the removal of the spleen from the body or merely from the circulation the spleen was ligated in nineteen animals. The operation was borne badly, fifteen animals dying in a short while and only four being available for further experiment. In these the results were found to be just the same as when the spleen had been removed from the body. The conclusion would thus seem justified that it is really the removal of the spleen from the circulation that is responsible for the increased resistance of guinea pigs to bacterial infection.

To determine if the blood of animals deprived of their spleens is endowed with the property of diminishing the virulence of bacteria in greater degree than the blood of normal animals virulent cultures of the bacillus pyocyaneus were brought in contact for several hours with defribinated blood obtained from normal animals, as well as from others deprived of their spleens, and the mixtures injected into other animals. The results were constant that the animals treated with mixtures of bacteria and the blood of normal animals died earlier than those treated with mixtures of the bacilli and the blood of animals deprived of their spleens. The conclusion seems therefore justified that the blood of animals deprived of their spleens possesses a greater bactericidal activity than that of normal animals. Bacterial toxins on the other hand behaved in the same way with the blood of both sets of animals; that is their activity was in no wise enfeebled.

In order to determine if experimental infection could be neutralized by hyperleukocytosis and if this result were to be attributed to the bactericidal action of such blood from the presence of the increased number of colorless corpuscles, the blood of sixteen animals was taken and counted before and at various times after extirpation of the spleen. In fourteen considerable increase in the number of leukocytes followed; in two there was a diminution, but in one of these suppuration took place and in the other death resulted on the fifth day from pneumonia. To demonstrate that the hyperleukocytosis was not dependent upon the operation rather than upon the removal of the spleen it was shown that the blood-state did not occur when the remainder of the operation was performed while the spleen was left intact. It was further found also that the hyperleukocytosis resulted when the spleen was merely ligated and thus excluded from the circulation only.

The evidence would thus go to show that *removal of the spleen is followed by* hyperleukocytosis, increased bactericidial activity of the blood and increased resistance of the body to certain forms of bacterial infection. There is thus afforded an explanation why animals deprived of their spleens are more resistant to bacterial infection than to intoxication with bacterial products and also why in diphtheria, in which the toxic factor preponderates, destruction of the bacteria is of so little direct importance, and why the infection of cholera is so readily overcome. It must, however, be remembered that the protective influence of the leukocytes is limited both in degree and in time. Perhaps in this fact is to be found the explanation of the aberrant results obtained with anthrax bacilli.

Now it may be suggested that if immunity to infection on the part of animals deprived of their spleens is due to hyperleukocytosis, opposite results should be secured if bacterial inoculation preceded removal of the spleen. The correctness of such an assumption was demonstrated by inoculating fourteen animals with bacilli pyocyanei and several hours later removing the spleens from eight. Of the latter six died, while of the six control-animals only two died. It may be, that other changes, chemic or morphologic, in addition to hyperleukocytosis, may have some share in the effects produced. Future investigation will have to determine whether the changes effected follow only removal of the spleen or other lymphoid structures or may develop in the sequence of removal of any other important organ. It has already been shown that injections of extracts of spleen, thymus and bone-marrow (lymphoid organs) induce hyperleukocytosis, while extracts of other organs do not. It yet remains for the clinician to determine whether in diseases attended with enlargement of the spleen and hyperleukocytosis, or hypoleukocytosis, these respective conditions bear a constant definite relation to one another and whether the enlargement of the spleen, like the number of leukocytes, is of favorable or unfavorable prognostic significance.

THE NERVOUS ACCIDENTS OF BICYCLING.

The bicycle has become so an important element in modern life that it is certainly worthy of an occasional mention by the medical press. The subject has not been exhausted in its hygienic and medical relations and new points arise from time to time for consideration. A few weeks ago the nervous disorders induced by bicycling were discussed, not exhaustively it is true, by certain English physicians and it was pointed out that excess in this as in other reasonably good things had its more or less damaging influences. Other than medical writers have discussed also the iniquities of this modern indulgence, the bicycle hump and the bicycle face are matters of common jest, not on the principle of ridiculing a false alarm, but as an evidence of the popular taste for the ridiculous even in self-inflicted misfortunes. Still the bicycle becomes daily more popular and its influence on our civilization will be seriously discussed by future historians and students as much as will its physical effects by physicians.

Much of what has been said against the bicycle, without doubt, falls into that class of hygienic criticism that, if sufficiently influential and accepted, would make life miserable by depriving it of all its pleasure. Still there is something to be said to its disadvantage now and then and this is accentuated by the almost universal use of the wheel by persons of all ages and classes at the present time. Extreme youth and advanced age have each their special drawbacks; in the one there is the possibility of overtaxing and possibly of deforming an only partially developed organism, and in the other the general danger of overstrain of an enfeebled one together with the special hazard of aggravating certain senile weaknesses. For the great mass of mankind of either sex the dangers could hardly be said to counterbalance the advantages if it were not for the tendencies to the excessive use and the abuse of what ought to be a pleasant and profitable exercise. The pleasure of rapid movement and the emulation and competition, the sporting instinct that exists in almost every one, all have their part, and the results are often disastrous. To say nothing of the frequent surgical accidents, the bad effects of vesical and prostatic irritation, the heart strain, and other disadvantages that have been frequently pointed out and are incontestable, there are yet other possibilities of evil. Drs. SEMPLE and TAYLOR have reported myelitis as a direct consequence of excessive use of the wheel, and another English physician, speaking from personal experience as an observer of road races and other bicycling sporting events, gives quite a formidable list of the nervous accidents he has seen follow in the participators. Most of them it may be presumed were only temporary, but some may not have been, and temporary or not, none of them were desirable symptoms. It would be interesting to know the extent of the nervous symptoms that actually do occur in scorchers and bicycle racers; as yet we have only a few observations on record, but these are suggestive and lead us to suspect that there are many yet to be reported. The use of the bicycle is rapidly extending and it is only a few years since it became so general; any remote nervous effects of its misuse have therefore hardly had time to develop. With its extended use there have been some improvements in a hygienic point of view; the pneumatic tire, reducing the jar, is one; the improved saddles are another; but modern high gearing and the tendency to sacrifice everything to lightness and speed are perhaps advances in another direction. In any event it will be long before all the medical aspects of the subject are fully discussed; they are all the while developing. But there is certainly room at the present time for a complete investigation of the effects of the altogether too common misuse in many ways of the bicycle upon the nerves and central nervous system.

THE BACTERIOLOGY OF MUMPS.

It does not seem unreasonable to believe that the entire group of so-called self-limited diseases, including among others the exanthemata, pneumonia, acute rheumatism and chorea are dependent upon bacterial invasion. The dependence of many of these upon specific bacteria has already been demonstrated and it is not improbable that the near future will bring similar demonstration for the remainder. The list of the former is steadily growing, while that of the latter is correspondingly diminishing. Among the latest of the disorders which have been shown definitely to owe their origin to microörganismal activity is mumps.

PASTEUR noted in the blood of patients suffering from this disease bacilli 1 μ thick and 2 μ long. CAPITAN and CHARRIN, and also OLLIVIER, observed in the blood and in the urine of such patients small rods in addition to cocci. BOINET found in the blood cocci arranged in part in pairs and in part in chains. LAVERAN and CATRIN, and later MECRAY and WALSH, found partly in exudates and partly in the blood diplococci capable of cultivation on artificial media. At a recent meeting of the Berlin Society for Internal Medicine MICHAELIS (*Deutsche medicinische Wochenschrift*, May 13, 1897, Suppl. 1, p. 93) detailed the results of a number of bacteriologic examinations made by himself and BEIN in cases of mumps observed at the clinic of Professor LEYDEN, who had some time before noticed peculiar diplococci in the sputum of a child suffering from this disease. These bacteria lay principally within pus cells. In all of seven cases of epidemic mumps recently studied the same organism was found both on microscopic examination and on culture, and not only in the secretion of the parotid gland as obtained from STENON's duct, but in two cases also in pure culture in the pus from an abscess and in one of two cases examined in blood obtained by venesection.

In spite of this small number of observations the belief is expressed that in view of the constancy of the results the conclusion is justified that the microorganism found may be considered to bear etiologic relations to the disease. The individual microörganisms are 1 μ in size and resemble the biscuit-shaped meningococci and gonococci, although smaller than these. They lie frequently within the cells, sometimes to the number of eight or ten or more, and are also partly distributed throughout the pus or in long chains or strings. They stain readily with the usual anilin dyes, especially with LOEFFLER's methylene-blue, and they can be decolorized by the method of GRAM. They grow upon the usual culture media, though slowly. Upon agar they develop tiny transparent, dewdrop-like points that do not coalesce. Upon peptone-bouillon they form a white, rather granular than flocculent, deposit, the bouillon itself remaining clear. The growth is more rapid on strongly alkalin than on feebly alkalin media. The bacteria grow also upon ascites-fluid and upon milk, the latter coagulating in the course of forty-eight hours. They are capable of slight movement. Inoculation experiments were unsuccessful, except in the case of a white mouse which died after thirty-six hours. Inocula-

ican Medical Association, as able, honest and honorable as himself, and whose only fault is that they have aborted typhoid fever and for the benefit of humanity have said so and have reported their cases.

It is not necessary, perhaps hardly proper, to call attention to the fallacies in the Doctor's paper, yet one can not help mentioning a few of them, *e. g.*, "The diet should be liquid. . . Milk is the best of all foods." Milk is a liquid outside of the body, but is it a liquid food in the stomach? "When the case has terminated the room should be thoroughly disinfected for at least two weeks before it is occupied and the furniture washed with a solution of bichlorid 1 to 1000." This is fairly good advice for two or three decades back, but insufficient and laborious. We live in an enlightened age now; we simply close up the room and send a stream of formaldehyde gas through the key hole and the next night use the room with safety as a surgical ward. "Such preparations as phenacetin, etc., may be used in small doses, but I deprecate most decidedly the use of the coal-tar derivatives at any stage of the disease." Does Dr. Upshur not know that phenacetin is one of the coal-tar derivatives? "Numerous drugs have been used with the object of abridging typhoid fever, but all clinical experience shows the effort to have been fruitless." "We have no evidence of proof given, except the bold assertions of success by himself and others, and the *testimonials are not worth any more than the testimonials given by hundreds to the so-called cancer cures and kidney cures et id omne genus.*" In one sentence Dr. Upshur shows his respect for clinical experience, coupling it, however, with a gross misrepresentation. In the other he designates the reports of cases of those who have succeeded with the abortive treatment and the opinions they have expressed regarding it—the highest expression of clinical experience—as testimonials and attaches the same value to those of the deluded victims of quacksalvers as to the clinical reports of educated physicians; and because these physicians cure so large a percentage of their cases and in so short a time that Dr. Upshur regards their results as marvelous, he condemns them as impossible and raises the hackneyed question of "errors of diagnosis." In comparing the clinical reports on the abortive treatment of typhoid fever to the "testimonials," generally of impecunious patients given to shameless quacks or patent medicine venders, is a gross insult to hundreds of the ablest and most honorable physicians in all parts of the United States and through them to the entire medical profession, and scarcely less insulting is his theory that all of the wonderful results of the method which he condemns are due to errors "of diagnosis." To accept this theory it would be necessary to believe that physicians who have been at the head of some of the largest hospitals in the United States—that hundreds of physicians who have won high repute and large practice, and many of them high official positions such as high rank on the Medical Staffs of the United States Army in Marine Hospital Service, etc., and have reported 7,857 cases of typhoid fever treated by the method I have advised, are incapable of making a correct diagnosis in one of the commonest and in its typical form, one of the easiest diseases to diagnosticate which they encounter; to believe that the physicians who adopt this method of managing the disease frequently in the midst of epidemics suddenly cease to meet with it; to believe that the hospitals in which the treatment is used acquire a like immunity, and that while in the same locality and during the same epidemics, physicians were treating typhoid with the ordinary death rate and duration of illness—these hospitals were receiving and these physicians were treating these 7,857 cases of a disease which was being mistaken for and presenting pathognomonic symptoms of typhoid fever with a death rate of 1.90 per cent. and an average duration of illness of 12.7 days of those that recovered; that the patient whose temperature dropped rapidly to 99 degrees and afterward died of intussusception, the necroscopy revealing extensive ulceration of Peyer's glands, was an "error of diagnosis;" the patient in whom the treatment was instituted and the temperature dropped from 104.8 to 99.7 on the fourth day and to normal on the tenth, the pulse in the meantime dropping from 96 to 76, the treatment having been previously discontinued, a relapse and death followed and the necropsy showed ulceration of Peyer's glands and intestinal perforation—an "error of diagnosis;" Diazo reaction positive—Widal's test of reaction of serum on Eberth's bacilli characteristic of typhoid fever—disease aborted—"errors of diagnosis." Is Dr. Upshur himself credulous enough to believe all these absurdities?

Aside from the small doses of phenacetin, the use of which is always reprehensible, the recommendations in this remarkable paper are in consonance with the procedures in vogue during most of the passing century; indeed the one remedy from the use of which the Doctor says he has seen marvelous benefit, was recommended and used during the last century in "typhus mitior"—not necessarily a condemnation. It is fair, therefore, to presume that his death rate (a subject upon which he is discreetly silent) is the ordinary 15 to 20 per cent., and his average duration of illness from four to six weeks. He is then to be commended for his unwillingness to "subject his patients to such experimentation" (as the Woodbridge treatment)!

Finally, Dr. Upshur is to be congratulated on his desire for "convincing proof of the brilliant results claimed," a wish which I promise to gratify if he will come to me, and I pledge myself that he shall be able "to approach the treatment of *his* cases of typhoid fever with the assurance of its harmless nature and certainty of cure." I am, my dear editor,

Your most obedient servant,

John Eliot Woodbridge, M.D.

"Life Insurance Fees for Medical Touts."

Hartford, Conn., July 8, 1897.

To the Editor:—Your edition of July 3 contains an editorial entitled "Life Insurance Fees for Medical Touts," which is in its initial statements so obviously unfair to the great majority of life insurance companies, as well as to the medical profession at large, that I beg leave to offer a remonstrance. You begin by saying, "for at least a half a century the American medical profession has been conscious of the great injustice done in the matter of fees for life insurance examinations." Now, I have been a practicing physician and life insurance medical examiner for thirty-one years, and for nearly half that time also the medical director of a large life insurance company. As the examiner of several companies I received, during the early part of my career, $3, and for the latter years $5, for each examination made, and when microscopic examination was called for I was paid from $3 to $5 additional. During all this time I have near heard any objection made by physicians, nor have I felt myself that these fees were unjust. In the days before uranalysis was so universally required, $3 was regarded as good compensation for the twenty-minute or half-hour examination made. Some years later a fee of $5 was allowed in cities and when chemic uranalysis became a general requirement the fee was advanced to $5 in most instances, both in the city and country alike, with an addition for using the microscope. The company with which I am connected (the Connecticut Mutual Life Insurance Company of Hartford) has several thousand examiners, and I do not recall a single instance in which there has been an expression of dissatisfaction with the fees we pay; nor could such a claim be put forward with any degree of fairness. The time and professional ability requisite for this work is as well paid for as in any other branch of medical service. Still more conclusive evidence is found in the fact that fee tables adopted by our medical societies in no instance, so far as my knowledge goes, calls for or suggests even a fee in excess of the amounts named above. Surely this would appear to be a strange way of manifesting to the world a life-long consciousness of great injustice.

Again, you say, "of late this feeling has been intensified by the wanton reduction of fees to medical examiners, while at the same time the salaries of presidents were increased by thousands." It is true, I believe, that one or two companies have reduced somewhat their fees, or made a graded scale of fees, within the past year or two, but no such action has been taken by the great majority of companies. Of course I am speaking of the old line life insurance companies and do not refer to assessment or society insurance at all. The Connecticut Mutual Life Insurance Company and the great majority of similar companies still pay a $5 fee, which has been and is accepted by our examiners as adequate and just. There can be no question, however, that an abundant corps of competent medical examiners can be found in all parts of the United States who are not only willing but anxious to make life insurance examinations for the old fee of $3, including chemic analysis of the urine, and our industrial companies inform me that they find little difficulty in securing competent service at a much lower cost to them. This illustrates the willingness of a large part of the practitioners in this country to perform such service for a fee much less than that generally paid by life insurance companies.

Continuing, you say, "while life insurance companies do not appreciate physicians highly in their proper functions as medical men, etc." Once more I must take exception to your statement. Nowhere is the service of a skilful and conscientious physician valued more highly than in an insurance office. The whole institution of life insurance rests upon the medical estimate of the individual applicant. The amount of money annually expended by life companies to secure competent examiners and to weed out those who are unreliable is very large, and is made necessary by the recognition on the company's part that the very best medical advice must be secured if a safe and stable business is to be transacted. In view of the great number of applicants for the position of examiner, and the high appreciation by the company of what is requisite in an examiner, any physician is surely to consider himself complimented when he is requested to occupy the position.

Criticise, if you please, business methods like those you mention in your editorial, but do not make it appear that the profession is being imposed upon or that life insurance companies are unmindful of the high service performed by their examiners, for this is surely unfair to both parties alike.

Regarding the employment of physicians as agents I care to say nothing beyond this: Should it come to our knowledge that one of our medical examiners was receiving fees from any of our agents for services as solicitor, I should consider the cancellation of his certificate as medical examiner an imperative duty. Very respectfully yours.

GEORGE R. SHEPHERD, M.D., Medical Director.

Color and Finish of Paper for Bookmaking.

SAN JOSE, CAL., July 8, 1897.

To the Editor:—Since I penned a few thoughts in the April 24 issue of the JOURNAL, on the subject of glossy paper for periodical and bookmaking purposes, I have been thinking more on the subject, and the more I think the more I am convinced that the matter needs thorough agitation all round. If one will call to mind the large number of periodicals and books now printed on paper of high glossy finish he will conclude that this style of paper is becoming a "fad."

A journal published in St. Louis entitled *The American Medical Journalist*, notices my former article and makes the following comments: "Dr. Simonton of San José, Cal., objects to the high finish of the paper upon which the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION is being printed, and claims that the 'gloss,' as he terms it, is injurious to the eye, and suggests that the paper should have a dead white finish. The paper used upon the JOURNAL is what is known as an S. and S.C. (Sized and Super-Calendered) book, and is the best quality for periodicals of that character, giving life to the letter-press and affording an opportunity to use half-tone engravings without inserting special sheets for the purpose. If the quality of the paper is reduced, it would be at the expense of the appearance, and illustrations would necessarily have to be printed on separate sheets."

Well may the publishers of the *American Medical Journalist* come to the rescue in defence of glossy paper for periodicals, since the paper on which that particular journal is printed is of such smooth finish that a fly should not venture to light upon it without its life was insured. The paper of this journal is certainly "calendered" in the highest degree of the art.

The editor says that this highly calendered paper "gives life to the letter-press and affords an opportunity to use half-tone engravings without inserting special sheets." I submit that the issue of his journal (June, 1897) in which the words of the last quotation are printed, presents positive evidence that such high finished paper does not receive the ink readily and uniformly from the type. On the contrary, the letter-press is bad.

It stands to reason that paper of highly glossy finish can not take the impression from the type so readily and perfectly as paper of a softer finish.

And it is the half-toned engraving that is leading to this highly calendered paper "fad"; is it?

Must human eyes be sacrificed in order that it may be convenient for the printer to insert half-tone engravings on any page of periodical or book? Give us "quarter-tone" engravings or none at all, rather than to put unnecessary demands on human vision, in this high civilization, which is trying to the utmost the useful organs of sight.

Should the printers of periodicals and books consult their own convenience rather than the convenience, comfort and welfare of those who use and furnish market for their product?

Take up one of these "highly polished" journals and hold it before even a diffused light from a window, so that the rays of reflection reach the eye and it will be found almost if not quite impossible to read the print. Before the direct light of a lamp the difficulty is increased. And at any angle the light reaching the eye from the glossy surface is much greater than from one that is dead white.

For comparison take up the *Forum*, which is printed on paper of proper texture and color. Place this magazine in same positions as you have the "polished" journal and observe the difference and comfort to the eye.

I observe that the imprint of letters on the pages of the *Forum* is perfect, being a positive refutation of the statement that paper of high gloss gives the best letter-press.

A very large number of periodicals and books are now being printed on highly calendered paper and I suppose for the reasons that engravings make a better impression on same, but for reasons which I have set forth the practice should be condemned on all occasions.

All periodicals and books should be printed on a dead surfaced, slightly cream-tinted paper.

A. C. SIMONTON, M.D.

Sterilization of Catgut.

PHILADELPHIA, PA., July 5, 1897.

To the Editor:—Some time about the first of this year an article was published on the sterilization of catgut by treating it with formalin. I am not sure that it was published in your JOURNAL—will you kindly look it up and let me know if I can secure a copy of the magazine containing it, provided you published it?

[illegible] [illegible], M.D.

Polyclinic Hospital.

ANSWER:—See JOURNAL of Dec. 12, 1896, p. 1219.

Fracture of Skull, Rupture of Meningeal Artery. Ligation of Common Carotid, Recovery.

ATHENS, ILL., July 10, 1897.

To the Editor:—Believing the following case would be of interest to the readers of the JOURNAL, I will report it as briefly as possible:

On Wednesday, April 15, 1897, I was called to see T. J. S., carpenter by occupation, age 28, American, and found him lying on the bed profoundly unconscious, pulse 40, breathing stertorous, right pupil dilated, and obtained the following history: Some four hours previously while engaged in building a barn a piece of timber, oak 2 x 8 inches, 11 feet in length, fell from upper part of barn frame while being placed in position by an assistant and dropped a distance of eight or ten feet, striking S. on the top of the head, felling him to the ground, but did not produce immediate unconsciousness. At time of accident he wore a very thick cap on his head, which probably explained absence of external evidence of injury, as close examination of head failed to reveal anything more than a small discolored spot at the point of injury. After receiving the injury he mounted his horse and rode to his home distant about two miles and gave his wife an intelligent account of the accident and requested that the family physician be called. Unconsciousness developed slowly and at expiration of four hours after injury had become profound. I diagnosed fracture of skull with compression of brain and asked for surgical consultation.

Dr. J. A. Prince of Springfield, Ill., saw the case with me and concurred in the opinion expressed, and operation was decided upon, which was performed a few hours later, the patient not showing the slightest evidence of improvement in any way, having lost control of sphincter muscles and having involuntary passages from bowels and bladder.

Incision was made through soft tissues of the scalp down to the skull at the point of injury, and fracture of right parietal bone near superior border was found extending downward and forward considerable distance but no depression of bone. On removal of section of bone with trephine a very firm blood clot presented in the opening, which was enlarged with bone cutting forceps, and clot removed, after which hemorrhage from the middle meningeal artery was very profuse. Packing the opening with gauze, firm pressure and compression failed to control the bleeding. To accomplish this purpose we decided, after giving other methods a fair trial to ligate the right common carotid artery, which was performed in the usual way, the vessel being tied with a double silk ligature, the result was all that could be desired and the operation was concluded in the usual manner and patient put to bed. In a few hours consciousness returned, the pupillary inequality disappeared and the patient made an uneventful recovery, and at this time, now almost three months after operation, expresses himself as being as well in every way as he ever was in his life; he is going about as usual and expects to resume work at his trade at once.

A. L. BRITTIN, M.D.

An Open Letter.

IOWA CITY, IOWA, July 5, 1897.

To the Medical Profession, Members of the Legislature and Citizens of Iowa:

You are doubtless aware that the Board of Regents of the University of the State of Iowa have appropriated nearly $150,000 for the construction and equipment of an hospital to be an adjunct to the Medical Department of the University.

This hospital has been planned to possess the greatest amount of facility for medical and surgical work possible in the present state of science; and, under proper restrictions, it might become a source of great benefit to the needy and indigent requiring medical or surgical treatment.

But the best information accessible indicates that the use and control of the hospital is to be *restricted* to members of the Faculty of the Medical Department of the State University, and that the practical working of the hospital is to be largely under the control of non-resident members of the faculty.

We are also informed that while it is the intention of those in authority to admit the poor, if funds for their board be guaranteed by friends, or by the county from which they come, the well to-do are to be received and afforded advantages superior to those that can be given by local physicians and surgeons, or by local hospitals or sanitariums, provided they pay their board and reasonable charges to the physician or surgeon in charge.

Thus the State, in behalf of a few individuals connected with the Faculty of the Medical Department of the University, enters into competition with every general practitioner, and every hospital and sanitarium in the State; also offering to furnish a set of operating rooms, and all special appliances, to the members of the staff without expense to them; thereby giving them great advantages in competition with the large body of the medical profession, who have no such extraneous aid.

We call your attention to this matter in the hope that you may aid in obtaining from the legislature such enactments as will secure the enforcement of the following rules; without which, in our belief, the hospital should receive no help from the State or the medical profession:

1. That no patient shall be admitted to the hospital or receive treatment therein who is able to pay, or possesses sufficient means to pay for his or her treatment at home, or in a private institution.
2. That no physician or surgeon, a member of such hospital staff, shall receive any compensation for service in such hospital, or receive any pay or gratuity from any patient admitted to such hospital.

It is our belief that the adoption of such rules would in no way lessen the opportunity for good of a State hospital, and could in no way interfere with the *legitimate* work of the members of its staff.

Respectfully submitted,

ELMER F. CLAPP, M.D., Iowa City, Iowa.
C. M. HOBBY, M.D., Iowa City, Iowa.

A Query.

FORT YATES, N. DAK., July 7, 1897.

To the Editor:—Would you kindly give the formula and method of using Schleich's fluid for anesthesia, and as full particulars as possible of Maragliano's serum, in your next issue?

Yours very faithfully,

JAMES W. BAIRD, M.D.

ANSWER: See THE JOURNAL, Dec. 29, 1894, p. 965, for Dr. Würdemann's article on Schleich's method, and THE JOURNAL, Nov. 21, 1896, p. 1105, for an abstract of an article on Maragliano's serum.

BOOK NOTICES.

Manuali Hoepli. Soccorsi d'Urgenza. Pel DOTTORE CARLO CALLIANO. Milano: Ulrico Hoepli. 1897. (*Aid in Emergencies.*) 4ta edizione.

La Morte Vera e la Morte Apparente. Con Appendice "La Legislatura Mortuaria." Pel DOTTORE FELICE DELL'ACQUA. (Real and Apparent Death, with Appendix, Mortuary Legislation.) Milano: Ulrico Hoepli. 1897.

The first of these two little volumes of the extensive and comprehensive Hoepli series, is a work that has received the approval of the Italian sanitary authorities and has passed through four editions, which facts ought to be an index to its worth. On examination the favorable presumption is confirmed; it is a very complete and thorough manual, covering rather a wider field than some of the other numerous publications on the subject, and seemingly very well suited to be utilized as a text-book for ambulance attendants, nurses and others who have to do with the class of cases of which it treats. Its compass will be better understood if it is stated that it gives the elementary facts of anatomy and physiology, the resources available for the immediate treatment of nearly or quite all accidents, poisoning and sudden ailments, the signs of death and the care of the dead, disinfection and asepsis, invalid diet, etc. It concludes with a very satisfactory index, and a number of plates illustrating anatomy, stoppage of hemorrhage, bandaging, transportation of the sick or wounded, etc. If it were only in English it would have our warmest recommendation to American readers.

The second volume gives apparently a very fair statement of the facts as to recognition of real and apparent death, with the Italian law of 1891 in regard to burial and mortuary dispositions generally.

Life of Thomas Wakley, Founder of the first edition of the *Lancet*, Member of Parliament for Finsbury and Coroner for West Middlesex. By S. SQUIRE SPRIGGE, with two portraits. Pages 509. London, New York and Bombay: Longmans, Green & Co. 1897.

We have here the biography of one of the most interesting members the medical profession has produced in Great Britain during the present century. If we consider his pugnacity we must admire the results which he accomplished by it. If we consider him an uncomfortable person to be in controversy with, we must at the same time admit his energy, his faithfulness in the pursuit of right, his great industry, and withal his ready grasp of the spirit of the times.

Wakley was a born reformer. Reformers although followed by many are usually loved by few, for they must run counter to the prejudices of the times, the sentiments of individuals and the customs of the country.

One marvels how it is possible for one individual to have accomplished so much work and at the same time it must be admitted, that done by Wakley was done well. As the editor of a great newspaper he was incomparable, as Member of Parliament for Finsbury, he was always ready with some interrogatory to embarras the party in power and to advance the liberal cause and interest of his constituents. As coroner for Middlesex his career was marked by ability, industry, patience, courtesy, integrity and uncommon learning. These three occupations he carried on at one and the same time.

The career of Wakley is of great interest to every medical man and we commend the perusal of this biography especially to the young medical student, who views with concern the long and rocky road between himself and the goal of his ambition. As for Wakley himself, notwithstanding his success in the House of Parliament and the reforms which he successfully instituted as coroner for Middlesex his best monument is that wonderful medical newspaper which we welcome under the name of the London *Lancet*.

Medical and Surgical Report of the Presbyterian Hospital in the City of New York. Vol. 2, January 1897. Edited by ANDREW J. McCOSH, M.D., and WALTER JAMES, M.D.

This volume contains besides the list of officers, managers, medical board, house staff, house officers the papers on various subjects by the staff of the hospital.

In medicine we have W. Gilman Thompson, Tilden Brown, W. P. Northrup, J. T. Thornley, Francis Kinnicott, and in surgery we have papers by Charles K. Briddon, Forbes Hauks, E. Elliott, and A. J. McCosh.

The volume opens with a well considered paper on cholelithiasis and surgery of the bile ducts by Dr. Briddon. Four cases are reported with analysis.

Gilman Thompson reports on cold tub bathing for typhoid fever and concludes that the cold tub bathing does not ordinarily shorten the duration of the fever. That it does not prevent an occurrence of at least as many relapses that may take place without it. It does not prevent the occurrence of many of the complicated cases to the disease, most of which however are less severe than those that are often presented without it. It does not in any manner preclude simultaneous use of the internal antiseptic or any other recognized methods of treatment.

It is a rational plan of treatment directed toward the support of the nervous system by the double stimulus and as such it is practically useful in preventing those symptoms which result from the overwhelming of the nervous system by the toxin of the disease.

When patients come under the tubbing treatment within the first week of illness it offers the almost certain prospect of the disease running a mild course and it reduces a mortality of many of the severer cases by approximately one-half. These conclusions were based on the study of 284 cases received in six years of treatment, with the total mortality under all forms of treatment of 14.79 per cent.

The paper on renal tuberculosis by Tilden Brown is a careful study.

Transactions of the Southern Surgical and Gynecological Association. Vol. IX. Ninth session, held at Nashville, Tenn., Nov. 10, 11 and 12, 1895. Published by the Association. 1897.

This session was held under the presidency of Dr. E. S. Lewis, and was marked by harmony in its methods and enthusiasm in the professional work before it. Forty members were present.

The volume presents the same handsome appearance as its predecessors and it is on the same high plane. It contains the minutes of the session and all the papers read, with the discussions thereon.

The next meeting of the Association will be held in St. Louis, under the presidency of Dr. George Ben. Johnson of Richmond.

NEW INSTRUMENTS.

A SET OF NEW CURETTES FOR OPERATING IN THE NASO-PHARYNGEAL VAULT.

BY HENRY W. WANDLESS, M.D.
CONSULTING OCULIST AND AURIST, PARKLAND CITY HOSPITAL; CHIEF SURGEON DALLAS CHARITABLE EYE, EAR, NOSE AND THROAT INFIRMARY.
DALLAS, TEXAS.

The cuts given herewith represent a set of curettes which I have devised for operating in the vault of the pharynx. They are specially designed for the removal of adenoids from the vault, granulations, and for curetting the mucous membrane in order to stimulate it to healthy functional activity. These curettes are made in pairs of which there are two. Each pair is composed of two sizes for large and small vaults and is designed for special conditions and localities which are described with each. It has been found that these curettes meet practically all the requirements in operating upon adenoids within the vault, except tumors that are too large to pass within the ring of the curette. Fig. 1 represents the first pair, which is adapted to the posterior walls of the vault only. It does not reach the roof of the vault, because the blade is not set on an angle for the roof. It is intended for this curette to have as near the same curve of the vault as possible, and when it sweeps over the walls it always conforms to the shape of the vault. When introduced the tumors pass within the ring of the curette and are cut off as the curette is made to sweep over the posterior walls. When the tumors have become hard as they often do, especially from age, considerable force is necessary to sever them from their attachment; and in such cases this is the only instrument with which I have had satisfactory success. This curette is not adapted for the removal of tumors in the roof of the vault, because it is impossible to get a curette to conform to the curves of both the roof and the posterior walls. For that purpose I have designed a second pair shown in Fig. 2. This curette may be used for general use, and all adenoids may be removed with it except those that have become hard. It will be observed that the cutting edge of this instrument is set at an angle of about 45 degrees from the handle and when introduced its edge strikes the mucous membrane on its posterior walls at about the same angle; but if the curette is pushed far up and the ring brought well forward against the post-nasal septum at the same time lowering the handle, the blade rests flat against the roof and as the sweep is made over the vault the curette engages the tumors within its rings and brings them away.

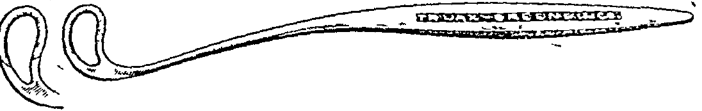


Figure 1.

Any instrument which is not so adapted fails in its purpose to remove the tumors from the roof and simply scrapes those from the posterior walls. It is well to add here that the tumors in the roof around the post-nasal nares do considerably more damage than those on the posterior walls, and it is therefore much more important to remove them. Tumors within the posterior nares can not be reached with these curettes and are best removed with a Bosworth snare. I claim considerable excellence for these curettes, not because they bear my name but because of my practical experience in operating with them, which has been very satisfactory.

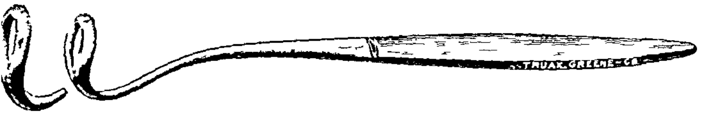


Figure 2.

For removing granulations from the vault and stimulating the mucous membrane, I only use the second pair, Fig 2. The granulations come away readily with moderate force and without much injury to the membrane.

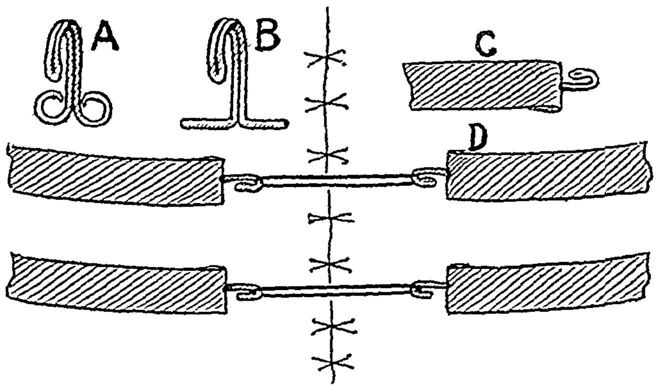
For stimulating the membrane in cases of chronic naso-pharyngeal catarrh I have used this curette with very happy results.

The curettes are made by Chas. Truax, Green & Co., Chicago, Ill.

TENSION ADHESIVE STRAPS.

BY E. H. KING, M.D., MUSCATINE, IOWA.

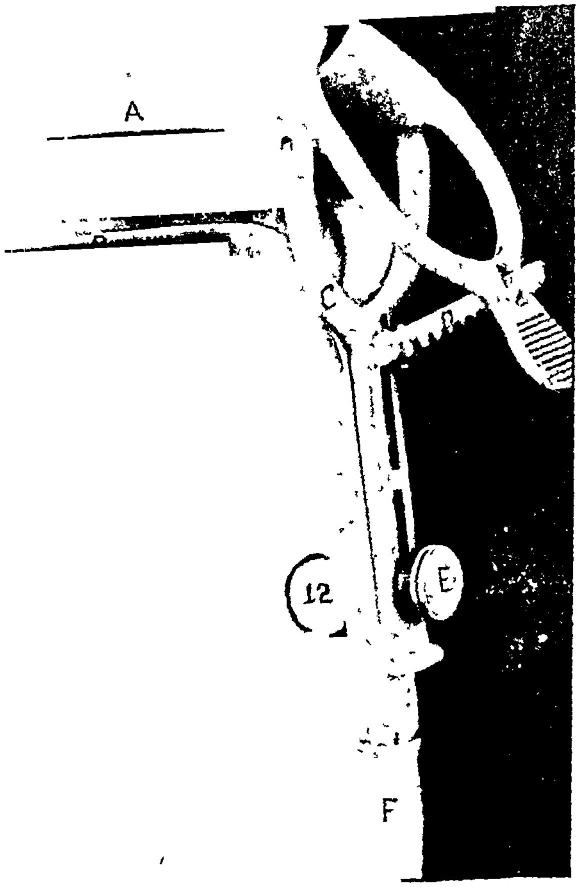
The greatest objection to the use of adhesive straps over wounds arises mainly from a collection of crusts or dried secretion under them, and from the difficulty of inspecting and changing the underlying dressings. This difficulty can be easily remedied by taking common dress hooks, A, bend the circular parts of the shank at a right angle, B, and fix them on the end of an inch strap of Meads, a similar adhesive plaster, C. The straps with the hooked ends may be placed one inch or more from the border of the wound, D, on either side and tension made with small rubber bands over any desired dressing, which will thus be comfortably retained in place. By unhooking the bands, the dressing may be removed without disturbing the straps, wound or patient. These hooks thus made were originated by me. I have used them over twenty years with satisfaction. There is no patent on them and the profession is welcome to the idea.



A VAGINAL SPECULUM.

BY G. R. FOX, M.D., PLAQUEMINE, LA.

I present herewith a photograph of a vaginal speculum which I have recently invented. The instrument is similar to Graves' in the mechanism for the vertical expansion of the blades, but has the following improved features. Instead of the screw used in most similar instruments to keep the distal ends of the blades expanded, I have adopted a ratchet and pawl mechanism, which permits the operator to expose the cervix uteri very quickly, and adjust the instrument with one hand, and to release the blades as quickly when he desires to remove the instrument.



Another improvement is a funnel shaped opening at the rear portion of the lower blade leading into a hollow shank on same, to which a piece of rubber tubing is affixed, thus providing a ready outlet for fluids while using the speculum.

The instrument is aseptible, and the lower blade can be detached and used as a Sims speculum.

Automatic Adjusting Thermometer.—The strain and inconvenience of the ordinary thermometer in severe prostration is avoided by the contrivance of Prof. Cornet, which holds the thermometer automatically in the armpit, by means of a broad spring which passes over the shoulder. The thermometer is curved to fit and can be read without removing.—*Deutsche med. Woch.*, June 3.

ASSOCIATION NEWS.

Competition for the Senn Medal.—Pursuant to a resolution adopted by the Section of Surgery and Anatomy of the AMERICAN MEDICAL ASSOCIATION, June 4, 1897, I have been appointed by the Chairman, Dr. Reginald H. Sayre, as Chairman of the Committee charged with the awarding of the Senn Medal for 1898. The other members of the Committee are Drs. H. O. Walker of Detroit, Mich., and S. H. Weeks of Portland, Me.

1. A gold medal of suitable design is to be conferred upon the member of the AMERICAN MEDICAL ASSOCIATION who shall present the best essay upon some surgical subject.

2. This medal will be known as the Nicholas Senn Prize Medal.

3. The award shall be made under the following conditions: *a.* The name of the author of each competing essay shall be enclosed in a sealed envelope bearing a suitable motto or device, the essay itself bearing the same motto or device. The title of the successful essay and the motto or device to be read at the meeting at which the award is made, and the corresponding envelope to be then and there opened and the name of the successful author announced. *b.* All successful essays become the property of the ASSOCIATION. *c.* The medal shall be conferred and honorable mention made of the two other essays considered worthy of this distinction, at a general meeting of the ASSOCIATION. *d.* The competition is to be confined to those who at the time of entering the competition, as well as at the time of conferring the medal, shall be members of the AMERICAN MEDICAL ASSOCIATION. *e.* The competition for the medal will be closed three months before the next annual meeting of the AMERICAN MEDICAL ASSOCIATION, and no essays will be received after March 1, 1898.

Competitors will address their essays to the undersigned.

J. MCFADDEN GASTON, M.D., Chairman.

1½ Edgewood Ave., Atlanta, Ga.

SOCIETY NEWS.

Twelfth International Medical Congress.—The President and Secretary have issued the following circular under date of June 13 (old style) presidents of important medical societies:

Dear Sir:—His Majesty the Emperor of Russia has given authority to hold at Moscow, on the 19th to the 26th of August, 1897, the Twelfth International Medical Congress, and has deigned to take it under his august protection. Desiring to assure to this great reunion, learned men of the highest character, and that the international character of the meeting shall be marked, the Executive Committee has addressed itself to the most important scientific societies of the world and begs that they will send representatives to the said Congress. The Committee hopes that the honorable society of which you are the president will not refuse to contribute to the *éclat* of the next scientific *fête* of Moscow, by sending delegates, to whom it will be happy to accord the highest consideration. Accept, dear Sir, assurances of the highest consideration.

J. F. KLEIN, President.

S. S. KORSAKOW, for the Secretary General.

The following have had credentials issued for Moscow by the AMERICAN MEDICAL ASSOCIATION:

Drs. L. Ashton, Dallas, Tex.; Frank Billings, Chicago; W.
G. A. Bonwill, Philadelphia; D. R. Brower, Chicago; Augustus
P. Clarke, Cambridge, Mass.; Judson Daland, Philadelphia;
Charles Denison, Denver, Colo.; Henry B. Favill, Chicago;
Thos. H. Fenton, Philadelphia; Geo. Ryerson Fowler, Brook-
lyn, N. Y.; Wm. H. Forwood, U. S. A.: Jacob Frank, Chi-
cago; Henry Gradle, Chicago: Alex. J. Campbell, Syracuse,
N. Y.: J. R. Hildreth, Cambridge, Mass.: Chas. H. Hughes,
St. Louis, Mo.; Florence W. Hunt, Chicago; H. L. E. John-
ston, Washington, D. C.: Wm. D. Kelly, St. Paul, Minn.; J.
O. Knipe, Norristown, Pa.; O. Litzenberger, Converse, Ind.;
T. Mortimer Lloyd, Brooklyn, N.Y.; Thos. McDavitt, St. Paul,
Minn.: Harold N. Moyer, Chicago; J. O. Malsbury, Peru, Ind.;
F. S. Milbury, Brooklyn, N. Y.; Thos. H. Manley, New York;
Abner M. Miller, Bird in Hand, Pa.; John H. Packard, Phila-
delphia, Pa.; Theophilus Parvin, Philadelphia, Pa.; Geo. M.
Preston, Lynchburg, Va.; Nicholas Senn, Chicago; Catherine Slater, Chicago; Edmund H. Stevens, Cambridge, Mass.; Eugene S. Talbot, Chicago; Fred C. Valentine, New York; J. Henry Woods, Brookline, Mass.

The following party sailed from New York, Saturday, July 3, 1897, by the North German Lloyd Express Steamship *Werra*:

Dr. Catherine Slater, Aurora, Ill.; Miss M. Costigan, Chicago, Ill.; Miss Isabel McIsaacs, Chicago, Ill.; Dr. Harriet E. Garrison, Dixon, Ill.; Dr. I. N. Wear, Fargo, N. Dak.; Dr. A. E. Abrams, Hartford, Conn.; Mrs. Abrams, Hartford, Conn.; Mr. D. A. Bishop, Jersey City, N. J.; Mrs. Bishop, Jersey City, N. J.: Miss Bishop, Jersey City, N. J.; Dr. W. H. A. Bonwill, Philadelphia, Pa.; Miss E. Lincoln, Providence, R. I.; Miss Anne L. Gorman, Providence, R. I.; Mrs. Lillian Condell, St. Louis, Mo.; Miss Grace Reynolds, Sugar Hill, Ill.; Dr. B. T. Whitmore, Chicago, Ill.; Dr. Jas. G. Hyndman, Cincinnati, Ohio; Mrs. Hyndman, Cincinnati, Ohio; Dr. F. B. Galbraith, Pontiac, Mich.; Mr. Galbraith, Jr., Pontiac, Mich.; Dr. W. F. Southard, San Francisco, Cal.; Dr. W. F. Forwood, Washington, D. C.; Mr. N. B. Scott, Wheeling, W. Va.; Mrs. Scott, Wheeling, W. Va.; Mr. Jos. Stone Perry, Worcester, Mass.; Mrs. Perry, Worcester, Mass.; Miss Josephine Perry, Worcester, Mass.

The following comprise the Athens and Constantinople section on the same vessel:

Dr. J. H. Woods, Brookline, Mass.; Dr. George Ryerson Fowler, Brooklyn, N. Y.; Mrs. Fowler, Brooklyn, N. Y.; Dr. T. N. Lloyd, Brooklyn, N. Y.; Dr. Daniel R. Brower, Chicago, Ill.; Dr. D. R. Brower, Jr., Chicago, Ill.; Dr. Nicholas Senn, Chicago, Ill.; Dr. W. N. Senn, Chicago, Ill.; Dr. Eugene S. Talbot, Chicago, Ill.; Dr. Lucy Waite, Chicago, Ill.; Dr. Casey A. Wood, Chicago, Ill.; Mrs. Wood, Chicago, Ill.; Dr. Edward K. Root, Hartford, Conn., together with Mrs. Fowler, Brooklyn, N. Y., and Mrs. Wood, Hartford, Conn.

LARYNGOLOGICAL SECTION INTERNATIONAL CONGRESS.

At a special meeting of the Oto-Rhino-Laryngological Society of Moscow, held June 21, 1897, it was decided that a "bureau" should be instituted for the convenience of members of the Twelfth Section of the Twelfth International Medical Congress (Otological and Rhino-Laryngological Section). The object of this bureau will be to give all information needed, not only as to matters concerning the Congress, but as to all other matters where our visitors may require assistance or information. This reference-bureau will be open from 7 to 9 P. M., from the 13th to the 19th day of August, in the Doctors' Club (Bolshay Dmitroffka), and during the meetings in the room of the Section XII b. (Laryngo-Rhinology). I. N. SCOTT, President.

ARRANGEMENTS FOR THE CONGRESS.

Transportation free of charge in first-class carriages from the Russian frontier to Moscow. Half-rate tickets will be issued to members of the Congress by the French, Italian, Spanish, Swedish and Norwegian, and Oriental railways, but not by the German roads. Reductions in fare are offered by many European steamships, but not by the transatlantic companies.

Foreigners must be provided with passports, properly *viséd* by a Russian Consul in the country to which they belong. The passports will be inspected at the frontier. Committees of Russian delegates will be present at the frontier stations to supply information and assistance, and there will also be committees at the Moscow railway stations, as well as offices, where information with regard to lodgings, etc., may be obtained. If physicians take their wives, or other members of their family, they will have to pay full railroad fares for them, but a committee of women, presided over by Mme. Sklifossovsky, will look after the ladies that go to the Congress and see that they have a good time. Rooms can be had at from $1 to $3 a day, with morning and evening coffee, and dinners in good Moscow restaurants cost from 40 cents to $2. A buffet will be opened in the building where the Congress meets, in which meals may be had at very low prices.

Physicians intending to be present must apply to the treasurer, Prof. N. Filatow, Moscow, for tickets of membership, inclosing 10 rubles or $4. The tickets will serve to identify them and will entitle them to take part in all the meetings and excursions and also to all the publications of the Congress. Scientific men, veterinary surgeons, pharmacists and dentists may also obtain tickets, as extraordinary members, but no mere students of medicine can attend in any save their private capacity.

The Congress, which is held under the patronage of the Czar and the Grand Duke Sergius, opens August 19 (August 7 according to the Russian calendar) and closes August 26 (14). Railroad tickets are good from July 1 to October 10, and thirty-five pounds of baggage may be carried free. Several excursions are being arranged for the benefit of members of the Congress, to the monastery of St. Sergius, to Nijni Novgorod, to the Crimea and to the Caucasus. Communications should be sent to the General Secretary, Clinic for Nervous Diseases, Moscow.

American Association of Obstetricians and Gynecologists.—The American Association of Obstetricians and Gynecologists will hold its tenth annual meeting at the Cataract House, Niagara Falls, Tuesday, Wednesday, Thursday and Friday, Aug. 17, 18, 19 and 20, 1897, under the presidency of Dr. James F. W. Ross of Toronto. The railways have granted reduced fares on the certificate plan to all who attend the meeting; the Cataract House has made a reduction from its regular tariff of charges; the place of meeting is a famous one; the season of the year auspicious, and everything seems to conspire to justify a prediction that this will be a large and interesting meeting of this famous Association. The date of the meeting has been fixed in mid-August, apart from college sessions, during the vacation season and at a place where many people like to spend a part of their outing. The climate of Niagara is always desirable during the heated term, the spray from the cataract giving it a healthy moisture and coolness that is at once invigorating and charming. To visit Niagara under the auspices of this Association will afford the tourists exceptional opportunities for the enjoyment of a rare and radiant scenery that is the most sublime in the world. One session will be devoted to the exhibition of specimens and giving their history. The scientific work of the Association will begin on Tuesday morning at 10 o'clock and end Friday at 1 o'clock, and it is expected to so arrange the program as to afford the members opportunity to visit the places of interest each day on the adjournment of the afternoon session. It is expected that the inducements to attend this meeting are such that Fellows will not only come themselves but bring their families and invite their friends as as well to visit the wondrous cataract.

PUBLIC HEALTH.

Medical Inspection of Chicago Schools.—Incited thereto by the publication of the results of the first year's medical inspection of schools—first undertaken in this country by the Boston Board of Health under the supervision of Dr. S. H. Durgin, the able and energetic executive of that board—an appeal was made to the Chicago City Council in the spring of 1896 for an appropriation to defray the expenses of a similar inspection of the public and parochial schools of the city. "Financial stress" dictated the refusal of the appeal; but the Assistant Commissioner, Dr. F. W. Reilly, was so much impressed with Dr. Durgin's showing that eight of the ten medical inspectors of the department were relieved from all other duty at the end of August, 1896, and assigned to this special work for the ensuing school year—Sept. 3, 1896, to June 30, 1897. Dr. Reilly thus sums up the work accomplished with this small force:

> The public and parochial school attendance during the period aggregated upward of 272,000—about 208,000 enrolled in public schools and nearly 65,000 in parochial schools. These occupied 572 separate buildings—234 city public schools, 131 branch and rented public schools and 207 parochial schools. Regular systematic inspections of each school building were obviously out of the question with the force at hand, and the work of the inspectors was therefore based upon physicians' notifications of cases of contagious and infective diseases occurring in their practice. Day by day each medical inspector was notified of the existence and the locality of every such reported case in his district, whereupon he proceeded at once to ascertain if the patient had been in attendance at any school: if not, his duties terminated with seeing that the case was properly isolated and the necessary precautions against spread of the contagion or infection on the premises and in the neighborhood were duly observed. If, on the other hand, the patient had been attending school the school was at once visited and taken charge of by the inspector so far as relates to carrying out and enforcing precautionary measures against further spread of the disease, to the remedy of insanitary conditions on the school premises, etc. In cases of diphtheria and scarlatina the throats of the children in the same room as the patient were examined after the method of Dr. Durgin; the teacher was instructed to watch for certain symptoms and to report their appearance to the inspector, and other appropriate actions were taken and surveillance maintained as long as deemed necessary.
>
> During February, March and April the work was interfered with by various emergencies—for example, in February every available attaché of the department was engaged in looking up, reporting and relieving cases of distress and destitution among the unemployed and in the administration of the Mayor's relief fund. Nevertheless, a total of 1,181 visits were made to the schools during the school year; 4,023 cases of contagious and infective diseases were located and taken charge of for preventive purposes; insanitary conditions in 63 public schools were reported to the Board of Education and similar conditions were remedied in 53 homes of patients.
>
> An important feature of the work was the examination, as to vaccinal status, of the pupils of schools visited. Nine hundred and fourteen such school examinations were made, covering a total of 90,220 scholars, 81,810 in public and 27,410 in parochial schools. Through these examinations 47,310 vaccination or revaccinations were secured, 37,470 of public scholars and 9,840 of parochial scholars.
>
> Of the diseases reported diphtheria was the most prevalent; 744 individual reports of cases among school children, leading to the disclosure of 2,619 cases at homes. There were 231 school cases of scarlet fever and 745 home cases. Forty-six reported cases of measles led to the discovery of an epidemic prevalence of this disease in several sections of the city during November 1896 and again in May and June 1897. In October an epidemic of impetigo contagiosa spread through seven schools of the north division of the city, but was arrested in a few weeks, after excluding 107 cases from the schools and instituting proper preventive measures. Two schools were found afflicted with pediculosis to such an extent as to demand radical treatment. One case of tuberculosis was found at school in such an advanced stage as to justify exclusion from school attendance; this patient died before the close of the school year.
>
> Stomatitis was found so prevalent in many schools that, upon the advice of the Medical Inspectors, the teachers instructed pupils to bring individual drinking cups from their homes and forbade the common practice of putting the lips directly to the water faucets for drinking.
>
> The commonest sanitary defects of school building reported are uncleanliness; dirty floors, passages and stairways; damp and filthy basements; foul water-closets located near furnaces, so that poisoned air is driven through the building, in which cases teachers suffer from headache, "sore throat," etc. Among other insanitary conditions noted are defective plumbing, stagnant pools on adjoining lots, dirty alleys, overflowing garbage boxes and general lack of sanitary policing. In few of the older school buildings is there any provision for drying the feet and clothing in wet or stormy weather. So far as practicable the School Board caused many of these defects to be remedied.

The present Commissioner of Health, Dr. Arthur R. Reynolds is so thoroughly convinced of the value of this work that he purposes making another appeal to the council for an adequate force of inspectors. New York has recently appointed 150 physicians for this service while Boston, with a population of less than half a million, employs 50 with an average of four schools and 1,400 pupils to each.

Smallpox at New Orleans in 1896.—Dr. W. H. Woods, the chief sanitary inspector of that city, has made the following com-

Russian Medical Institutions.—Dr. S. M. Malischew of Rostaw, writes to the *Deutsche Med. Woch.*, No. 14, to correct several inaccurate statements in various articles that have appeared recently on this subject. He explains the official medical service as follows: Russia is divided into 97 governments. Two-thirds of these are governed each by an official appointed by the State, and the other third by a local institution known as the Semstwo, which has charge of the affairs of the government, including the medical and sanitary. The Semstwo of the Moscow government was the first established (1864), and possesses an ideal medico-sanitary organization, from which the rest were modeled. It has a population of a million and a half, and yet the medical service is so arranged that it is within the reach of all, effective and fruitful of results. This is accomplished by dividing the government into 118 medical districts. The physician-in chief of each district resides in the hospital erected in the center of the district, and takes charge of the sick in the country around for a distance of twelve wersts. (One werst = 1,066,781 meters.) The hospital has usually a capacity of twelve to fifteen beds, dispensary, etc., with a pavilion apart for maternity cases and another on the other side for contagious diseases. In ten of the districts there is also a building for chronic patients. All these hospitals and the medical assistance, dressings, etc., are free. Vaccination and sanitary oversight of the schools are also in the hands of the head physician, who has an assistant where needed. The sanitary conditions of the government are in charge of a corps of eight or nine special physicians, some of whom coöperate in recording the medical statistics of the government. The physician receives his residence free, heated and lighted, and also free transportation and 100 to 150 roubles a month. (The rouble = about 55 cents.) The administration of the affairs of the medical department is in the hands of what is called the Health Council, composed of all the district physicians, and five or six members of the Semstwo. This coöperation of medical men and the officials best acquainted with the economic and financial conditions, etc., of the government, results in fruitful action. There is besides all this a vaccine institute, a colony for the insane near Moscow with 1700 acres of land, and a medico-statistic bureau in Moscow. Every two or three years all the physicians in the government meet in a general congress, the transactions of which are published. The expense of all these institutions amounts to almost a million roubles, part of which is contributed by manufacturing firms and landed proprietors. The state is planning to introduce the Semstwo into other governments as soon as possible, but has slightly restricted its independence of action since 1890.

Washington.

Health of the District.—The mortality for the past week was 128, of which 60 were white and 68 colored. The prominent causes of death were, diarrheal diseases 29; brain disorders, 17; lung diseases 19, of which 15 were from consumption. There were 3 fatal cases of diphtheria and 3 from whooping-cough, and 2 from typhoid fever. No new cases of scarlet fever were reported.

The New Superintendent of Charities.—Mr. Herbert W. Lewis has been appointed Superintendent of Charities to succeed Colonel Tracey, deceased.

Medical Society.—At the stated meeting of the Medical Society held on the 5th inst., the semi-annual business of the Society was transacted. The treasurer, Dr. Franzoni, made his report. A number of applications for membership were received. The hot weather had a reducing effect upon the attendance of the Society, only seven out of three hundred and seventy-seven members being present.

To Locate the Isolating Hospitals.—The Commissioners have addressed circular letters to the different hospitals, setting forth the terms upon which they will agree to the location of the isolating wards. Thirty thousand dollars has been appropriated and is now available for that purpose. The diseases which will be treated in these wards are scarlet fever, measles, erysipelas and other contagious diseases of less gravity.

Central Dispensary and Emergency Hospital.—At the July meeting of the Board of Directors of the Hospital, the attending staff made the following report: Number of new cases treated, 1,329; number old cases, 2,540; total number of cases treated, 3,869; number of deaths, 7; number of post-mortems, 4; number of operations, 226; number of ambulance calls, 39.

THE PUBLIC SERVICE.

Army Changes. Official List of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from July 3 to 9, 1897.

Capt. William F. Lippitt, Jr., Asst. Surgeon (Ft. Leavenworth, Kan.), leave of absence granted to take effect about July 24, 1897, is changed to take effect when his services can be spared by his post commander, and is extended one month.

Capt. Henry P. Birmingham, Asst. Surgeon, on being relieved from duty at Ft. Trumbull, Conn., by Major Woodruff, will proceed to Chicago, Ill., and report for duty as attending surgeon and examiner of recruits, relieving Capt. Norton Strong, Asst. Surgeon. Capt Strong, on being thus relieved, is ordered to Ft. Myer, Va., for duty, relieving Capt. William H. Arthur, Asst. Surgeon.

Major Louis M. Maus, Surgeon, is relieved from temporary duty in the office of the Surgeon-General of the Army, and will on Aug. 2, 1897, report for duty at Ft. Hamilton, N. Y., relieving Major Paul R. Brown, Surgeon. *Major Brown, on being thus relieved, is ordered to Ft.* Keogh, Mont., for duty, relieving Major Ezra Woodruff, Surgeon. Major Woodruff, on being thus relieved, is ordered to Ft. Trumbull, Conn., for duty, relieving Capt. Henry P. Birmingham, Asst. Surgeon.

A board of officers to consist of: Col. William H. Forwood, Asst. Surgeon-General; Major George W. Adair, Surgeon; Major Walter Reed, Surgeon; Major James C. Merrill, Surgeon; Capt. Leonard Wood, Asst. Surgeon, is constituted to meet at the Army Medical Museum Building, Washington, D. C., on Monday, Sept. 27, 1897, at 10 o'clock A.M., *for the examination of candidates for admission to the Medical Corps of the Army.*

CHANGE OF ADDRESS.

Anderton, W. B., from New York to East Quogue, L. I., N. Y.
Bonner, M. H., from Nashville to Murphreesboro, Tenn.
Battell, J. Geo., from Grand and Western Avs. to 790 N. Leavitt St., Chicago.
Clark, J. F., from Angola to 120 W. Lincoln Av., Goshen, Ind.
Cresswell, Willis W., from Minneapolis to Dundas, Minn.
Calawell, W. S., from Edinburgh, *Scotland, to care of Union Bank of* London, London, England.
Ebert, R. G., from *Philadelphia, Pa., to care of Dr. W. H. Saylor*, Hamilton Bldg., Portland, Ore.
Eads, S. O., from Somerset, Ky., to Arthur, Ill.
Fellman, G. H., from Oak Park, Ill., to 289 Pavonia Av., Jersey City, N. J.
Houston, Jas., from New York, N. Y., to Swartz Creek, Mich.
Kolmer, J., from 203 N. Illinois to 19 W. *Ohio* St., Indianapolis, Ind.
Johnson, L. D., from 819 W. Harrison St. to cor. Lake St. and California Av., Chicago.
Linjer, O. E., from Starbuck to St. James, Minn.
Makuen, G. H., from Philadelphia to Cresson Springs, Pa.
Rathbone, F. W., from Albuquerque, N. M., to Tonganoxie, Kan.
Sleicher, J. M., from Chicago, Ill., to 102 Main St., Watertown, N. Y.
Scofield, W. K., from Philadelphia, Pa., to 62 South View Av., Stamford, Conn.
Stone, R. F., from 250 N. Illinois *to* 14 W. *Ohio* St., Indianapolis, Ind.
Stewart, D. D., from 2602 N. 5th to 108 S. 17th St., Philadelphia, Pa.
Ward, Milo B., from Topeka, Kan., to Rialto Bldg., Kansas City, Mo.
Wolff, A. S., from Brownsville to Isabel, Texas.

LETTERS RECEIVED.

Arnold, Edmund S. F., Newport, R. I.; Atkinson, W. B., Philadelphia
Pa.; Arlington Chemical Co., The, Yonkers, N. Y.
Baldwin, Helen, New York, N. Y.; Burgoyne, J. A., Columbus, Ohio;
Barker, Lewellyn F., Baltimore, Md.; Beadles, C. H., Sadlersville,
Tenn.; Burwell, W. M., Chincoteague Island, Va.
Columbus Phaeton Co., *Columbus, Ohio; Clark, E. E., Danville, Ill.*
Douglas, Morton G., Warrenton, Va.; Dubs, R. S., Chicago; Daniel, J.
B., Atlanta, Ga.
Edson, Carroll E., Denver, Colo.; Elliott, A. R., New York, N. Y.;
Eastman, Joseph, *Indianapolis, Ind.; Enno Sander* Mineral Water Co.,
St. Louis, Mo.
Forester, Joseph, Erie, Pa.
Gleitsmann, J. W., New York, N. Y.
Herrick, H. B., Cleveland, Ohio; Hayden, A. M., Evansville, Ind.;
Hunt, C. C., Dixon, Ill.; Hummel, A. L. Adv. Agency, New York, N. Y.;
Hobby, C. N., Iowa City, Iowa; Hare, H. A, Philadelphia, Pa.; Holmes,
Bayard, *Chicago; Home for Inebriates*, Stamford, Conn.
Jones, Mary, A. D., New York, N. Y.
Knopf, S. A., New York, N. Y.; Kentucky School of Medicine, Louis-
ville, Ky.; King, Thomas, Cincinnati, Ohio. Kenyon, E. L., Chicago.;
Koechl, Victor, & Co., New York, N. Y.
Love-Hadley Publishing Co., St. Louis, Mo.
Marvin, J. B., Louisville, Ky.; Manley, Thomas H., New York, N. Y.;
Mills, James, Janesville, Wis.; McClellan, E. S., Saranac Lake, N. Y.;
Mulford, H. K., Co., Philadelphia, Pa.; Minor, J. C., Hot Springs, Ark.;
Morse, Lyman D., Advertising Agency, New York, N. Y.
Nuckols, M. E., Richmond, Va.
Oaks, John F. (2, *Chicago; Otis, N. M., Fairbury, Ill.*
Prewitt, T. F., St. Louis, Mo.; Potomac Advertising Agency, Wash-
ington, *D. C.; Preston, George M., Lynchburg*, Va.
Roop, J. W., Daly's, Texas; Reynolds, Arthur R., Chicago; Robertson,
John, Cincinnati, Ohio; Reynolds, Dudley S., Louisville, Ky.
Stewart, D. D., Philadelphia, Pa.; Sander, Enno, Paris, France; Solis-
Cohen, S., Philadelphia, Pa.; Schering & Glatz (2), New York, N. Y.
University of Virginia, Charlottesville, Va.; *University College of*
Medicine, Richmond, Va.
White, S. S., The, *Dental Mfg. Co., Philadelphia, Pa.*; Wing, E. D. (2),
New York, N. Y.; Wright, John W., Columbus, Ohio; Wareham, J. W.,
Gilead, *Ind.*; Way, J. H., Waynesville, N. C.; Ward, Montgomery, & Co.,
Chicago.

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ORIGINAL ARTICLES.

CHEYNE-STOKES RESPIRATION PHENOMENA.

Presented in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY N. S. DAVIS, JR., M.D.
CHICAGO, ILL.

Mr. ——, merchant, 73 years old, of good habits and good family history, came under my care in September last. His health had not been robust for many months. In midsummer his legs became edematous and he then first consulted a physician. He was found to have dilatation of the heart, a slight aortic murmur, atheroma to a moderate extent of the peripheral arteries and interstitial nephritis. His symptoms underwent no material change up to September, when I first saw him. As time went on he grew feebler, thinner and mentally depressed. He had little appetite for food or drink. He was often sleepless. About the middle of October he was too feeble to walk, and rarely slept more than an hour at a time. At night he was tormented by hallucinations which were very persistent. At this time Cheyne-Stokes respiration first manifested itself. The rhythmically increasing and diminishing respiratory movements with short pauses were very noticeable. The periods of apnea were short and the periods of dyspnea were not severe. The pulse was quite regular and was kept at about 85 by strophanthus. The pupils showed no change in size and there was no hebetude during apnea.

Cheyne-Stokes respiration was not constant at this time. It lasted for several days, and disappeared only to reappear from time to time for a few hours or days. Occasionally apnea was almost wanting, and even at the height of dyspnea the respiratory movements were not labored.

In November he improved; respiration became normal, sleeplessness was less troublesome and hallucinations were more infrequent and less persistent. Early in December he grew worse, Cheyne-Stokes respiration reappeared in an aggravated form and persisted for almost a month until he died. Dyspnea was more intense than during the first attack of Cheyne-Stokes respiration and the pauses were longer. His pulse quickened during apnea, and as respiratory movements grew shallower his eyes converged slightly, his lids closed and he seemed to be in deep sleep. If at this time his lids were lifted the pupils were uniformly found to be closely contracted. Conversation with him was slow, for he would cease speaking and apparently become unconscious during the period of apnea. With the first few shallow breaths his lids would open and his eyes would roll slightly as they are apt to do when one is suddenly roused from deep sleep. He would, so soon as respiration was fairly established, resume a conversation without interruption of argument or break in the continuity of events that he might be describing. During apnea the power of speech was lost and mentality seemed suspended. If spoken to when thus apparently dozing he was not conscious of the question. Conversation with him was tedious, for these pauses occurred once in every eighty to ninety seconds and lasted about twenty-five seconds. The dyspnea was very wearisome to him. He was never cyanotic.

I have described this case as it illustrates Cheyne-Stokes respiration in its mildest form, and in that form in which all the accompanying rhythmic phenomena of pulse, eye and mind are present. In 1818, Cheyne (Dublin Hosp. Rep., 1818, vol. ii) first called attention to rhythmically ascending and descending periods of respirations separated from one another by short pauses.

Cheyne-Stokes respiration should be clearly distinguished from irregular breathing accompanied by pauses. In the latter form of respiration pauses occur, followed by several long gasping breaths which may gradually grow less violent and rapid or irregularly become so and cease with the beginning of another pause. Cheyne-Stokes respiration is characterized by a pause of from ten to forty seconds followed by from ten to twenty respirations which grow gradually quicker and deeper until they are dyspneic in character, both because of their violence and rapidity. During the succeeding ten to twenty respirations the movements grow progressively less violent and rapid until they cease and apnea begins. Usually the ascending and descending series of movements number about the same, but they are not always equal. The descending series are often less regular than the ascending. In the mildest cases apnea may be wanting, the ascending series of respirations may follow the descending without interruption. If, during the respiratory pause, voluntary efforts are made to breathe the whole chest is lifted by the unusual muscles of respiration, but the diaphragm and intercostals do not move.

Cyanosis is very rarely observable, although the pauses are frequent and many of the respiratory movements are shallow. Patients often complain of the wearisomeness of respiration, but not of hunger for air. In 1859, Reid (Dublin Hosp. Gaz., vi, 308) pointed out the commonly observable changes which occur in the pulse during Cheyne-Stokes breathing.

In most cases during apnea the pulse rate is quicker than during dyspnea; it will beat once or twice oftener in the quarter minute. Not infrequently the pulse is paradoxical. It is apt to be large and soft during dyspnea and small during the respiratory pause. Biot uniformly observed less arterial tension during apnea than dyspnea (*Rev. Mensuelle de Méd. et Chir.*, 1878, ii, 975). While these are the usual changes in the pulse, if any occur, it has been found in rarer instances to be slow during apnea instead of quick, and once Hesky (see Gibson, *Edin. Med. Jour.*, xxxiv) observed almost a complete disappearance of pulse beating during each respiratory pause.

In 1866, Leyden (*Arch. f. Path., Anat. und Phys. und f. Klin. Med.*, xxxvi) first called attention to the rhythmic changes that occur in the pupils during the phases of Cheyne-Stokes respiration. In very many cases, though by no means in all, the pupils become closely contracted during the pause and do *not* respond to the stimulus of light, although during dyspnea they are normal in size and respond readily to light. Contraction of the pupils usually takes place slowly and progressively, but in a few instances it has been observed to occur in slight successive spasms. Biot thinks these changes are due to variations in blood pressure, which are so often noticeable in the different phases of Cheyne-Stokes respiration. Recent observations, however, make it probable that they are not to be explained in this way, but are due to the direct influence of the nervous system upon the eye. Often, just as the pupils begin to contract, a slight convergence of the eyeballs occurs and still oftener the lids close during the period of apnea and the patient appears to be in deep sleep.

Not only do rhythmic changes occur in respiration, pulse and pupils but in a proportion of cases, as in the one that I have just described, mental processes seem to be suspended during apnea, although so soon as respiratory movements begin the mind awakes and seems normally clear. In many cases of Cheyne-Stokes respiration patients are deeply comatose and no mental variations are observable. Even in these cases, however, the pulse and eye phenomena are often seen.

In 1876, Ross (*Canada Med. and Surg. Journal*, v, 544) described a case in which general muscular rigidity occurred during each respiratory pause. Several similar cases have been described since. This is, however, not a frequent concomitant of Cheyne-Stokes respiration, and can not be regarded as one of the phenomena usually accompanying it.

In individual cases we find various combinations of these modifications of pulse, pupil and mental state. They by no means all occur coincidentally. The pulse and respiratory changes are the commonest, and next in frequency the eye and respiratory changes. Gibson (*Edin. Med. Jour.*, xxxiv) has described one case, which is interesting and important, as it throws light upon the nature of these phenomena. It was a case of meningitis, in which at regular intervals there occurred contraction and dilatation of the pupils, and coincident periods of somnolence and waking, but respiration remained normal. This case can not be called one of Cheyne-Stokes respiration, but it illustrates the fact that certain portions of the brain may be involved and produce certain of the rhythmic changes characteristic of Cheyne-Stokes phenomena, although the medulla is not affected. The reverse of this condition, which produces Cheyne-Stokes respiration, is much the commonest.

The phenomena of periodic respiration are very variable in their duration, sometimes lasting only a few minutes or hours, at other times persisting for many days or even for many weeks. An anonymous contributor to the *Lancet* (1890, i, 776) says that his father, who is advanced in years, has exhibited characteristic Cheyne-Stokes phenomena continuously for many years, although otherwise apparently well.

The dyspnea varies greatly in severity. For instance, in one case which was under my care this winter, the respiratory movements were so moderate that they caused the patient little annoyance, and he scarcely ever complained of difficult breathing. Usually, however, it is sufficiently severe to weary the patients very much, and every now and again it is intense. When respiration is wearisome and difficult it seems to demand relief by treatment. Text-books upon therapeutics and upon medicine give practically no information as to the mode of action or the utility of drugs for the relief of these peculiar symptoms. As one case after another came under treatment, I tried successively the nitrites and soporifics, thinking that they might relieve the dyspnea as they so often do that of asthma, but I soon found that their effects were uncertain, that apparently they afford relief in one case and none in another. I then tried respiratory stimulants and oxygen inhalations, but with similar results. As during the last year there came under my observation in quick succession a series of these cases, I was prompted to review the literature of the subject with care, hoping that I might there find more information in regard to the nature of the phenomena and its mode of treatment than is to be obtained from our usual books of reference. I have found the literature of the subject very large, but unfortunately, it contains almost no exact information of a therapeutic character. It is chiefly controversial in regard to the nature of Cheyne-Stokes phenomena.

When we approach the treatment of this affection we naturally ask ourselves, under what conditions does it arise and what is its nature? Cheyne-Stokes respiration has been observed as a complication of the most varied maladies, and has been provoked experimentally in very many ways. Edes (*Boston Medical and Surgical Journal*, 1879, ci, 734) and Cheyne have both pointed to certain families in whom there was apparently an inherited tendency to this peculiar form of respiration. It is rarely associated with such infectious diseases as typhoid fever, smallpox, diphtheria, cholera and whooping cough. It occurs much more frequently in cerebral affections such as meningitis, apoplexy, cerebral embolism and thrombosis, sun-stroke, insanity, hysteria, hemorrhage into the cerebellum and medulla, or aneurysm in the latter. Complicating hemophilia, hemorrhage after operations and deep anemia from other causes has been observed. It is frequently associated with certain circulatory affections, oftenest with fatty degeneration of the heart, valvular disease, pericarditis, aortic aneurysm and general arterial atheroma. At times, it also complicates respiratory affections such as bronchitis, pneumonia and tubercular disease of the lungs. It has been observed as a sequel to tracheotomy. In these affections, however, unconsciousness or semi-unconsciousness exists before Cheyne-Stokes respiration develops. It is also rarely observable in severe catarrhal affections of the gastro-intestinal tract. It occurs oftenest of all associated with chronic renal disorders, when it is usually regarded as a manifestation of uremia. It has been observed in healthy individuals who were sleeping deeply from the effect of prolonged or excessive exertion. It has also been seen when narcosis produced by morphin, chloral and the bromids was deep. In some animals it seems to be the normal mode of respiration during hibernation. It has been produced experimentally in frogs by subjecting them to very considerable changes of given, of late years, to the development of children by intelligent mothers, nurses and educators, who from time to time meet to consider the interests of children, may throw light on the normal and abnormal child's mind that may in the future make the very early recognition of defective development easier. At the present time it must be based to a large extent upon a balancing of probabilities and upon the ripe experience and the trained judgment. Fortunately there is nothing in the management or treatment of the defective child that would in any way prejudice the future of a child, in the case of a mistaken diagnosis. On the other hand much harm can be done to the prospects of development if the defective child is wrongly managed in its earlier years, and its condition only recognized when the manifest difference from its fellows becomes evident through the application of an educational system that has already worked upon it the greatest hardship.

THE CARE OF THE BABY'S EYES IN THE PERAMBULATOR.

Presented in the Section on Diseases of Children, at the Forty eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY MARY E. BALDWIN, M.D.
NEWPORT, R. I.

The matter to which I call your attention, the baby's eyes in the perambulator, is one epoch in the life of many children that seems absolutely to have been ignored. I say many children! The very poor are not luxuriating on wheels. They have a possible contact with mother earth, or with a pavement. Again they get the air on the hip of an older sister. Children born in the other extreme of worldly position are not so often in a baby cab.

In the maternity, the nursery and in the school, the young eyes have received intelligent attention with preventive suggestion and remedial treatment.

The first bright spring days are hailed by invalids and almost anybody's baby is then given a breath in the fresh air. The invalid is apt to have a veil, colored glasses, a close carriage, a sunshade, etc. For this outing the baby of fairly well-to-do parents in America may have in order of time the third special outlay for sweet daintiness. The toilet basket and the Christening robe have or have not preceded. The perambulator with its umbrella top may be the first real treasure the parents secure for the baby. It is as important as the coming-out dress of the *débutante*, or the first dress suit. What is it? Of rubber tires and the various springs, I will not speak. Would that many adults might have had an outing some glorious morning in the past three months in an enlarged baby cab. This means an intense white reflex from the blanket. much farther from the eyes than could possibly be arranged for the baby. An ever changing parasol is professedly protecting from wind and sun. What does this creation of lace and flummery really do? The average parasol for the baby cab is covered with figured white lace, or thin white material that is gathered. The lining may be fairly opaque and of neutral tint. Often the covering is of such a combination of texture and color as to give through it, in bright sunshine, a mottled light. The edge is finished by a fringe or by a ruffle, something that can wave and flop, and usually it does this so that it not only gives a changing object before the child but at the same time throws the sunshine or light of varying intensity into the face.

With the joltings from various causes, including the curbstones and the temper and thoughtlessness of the attendant, the parasol top and a white blanket to give a reflected light, there is a sorry combination. If my picture does not appeal to each one of you, I beg you to call upon your memory and put your eyes in the place of the baby's. If your attention has never been arrested by the squinting babies, will you not observe them in their perambulators?

During the short, cold and comparatively sunless days, the young child is apt to be kept indoors. The adult likes a breath of spring warmth, and gets it with an outing for the baby. From the shaded room to the unshaded street the transition is greatest for the infant, during the spring months. When summer heat comes, the care-taker will seek the shady side of the street or the protection of trees.

The ocean beach with the near sand and the far reach of sky and dancing water needs consideration, if the baby, well or sick, is to be sent to it.

Without actual demonstration, it seems most probable that an obscure etiology may often be traced to the conditions to which I have had the honor of calling your attention. Does not the probability assume so much the aspect of a certainty as to demand a widespread protest and warning. This is my reason for wishing even at this hour to enlist your interest. Grant you I certainly do, that this touches a most fruitful means of gratifying the vanity of the younger or the older mother or even of the devoted father. Twenty-five years ago, imagine if you can the horror with which we would have looked upon a dozen well-bred daintly dressed children wearing black stockings. Put a dozen daintily dressed children on the street today with white stockings and they will attract every eye.

If the parents are convinced that danger threatens the babies from the present vanities of their cabs they will accept a remedy, a prevention; make the prevention a fad, a fashion, and all is accomplished. Taking for granted that every doctor will be convinced as soon as his own eyes have been taken for an imaginary outing with those of the baby, every baby carriage will soon be dressed in opaque and soothing color, with no tilting canopy, flying frill or sharply reflecting robe.

DISCUSSION.

Dr. J. J. TAYLOR—Usually the iconoclast lays the way for the reconstructionist, but sometimes we have the iconoclast and the reconstructionist in the same individual. The Doctor has destroyed our baby carriage, but she has also given us some idea as to the proper kind of a baby carriage.

Dr. BALDWIN—I am very glad of the opportunity to speak of the remedial measures, although I can not say I have sufficiently formulated them not to be open to some *modifications*. I am told the English cabs have a top that shoves down, a good deal like the street cabs in America. Occasionally I have seen those in America. They are usually in some dark color. I am told, also, that the English cab has a dark colored robe. I think we seldom see a physician here riding with a white lap robe. Recently, in speaking on this subject, a physician said, "O, you will never get our mothers *to dress their children in* green." But I do not believe the mothers can keep the top of the perambulator in such a position as to be of any advantage to the child. I think a cover that will give a steady light is much better. I would have no lace and no frill that can be constantly changing its position. In the nursery we have been told the children should not be given things near the eyes, and that the light should not come into their eyes directly, and that at no time should they be employed with anything small. But the very first season, when the child goes in the perambulator, these rules are lost sight of. I would take away the irregular light, I would plant no flapping thing on the carriage, and I would have no white light reflected into the infant's eyes.

THE INFLUENCE OF OUR SCHOOL SYSTEM ON THE HEALTH AND DEVELOPMENT OF THE CHILD.

Presented to the Section on Diseases of Children, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY E. STUVER, M.Sc., M.D., Ph.D.
Member Colorado State Medical Society (Vice-president 1894), American Medical Association, International Medical Congress (Berlin); Active Member National Educational Association.
RAWLINS, WYO.

The strength, happiness, prosperity and stability of nations and races almost entirely depend on their hereditary heritages and their ability successfully to adapt themselves to their environment.

The whole history of man's development from the earliest times conclusively proves that his highest welfare is conditioned on the harmonious development of all his powers, physical, intellectual and moral, and that when one or more of these have been slighted or neglected, he has paid a dear penalty for such neglect.

Glancing down through the ages, we behold untold misery and innumerable wrecks caused by the violation of this inexorable law of nature. Here we see ignorance or disregard of sanitary laws followed by pestilence, disease, lowered vitality, degeneration and extinction; there we behold licentiousness, debauchery and immorality in all its varied forms, produce a similar result. Nor are the most striking examples taken from savage or barbarous peoples, but furnished by the greatest and most powerful nations the world has ever known.

The observance of these developmental laws raised Greece to the pinnacle of intellectual greatness and physical perfection; their violation reduced her to an insignificant dependency and to a position of subordination, which she is now making a gallant effort to overcome. Physical, intellectual and moral integrity made Rome the mistress of the world and the Roman name honored and feared everywhere, but the loss of the virtues which made her great was the signal for her downfall, and now there remains only the name of her former power, grandeur and glory.

Such examples as these should cause us, as a nation, to pause in the midst of our wonderful career and consider some of the dangers that threaten us, and at the same time carefully examine our bulwarks of defense and see whether they are in a condition to resist any or all attacks that may be made against them.

We have always boasted, and justly too, of our National system of popular education, and repose greater confidence, as a means of defense, in the intelligence, freedom and patriotism of our people, than in immense standing armies and monster iron-clad ships. While nearly all will admit that our public school system is a strong bulwark of defense, and has been a potent factor in molding our National character, developing our institutions and promoting our material welfare, still the question naturally arises, have these results followed as the consequence of our educational methods, or have they been largely due to the inherent force of character, mental acumen and physical integrity of the hardy pioneers who laid the foundations of our Nation, and to whom is due much of our greatness as a people?

The highest happiness and welfare of a nation or a people is in direct proportion to the highest happiness and welfare of the *great* majority of the individuals who compose it; and the greatest welfare of the individual depends upon the inheritance of a strong, well balanced organization and the symmetric and harmonious development of all his powers; in short, in order to attain the most complete living he must be perfectly adjusted to his environment. To accomplish these results an educational system must provide, in the first place, for a strong physical organization on which to work. Sanitary, hygienic and dietetic laws should be thoroughly understood and their principles carefully inculcated. Every parent and teacher should be strongly impressed with the truth that a "sound mind in a sound body" is a *sine qua non* in every case, if enduring results are desired or expected. Every one, and especially teachers, should understand that plain, nutritious and unstimulating food, an abundance of sleep, and plenty of free, unrestrained exercise in pure air, away from the formality and routine of the schoolroom, where the spontaneous activities are given free play, are of the greatest possible value to the child. They should not only know, but put into practice, the truth that proper food, plenty of oxygen, and frequent periods of relaxation in which to rest and change the activities of the brain, are of infinitely greatar value to the child than the details of geography or history, or the memorizing of rules of grammar or arithmetic, frequently drawn from principles they do not understand. Then, too, teachers and all those who have the direction of the intellectual and moral training of children, should have a clear and comprehensive knowledge of the laws and principles underlying and governing the development of the brain, as well as the mental and moral faculties of the child. They should know that the brain of the child, as compared with that of the adult, contains a larger percentage of water, is more unstable, more easily irritated, and that as a consequence, long continued, monotonous work not only fails to strengthen it, but, on the contrary, weakens the mind, besides producing irritation of the brain, with a lowering of the vital powers and retardation of the physical development. They should understand that the motor centers, which preside over and control muscular movements, act much as storage batteries, that is, they store up nerve force, which is almost constantly being discharged and producing muscular movements. The proper development of the muscular system being the foundation on which muscular strength and integrity depend, nature has wisely, by the automatic discharge of nerve force, to a large extent removed muscular development from our volitional control. We might just as well try to compel a normal, healthy child to stop breathing, as to remain quiet for any great length of time. The nerve force accumulating in its motor centers has just as specific and important a function to perform as that which regulates the activity of its respiratory organs. If teachers understood this fundamental physiologic truth, together with the fact that the inhibitory brain centers, as well as the paths of association whi[illegible] connect them with the motor centers, [illegible] veloped condi[illegible] thereby [illegible] nearly force in muscular movement, and that when the attempt is made to frustrate this provision of nature the effort at inhibition not only requires much brain power, which should be used in quiet thought and study, but that it produces irritation of the brain and weakens the mind, they would not commit the very common error of trying to compel young pupils to concentrate their attention on one subject or remain quiet for a long time.

Teachers who understand the natural order of evolution of the faculties can assist nature in directing the mind in proper channels and help strengthen and develop the various mental powers at the proper time and in the proper manner. Activity is the normal healthy condition of the human mind, and if this activity be properly directed mental work should be a constant joy, a source of the greatest pleasure and happiness to the learner. Show me a school where the pupils dislike their work, where everything is regarded as a disagreeable task and evaded or performed as a matter of routine, and I will show you a school where dreary drudgery and dead formalism have taken the place of generous enthusiasm and noble aspirations; where the laws of mental and physical growth are outraged and the moral nature is being warped and distorted, and in charge of that school you will find a teacher entirely unfitted for his or her work and who is lowering one of the grandest vocations to the level of a mercenary calling.

Every educator should appreciate the fact that in its development the child is an epitome of the development of the race. It passes through savage, barbarous and semi-civilized phases of development with many of their attendant impulses and passions before reaching that culture and refinement represented by our best civilization. In view of all these facts the proper training and education of a child is a most difficult thing and demands on the part of the teacher natural ability for the work, a thorough education and careful professional training, besides an accurate and comprehensive historic knowledge of the mental and moral evolution of the race and a careful observation and study of these faculties in the child.

While educators are being profoundly stirred on this subject and "child study" is receiving much attention and creating great interest, still the fact remains that the great mass of teachers know very little about it: indeed, it is a deplorable fact that the great majority of teachers in our public schools have never had adequate professional training of any kind (only about 15 per cent. have taken a course of training in normal schools, see *Forum*, April, 1896, page 179), and many lack that thoroughness of education necessary to make them first-class teachers. Under these conditions, is it any wonder that the courses of study formulated and the methods of instruction pursued have been either injurious, barren of results or failed to produce that highest good which should be the aim of all education.

To obtain a consensus of opinion on the influence of our school system on the health and development of the child, I addressed to about one hundred and fifty of the leading educators and physicians of the country the following questions:

1. Do you think our present comprehensive course of study is best calculated to develop the highest physical and intellectual powers of the child?
2. How long do you think continuous school sessions should last?
3. What is the longest time that should be devoted to a single recitation? *a.* In primary grades; *b*, in grammar grades.
4. How often should pupils have recesses or periods of relaxation?
5. Which do you think are more beneficial, open-air recesses with spontaneous play, or formal indoor exercises consisting of calisthenics, etc., and why?
6. To what extent does the practice of denying pupils the privilege of attending to the calls of nature or of punishing them for the exercise of this privilege (by making up for the time so lost, etc.) exist in the schools? *a.* What do you regard as the moral effect of such a practice on the child? *b.* What physical evils may or do follow it?
7. What effect does "home" study, outside of school hours, have on children, and especially on girls during puberty?
8. What should be the outside limit of such study for: *a*, grammar school pupils; *b*, high school pupils?

One hundred and five answers were received: Sixty-nine from educators, including college presidents, professors in colleges and normal schools, superintendents of city schools, principals of graded schools and others eminent as educators; also thirty-six from physicians who occupy professorships in our leading medical colleges or have distinguished themselves as general practitioners or specialists whose work is among children, or who have large opportunities to observe the effects of school work upon the health of those who have recently passed through or who are now pursuing a course of study in the schools of the United States. As you will notice, the answers come from all sections of the country, and as a consequence the results of the investigation which I herewith subjoin, do not possess a mere local significance.

Answers to No. 1.—Sixty-three of the sixty-nine educators answered this question as follows: Yes, fifteen; no, twenty-nine; doubtful, eighteen, with one no to first part and yes to the second part.

Prof. Joseph Baldwin, LL.D., Austin, Texas: No. Many modifications are demanded.

Prof. Edward Brooks, LL.D., of Philadelphia, Pa.: Yes. The course in the elementary schools is not too comprehensive and does not interfere with the physical development of the child.

President George Stockton Burroughs, LL.D., of Crawfordsville, Ind.: No. Too many subjects are handled at once; the physical neglected.

Prof. William A. Cate, M.S., of Fountain City, Tenn.: Too many studies are carried at one time. I do not find so much fault with the comprehensiveness of the courses of study, however, as I do with the everlasting cramming in teaching.

President Alston Ellis, LL.D., of Fort Collins, Colo.: No. Course of study in higher grades too pretentious.

President Charles W. Eliot, LL.D., of Cambridge, Mass.: Courses are now in stage of transition, are being revised and enriched and will result in a comprehensive and better course.

Principal J. M. Green of Trenton, N. J.: I do not. I think it contains too many subjects, as generally laid out.

Supt. J. M. Greenwood, A.M., of Kansas City, Mo.: In general the schools are overcrowded with studies.

President G. Stanley Hall, Ph.D., of Worcester, Mass.: It needs great reconstruction.

Prof. Mark W. Harrington, LL.D., of Seattle, Wash.: Probably best for pupils treated collectively. Better means could be applied to pupils treated individually.

Supt. L. H. Jones of Cleveland, Ohio: I am a believer in liberal and comprehensive course of study.

A. A. Johnson, D.D., of Laramie City, Wyo.: Yes, if proper attention is given to hygiene and physical exercise.

Prof. Joseph W. Mauck, LL.D., of Vermilion, S.D.: I believe it would be better if less comprehensive and more intensive; more thorough grasp of a few subjects and less distraction and anxiety from a multiplicity of studies.

President George L. Osborne, LL.D., of Warrensburg, Mo.: The early part of the course deals too much with books and not enough with nature. It is also defective in its cultivation of the power of expression.

William H. Payne, LL.D., of Nashville, Tenn.: There is a tendency to injurious high pressure.

Col. F. W. Parker of Chicago.: There are a great number of courses of study and few are adapted to the growth of the child.

Mrs. Frances E. Ramsey of Westport, N. Y.: Emphatically, no! There is danger of superficiality as well as physical degeneration through feeding the brain at the expense of the body.

President Charles Super, LL.D., of Athens, Ohio: I do not, most emphatically.

Nathan C. Schaeffer, LL.D., of Harrisburg, Pa.: Everything depends upon the teachers employed.

Charles F. Wheelock, B.S., of Albany, N. Y.: No. We teach too much and permit the child to develop too little.

Rev. F. R. Wotring, D.D., of Berthoud, Colo.: No. Too much pouring in and not enough drawing out, though there has been a great improvement in recent years.

President Irwin Shepard, A.M., Ph.D., of Winona, Minn.: Yes, if wisely administered.

Thirty-five physicians answered this question (No.1) as follows: Yes, two; no, thirty-two; doubtful, one. The following are some of the opinions expressed:

Prof. Henry M. Brown, M.D., of Cincinnati: Not by any means; too hard on the nervous system.

Prof. N. P. Dandridge, A.M., M.D., of Cincinnati: No. I regard our public school system as defective in many ways.

Prof. N. S. Davis, M.D., LL.D., of Chicago: No; because it taxes the mind with too many studies and prevents thoroughness in any.

George M. Gould, M.D., of Philadelphia: Not by any means. Our modern system of education is the offspring of vanity and sin, for which our future world will justly curse us.

Prof. C. H. Hughes, M.D., of St. Louis: No. It is too exhaustive, overtaxes the perceptive powers and dwarfs the reflective. The tension on the physical centers is beyond their responsive powers and powers of body and endurance.

Prof. Frank Parsons Norbury, M.D., of Jacksonville, Ill.: I am opposed to the present method of conducting primary grades, very large classes and crowding together.

Prof. C. D. Palmer, M.D., of Cincinnati: No. One of the most serious effects of our modern school education, especially in the more advanced grades, is the multiplicity of studies crowded into any course, for the result is that a very imperfect and superficial information is obtained with nothing done in a thorough manner. A few things learned well are infinitely better than many learned superficially. Bad habits of mental training are induced by skimming over branches. Good habits of study and strength of mental discipline come only from thoroughness.

Prof. Theophilus Parvin, M.D., LL.D.. of Philadelphia: I do not believe in a common education for boys and girls. They have or ought to have different work or calling in life and the education should not be the same in many departments of study. Of course, it follows that co-education can not be. On moral grounds, too, I am unfavorable to such education. Not only sex but the individual is disregarded in our system of public education.

Prof. Thad. A. Reamy, M.D., LL.D., of Cincinnati: No. They are not taught to think and observe.

W. H. Short, M.D., of La Grange, Ind.: There are too many branches in one grade: too much required in all grades, especially primary grades, *e.g.*, arithmetic contains too many written exercises and examples which never occur in business, and fractional numbers of large and unusual terms which weary and bewilder, and when written analysis is required a child of only average ability, in almost every case, is compelled to accomplish this at home. If we had teachers of discretion who would cut out half of the text-book and instead give the classes, simple practical business questions, both mental and written, much would be gained. Instead of some conception of the simplest laws of mathematics, children are misled with rules and puzzled by hard questions until they neither know what they are trying to learn nor what powers they are trying to use, and so in other branches. *Too much attention is given to details.*

Henry Ling Taylor, M.D., of New York City: Not as I am acquainted with it.

Henry E. Tuley, A.B., M.D., of Louisville: The curriculum in the public schools in this city is very good.

De Forest Willard, M.D., of Philadelphia: Fewer branches would yield better results.

Prof. James T. Whittaker, M.D., LL.D., of Cincinnati: I think there is too much study from books and too little from nature.

Wm. Jay Youmans, M.D. (Editor Popular Science Monthly), New York City: No. It includes too much, forestalling the exercise of the thinking faculty. I am not an admirer of our school system as now organized. It is artificial to the last degree; while healthy development, both bodily and mental, is a natural process that is oftener defeated than promoted by the school.

Augustus P. Clarke, A.M., M.D., of Cambridge, Mass.: Not for the average child.

Prof. Leonard Freeman, B.S., M.D., of Denver: No. There is too much systematic study and too little systematic physical culture.

Prof. J. A. Larrabee, M.D., of Louisville: The course of study and requirements between eight and twelve years is too laborious, exacting and voluminous.

Answers to No. 2.—One hundred educators and physicians answered this question, and while there is considerable diversity of opinion among them the average length of a session without outdoor, open air recess, advocated, is from one to one and one-half hour. Many insist that the sessions should be shortened and more time given to physical culture.

Answers to No. 3.—Just one hundred answers were likewise received to this question, and while there is considerable divergence between them, the great majority advocate recitations, in the primary grades, of from ten to twenty minutes in length, and in the grammar grades from twenty to thirty minutes. It is urged, very justly t [illegible] by many of the respondents that the l [illegible] tation should be governed to a large [illegible] ct, t [illegible] d of instruction and the kind of teacher in charge of the class; that a good teacher would be able to maintain the interest of the pupils for a longer time and attain good results, while under the charge of a poor teacher, this interest would not be secured, they would soon tire and be more injured than benefited.

In this connection I desire to insist that whenever the children of a class in their efforts to follow the recitation, become tired, or it requires a strong effort of the will to keep their attention on the work in hand, it is time to stop. If this limit be exceeded the unstable brain will be injured and infinitely more harm than good be done. The custom of requiring pupils of 11, 12 or 14 years of age to spend two hours or more continuously on a single recitation, review or examination of one subject as is sometimes done, is not only a gross violation of all mental laws and is *prima facie* evidence of ignorance or heartlessness on the part of the teacher, but is at the same time barren of results; because it is a well established fact that impressions made on a tired brain are very evanescent in character and the effort required to concentrate the attention in such a condition has a very enervating effect on the mind.

Answers to No. 4.—The importance of relieving the strain on the brain and allowing it to equalize its energies; that is permitting the stored up nerve-force of the motor centers to discharge itself in muscular activities while the higher brain centers are resting and accumulating force to carry on their proper work, is being recognized by the best educators and physicians who advise frequent periods ef relaxation and play.

In response to this question I quote the following:

Prof. Joseph Baldwin, LL.D., of Austin, Texas: Every hour.

Prof. Edward Brooks, LL.D., of Philadelphia: Each hour to once in each half daily session, according to grade.

Pres. Chas. W. Eliot, LL.D., of Cambridge, Mass.: As often as once an hour in all grades.

Supt. J. M. Greenwood, A.M., Kansas City: Two regular recesses of fifteen minutes.

Pres. Geo. L. Osborne, LL.D., of Warrensburg, Mo.: Very young pupils at least once in thirty minutes; upper grades once per hour.

Pres. G. Stanley Hall, Ph.D., of Worcester, Mass.: If practicable, a little every hour.

Supt. L. H. Jones, of Cleveland, Ohio: Once in about one hour.

Prof. G. W. Patrick, Ph.D., Iowa City: Every hour.

Col. F. W. Parker of Chicago: A short period, between every two recitations, of music and gymnastics; fifteen minutes outdoor play in the morning session.

Mrs. Frances E. Ramsey of Westport, N. Y.: After each recitation if practicable.

Prof. W. J. Stevens, M.A., of Carthage, Mo.: At least every forty-five minutes.

Prof. Wm. H. Smiley, A.B., of Denver: Best work would be done with opportunity for free movement every hour for five minutes.

Pres. Z. X. Snyder. Ph.D., of Greeley, Colo.: Every hour or so.

Nathan C. Schaeffer. LL.D., of Harrisburg, Pa.: Twice each day and noon intermission.

Prof. Irwin Shepard. A.M., Ph.D., of Winona, Minn.: Every hour.

Pres. Alfred Holbrook, of Lebanon, Ohio: Every hour a short recess of ten minutes.

Prof. N. S. Davis, M.D., LL.D., of Chicago: Once in the middle of each daily session.

Prof. J. T. Eskridge, M.D., of Denver: Every hour, or at most every two hours.

Geo. M. Gould, M.D., of Philadelphia: Every hour.

I. B. Parkins, M.D., of Denver: At least once in afternoon and forenoon.

Prof. James T. Whittaker, M.D., LL.D., of Cincinnati: In the middle of each session.

Elizabeth K. Matthews of Des Moines: At the close of every lesson or study period.

Answers to No. 5.—In the whole range of educational subjects there is no question more fraught with important consequences to the child than that of proper sanitary surroundings and ample provision for healthful outdoor exercises. As previously indicated the brain of the child is unstable and easily irritated; nerve-force rapidly accumulates in the motor-centers and unless frequent opportunity be given for its discharge in muscular movements, the attempt to inhibit the movements by will power, will not only set up irritation of the brain, make the child peevish and unamiable, injure its health and interfere with its proper physical development, but will at the same time weaken the mind and defeat the very object for which long sessions are intended, viz., the accomplishment of the largest amount of work in a given time.

Oxygen is necessary to produce nerve-force (Spencer: "Principles of Biology," Vol. I, p. 50), to stimulate the respiration and the circulation of the blood, to develop the muscular system and to destroy the poisons constantly accumulating in the body. No room with from forty to sixty pupils can be occupied much over an hour and the air be fit to breathe without dangerous draughts being created; consequently, pupils should have a fifteen minute, open air, outdoor recess in the middle of each long session. During this recess the windows should be thrown open and the room thoroughly ventilated, the foul emanations eliminated and the air vitalized. This outdoor exercise is best for the child because it removes him from the monotony, formalism and routine of the schoolroom and enables him, yes, compels him to inhale full draughts of nature's life-giving element, pure air, to free his system from accumulated poisons and spontaneously to develop his powers and adjust himself to his environment. A properly conducted recess not only increases the sympathy and fraternal feeling between pupils, increases their physical strength and enlarges their intellectual and moral horizons, but draws them closer to Mother Nature, the source from which to derive inspiration. The recess too gives pupils an opportunity to attend to the calls of nature which under other conditions would be neglected, because, as pointed out by Durante (*Medical Age.* Oct. 10, 1896, p. 601) "the sigmoid flexure in children is of much greater length than in the adult; the nervous forces also are not yet as well regulated; so the child does not feel the need of an evacuation" and, therefore, children are more apt to put off or disregard these calls of nature than they are to abuse their privileges if permitted to leave the room whenever necessary.

The recess too, to a large extent, prevents withdrawals from the room during the school sessions and in this way much disturbance is avoided and good order promoted. The objection to the recess on the ground of immorality is, in my opinion, not well founded, because there is much greater danger of immoral practices being carried on when a few pupils are excused from the school at the same time during the sessions than when all are let out together at the general recess. I do not wish to be understood as being opposed to calisthenics and gymnastic exercises. On the contrary, I regard them as of very great value and deserving of a place in every school. What I do wish to insist on, however, is that they should be used in connection with, but not displace, the regular outdoor recess. In the advanced sheets of his new work, kindly sent to the writer, the distinguished author and educator, Prof. Joseph Baldwin of Austin, Texas, writes as follows:

PLAY AND GYMNASTICS.

Play is eminently hygienic.—"Recreation makes the best work possible. The kindergarten by utilizing play has made a large contribution to the well being of the race. Work fatigues, exhausts the brain cells; play is recreation for it is free, spontaneous activity. It breaks the spell of work and care. From infancy to age play is a boon to all workers. A self while taking recreation relaxes effort and roams fancy free. Thus the tired brain is given time to recuperate. The men of thought as well as the men of action, double their efficiency by taking regularly helpful recreation."

School work is education when pupils are fresh.—"Drudgery hurts and does not help. Work and then play is the divine plan. We may easily quadruple the value of our schools by studying to keep the pupils fresh. Strong men find recreation a necessity; how much more must immature pupils play as well as work and thus grow. He who helps to lead the school world to play wisely deserves to be crowned as a benefactor."

Recess at the close of each hour is the perfect economy.— "The hygienic and educative benefits of the hourly recess are incalculable. Young children soon become fatigued and so we make their periods of work very brief. The periods of work are lengthened as the pupils advance. The fatigue limit is a great practical study. Much may be done to keep pupils fresh by having easy work follow difficult work. Change rests, but frequent periods of absolute freedom are indispensable. In schools of the future it is believed a recess of ten minutes will be given at the end of each hour."

Play in open air is most hygienic.—"Suitable play grounds with the best play-provoking facilities may safely be counted among the most hygienic agencies. All real play is essentially free and spontaneous, yet at no time is a wise supervision more important than during play. Hurtful plays may be discouraged and the most helpful plays fostered. The teacher feels the play impulses and so guides by suggestion without abridging freedom and spontaniety. Well ventilated, well lighted and commodious play rooms for use during inclement weather are remarkably helpful when the supervision is judicious. However great the cost, these play rooms pay largely in increased pupil vigor."

Systematic physical culture is indispensable.—"In our best schools physical culture goes side by side with mental and moral culture. Graded physical exercise gives pleasure, gracefulness and vigor. During the pauses pointed suggestions are given in practical hygiene. The gymnastic exercises when adapted to the pupils and well managed are educative as well as hygienic. They develop habits of exact obedience, train pupils to work in harmony with others and give artistic command of the body. *Gymnastics require considerable will effort, and hence do not take the place of the spontaneous plays of the recess.* (Italics ours.) The Germans emphasize systematic gymastics but neglect play. The English exalt play but neglect systematic physical culture. The Americans and the French after the fashion of the Greeks, emphasize both play and gymnastics."

In contrasting romping and calesthenics Prof. Frank H. Hamilton (see *Lancet-Clinic*, Oct. 31, 1896, p. 477) speaks as follows: Calisthenics may be very genteel and romping very ungenteel, but one is the shadow, the other the substance of healthy exercise. Girls need health as much, nay, more than boys. They can only obtain it as boys do, by running, tumbling; by all sorts of innocent vagrancy. At least once a day girls should have their halters taken off, the bars let down and be turned loose like young colts.

Out of 105 answers to this question all except four strongly advocate out-door exercise or a combination of calisthenics and the old-fashioned recess. Following are some of the replies received:

Henry S. Baker, Ph.D., of St. Paul: In city schools calisthenics are infinitely better.

. Prof. J. E. Brate, A.B., of Fostoria, Ohio: The former; they tend to relieve necessary formality of room and give nature's best tonic, pure air.

Prof. Warren Darst of Ada, Ohio: Open air, better air, usually more hearty, freer minds, more restful, therefore more free from restraint. Cultivate a free spirit favorable to free institutions, more self-control and self-reliance among pupils.

Prof. C. C. Emigh of Fort Collins, Colo.: Out-door, wild, free, innocent, natural play at what pleases the individual pupil best. Calisthenics require close attention.

Pres. Alston Ellis, LL.D., of Fort Collins, Colo.: I favor both, the open-air recesses preferred. Calisthenics at close of recitation.

Pres. Chas. W. Eliot, LL.D., of Cambridge, Mass.: I would insist on both. If I could have but one I would prefer recesses with spontaneous play.

Prof. L. C. Greenlee, A.M., of Denver: Open-air recesses: 1. Pure air. 2. Not so fatiguing. 3. More natural to child, and relaxation more complete.

President Graves, A.M., Ph.D., of Laramie City, Wyo.: Open-air recesses and all pupils, unless real invalids, should be obliged to go out every time. I do not believe there is anything like getting good oxygen into the lungs and getting the benefits of sunshine.

Supt. J. M. Greenwood, A.M., of Kansas City, Mo.: Open air; no indoor recess can take the place of the regular old-fashioned spontaneous recess.

J. H. Miller of Lincoln, Neb.: Out door, if possible to have close supervision as in country schools; if otherwise these are dangerous to morals and not needed, as children have nothing to do but play before and after school.

Supt. J. H. Millspaugh, A.B., M.D., of Salt Lake City, Utah: Open-air recesses. Freedom and spontaneity are essential to perfect relaxation, yet rightly directed calisthenics will serve a p[illegible]ose not met by recesses.

Pres. Geo. L. Osb[illegible] sburg,
Open air with spc[illegible] dir
Greater freedom, [illegible] s,
results. Cal[illegible] r va

and systematic exercise with a view to regularity of movement and discipline.

Prof. John H. Philips, A.M., of Birmingham, Ala.: Both essential; first must be had, second should be; first, health; second, physical grace and strength.

Prof. W. B. Powell, A.M., of Washington, D. C.: The latter, because the exercise can be directed to known wants. The child has free undirected exercise enough without this.

Miss Estelle Reel, State Superintendent of Public Instruction, Cheyenne, Wyo.: Open-air recesses, because more helpful.

Prof. Wm. H. Smiley, A.B., of Denver: Open-air recesses with spontaneous play. The child, instinctively, unless abnormal, will harmonize his bodily organism with his environments better than any one can do it for him.

Pres. D. E. Sanders of Fort Scott, Kan.: Open air. Greater freedom, purer air, more interest.

Pres. Z. X. Snyder, Ph.D., of Greeley, Colo.: Open air by all means.

James Russell Parsons, Jr., and Dr. Roland Keyser of Albany, for Board of Regents, New York: Recess with play, because it affords complete and natural recreation.

Albert E. Winship of Boston: I doubt the utility or necessity of a recess. Indoor recreations, singing, calisthenics, etc., would seem all sufficient.

Pres. Irwin Shepard, A.M., Ph.D., of Winona, Minn.: Open-air recesses once each session and calisthenics between recitations.

S. Henry Dessau of New York City: Open air by all means. It restores oxygen to blood and gives vent to pent up energy.

Prof. Chas. Dennison, A.M., M.D., of Denver: Open air always in pleasant weather.

Joseph Eastman, M.D., LL.D., of Indianapolis: By all means open-air recesses with spontaneous play. Exercises by rule keep the mind on a strain. Chest expansion is better facilitated by outdoor exercise and chest expansion determines the capacity of any individual for physical or mental exertion.

Prof. F. Forchheimer, M.D. of Cincinnati: The former. We know that the air in schoolrooms is not the best, therefore as much fresh air as possible.

Prof. I. B. Perkins, M.D., of Denver: Always outdoor. Indoor exercises are of little value; fresh air is what they need.

Prof. Henry Sewall, M.D., Ph.D., of Denver: A combination of both. Calisthenics should be practiced in the open air when possible and are then preferable if one mode of recess must be chosen.

P. A. Walling, M.D., of Park Rapids, Minn.: Open air and plenty of it. Reasons: This gives greater freedom and allows the minds to come in touch; also it brings out the slow ones, does away with the idea of a recitation as the set exercises are apt to be viewed.

Prof. James T. Whittaker, M.D., LL.D., of Cincinnati: Open air and spontaneous play because of better ventilation and because there is no tonic like pleasure: a task is no pleasure.

Wm. Jay Youmans, M.D., of New York: Freedom in the open air because it is natural and superior to any artificial arrangements that can be devised.

Prof. Augustus P. Clarke, A.M., M.D., of Cambridge, Mass.: My experience leads me to doubt very much the pretended benefits of calisthenics and gymnastic exercises, which serve to make the pupil be more like a machine than a living being. Outdoor exercises: they favor spontaneous activities.

Harriet E. Garrison, M.D., of Dixon, Ill.—Open air. The machine system of our schools is crushing out spontaneity from children.

Hon. John J. Lentz of Columbus, Ohio: Open air for reasons that must be obvious.

Pres. Alfred Holbrook of Lebanon, Ohio: I would prefer both alternately enjoyed. Indoor exercises when weather is inclement.

Elizabeth K. Matthews of Des Moines, Iowa: By all means the outdoor. The child gets the benefit desired, perfect freedom without restraint, hence normal development.

Prof. J. A. Larrabee, M.D., of Louisville, Ky.: Primary grades, five minutes recreation in schoolroom after each recitation. For all grades, fifteen minutes recess in the middle of the forenoon and afternoon sessions. Morning session to begin at 8 A.M. and close at 12 M.; afternoon session to begin at 2 and close at 4 P.M., thus enabling all children to go home for dinner. The recesses, except the recreation above mentioned, should always be outdoors, untrammeled and unrestrained. The windows of the rooms should be thrown open in pleasant weather. Calisthenics and all rhythmic exercise, whether by system or music, tend to continue thought and brain exertion and is not therefore complete relaxation.

(To be continued.)

ABNORMAL RESPIRATION IN INFANTS FROM OBSTRUCTION IN THE UPPER AIR PASSAGE.

Presented to the Section on Diseases of Children at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

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Normal infantile respiration in sleep is quiet, noiseless, save for the soft low inspiratory murmur, always nasal, chiefly diaphragmatic. During the first month its rhythm is irregular, there are frequent pauses and at times it is deeper, as in the Cheyne-Stokes variety. Its rate varies from 30 to 45. At the end of the third year it is regular and has a rate of 24. The rhythm is changed by very slight impressions. The movements seen are the ample ones of the abdomen, the lesser ones of the thorax and those of the nasal alæ. There is no drawing in of the fleshy portions of the thorax, the mouth is closed and the act of nursing can be completed without interruption.

Widely differing in its symptoms from that due to pulmonary or bronchial affections, abnormal respiration from obstructions in the upper air tracts is more difficult to trace to its cause, but is more amenable to treatment. Many fatal cases have shown that errors of diagnosis are common. Only recently has it become generally known that nearly all cases of croup are true diphtheria. Deaths from foreign bodies in the larynx or trachea, or from growths therein, could have been prevented had these not been mistaken for croup.

There exists hardly any other affection so dangerous and distressing to the patient, alarming to his family, or trying to the physician as obstructive dyspnea; nor is there any in which treatment is more effective. In no other condition is the skill of the surgeon or the ability of the physician so evident. Antitoxin is the greatest medical triumph of the nineteenth century, and intubation and the recognition and removal of obstructive growths are amongst the most brilliant of surgical achievements. Occuring with great frequency in early childhood, respiratory obstruction may be regarded as one of the most important of pediatric subjects. The condition may last for moments or for years; life may be ended by it in a few moments or made unenjoyable for months or throughout its whole duration.

The symptoms, effects and treatment vary according to the nature and degree of the obstruction, and with its situation, which may be in the nasopharyngeal, the pharyngeal, or the laryngotracheal portion of the air tract. The first of these divisions extends from the anterior nares to and including the retronasal space; the second, from the level of the palate to that of the larynx; the third, from the mouth of the larynx to the lower end of the trachea. Briefly, impediments in the nasopharyngeal portion cause mouth-breathing; in the pharyngeal, snoring, and in the laryngeal stridulous respiration.

Of the three, that last mentioned is by far the most important.

LARYNGEAL OBSTRUCTION.

Laryngeal obstruction figures largely in infantile mortality. Phonation being one of the principal functions of the larynx, an altered or lost voice will be one of the earliest symptoms of obstruction.

The larynx being also the gateway of the respiratory regions, its partial closure interfering with the influx of air soon causes dyspnea with laboring inspiratory movements and noisy breathing.

Causes and symptoms.—The causes of laryngeal dyspnea in infants are numerous. Dividing them into six groups, it will be convenient to study, first, their nature and symptoms, and afterward their diagnosis and treatment.

Malformations of the larynx may cause congenital aphonia, hoarseness or dyspnea. There have been found membranous webs joining the vocal chords, and elongations of the arytenoid cartilages, preventing proper closure of the glottis and giving rise to whispering voice. The epiglottis in infants is folded longitudinally, approximating the aryteno-epiglottic folds. In some cases this causes so much narrowing of the entrance to the larynx, as to give rise to what has been called chronic infantile stridor, which is accompanied by crowing inspiration that at times becomes shriller as the dyspnea increases and again subsides to the low-pitched stridor which is always present even in sleep. One case of this affection has been under the author's observation since birth. Although there is a great improvement, noisy inspiration with occasional attacks of dyspnea exist still, the child being 3 years old. Even slight congestion may be very dangerous in these cases.

Laryngeal growths are nearly always papillomatous in infancy, fibroma being rare and myxoma and cysts rarer still. The last named are sometimes found on the epiglottis. Growths give rise to dys- or aphonia, cough and dyspnea. The number and intensity of the symptoms depend upon the size, situation and character of the tumor. Granulations from tracheotomy wounds may be a cause of obstruction. With pedunculated subglottic growths the symptoms may be intermittent. Systemic effects, anemia and failure of development from imperfect respiration are present in proportion to the duration of the obstruction.

Foreign bodies according to their nature, size and location, give symptoms varying from the mere sense of their presence to the most distressing dyspnea or instant death. In infants they nearly always cause dangerous stenosis, although in out-of-the-way places they may be present for a long time without giving rise to any pronounced symptoms, but may at any time cause fatal obstruction from edema or displacement. Pointed bodies, pins and fish-bones, and prickly ones, as sand-burs, usually fasten themselves in the larynx. Fish-bones may be fastened across the glottis without serious symptoms unless edema occurs. Pieces of meat or other food, vomited or swallowed, entering the larynx are perhaps the most dangerous and frequent of foreign bodies ordinarily met with in infants. Smooth, roundish bodies. such as small glass beads, buttons and fruit stones may pass into the trachea. Bronchial glands have also been found therein. If these do not pass into the bronchi they may remain loose in the trachea, a source of great danger from being subsequently wedged into the glottis.

Inflammations of the larynx, idiopathic or caused by the exanthemata, malaria, aphthæ, erysipelas, pertussis, typhoid, influenza, syphilis, tuberculosis, urticaria, erythemanodosum, pemphigus, traumatism, cold, inhalation of steam or of caustics and foreign bodies cause edematous, membranous, spasmodic or cicatricial stenosis.

Cicatrices are the result of congenital syphilis, sometimes of inhaled steam or caustics. Stenosing infiltration is extensive in syphilis, burns and tuberculosis. Spasmodic stenosis may result from congestion or inflammation, the local condition acting as an irritant to excite closure of the glottis.

Membranous exudates occur not only in diphtheria but also with scarlet fever, influenza and aphthæ.

Stenosis depending upon causes that act through the laryngeal nerves are frequent in infancy, at which period the controlling centers are undeveloped and motor response to all irritations is very active. Apart from the spasm occurring with congestion or inflammation of the larynx, reflex spasm may be due to dentition with its slight cough, pertussis with its inspiratory dyspnea, or to tetany or rickets, which are not seldom fatal. Other reflex causes are mediastinal tubercular glands, retro-esophageal abscesses, or hypertrophied thymus gland pressing upon the recurrent laryngeal nerve. Others yet are foreign bodies in the ear, nose or tonsils. Adenoid growth of the nasopharynx and elongated uvula are not infrequent causes. In some cases of rickets these spasmodic attacks of dyspnea are easily excited. One case happened in the author's practice where tetany and laryngismus stridulus coexisted. An attack fatal in half a minute, was caused by feeling the pulse. In chorea the inspiration has a peculiar wavy character which may be due in part to the intermittent contractions of the laryngeal muscles. Paralysis of the larynx often follows diphtheria and may be a cause of severe continuous dyspnea. Unilateral abductor paralysis gives dyspnea upon exertion only. It may result from compression of the recurrent laryngeal nerve. Suffocation from particles of food is likely to happen.

The pressure upon the larynx or trachea of retro-esophageal abscesses, enlarged cervical glands, hypertrophied thymus gland or foreign bodies in the esophagus may be causes of fatal dyspnea, as may also the peritracheo-laryngeal abscesses described by Massei.

Diagnosis.—Notwithstanding that the diagnosis of some of these laryngeal causes of dyspnea is often a matter requiring no small degree of ability, it would be more often successful if it were generally known that the examination of the larynx in infants is not at all so difficult as has been believed. It is not, as in the case of adults, a matter of training the patient, but one of gentle force, properly applied. Probably not one physician in fifty examines the infant larynx. Direct and laryngoscopic examination of the larynx should be practiced until skill is acquired. No one can be considered an adept in the treatment of diseases of childhood who is not proficient in the employment of modern methods for the diagnosis and treatment of the diseases and abnormalities of the upper air-passages. No careful physician commences the treatment of an infant without examination of at least the fauces. In three-fourths of the cases, as we get them, the upper air-passages are involved. With the patients head well back and the tongue drawn forward, by means of the little finger placed beside the epiglottis, or better yet, with the spatula of Escat, the knobbed forks of which fit into the sinus pyriformis, the larynx can be opened to laryngoscopic and, in many cases, to direct examination.

In the diagnosis and treatment of the first three classes of causes of stenosis, malformations, tumors, and foreign bodies, laryngoscopy is indispensable. Acute stenoses have diverse causes but symptoms much alike. Moreover, the history is often obscure. While unobserved the infant may have swallowed a pin or button, or inhaled steam from the spout of a kettle and can not or will not give an account of it, hence, examination of the larynx is necessary for intelligent treatment. Bodies in the trachea may give symptoms easily mistaken for those of croup. The laryngoscope will often fail here and then recourse must be had to the Roentgen rays, which method, cryptolaryngoscopy, has been successfully used for the location of foreign bodies in the air tracts and esophagus.

Inflammatory conditions are distinguished from others by the presence of fever, the symptoms of the causative disease or the history of the causative accident. It is well to remember that with stenosis occurring in the course of acute diseases, the Klebs-Loeffler bacillus can often be found. In very severe stenosis occurring in the course of measles or scarlet fever, it is much better to administer antitoxin at once, which will often serve not only to cure but in so doing will indicate the true cause while awaiting further confirmation of the bacteriologic examination. Stenosis from inhalations of steam or other irritants can be ascertained by examination of the fauces and epiglottis, where their action is quickly manifested, urgent dyspnea and dysphagia coming on rapidly as the result of extensive swelling.

Spasmodic dyspnea is most frequently found in connection with rickets, of which disease laryngismus stridulus is but a symptom, whose presence makes the diagnosis easy. Absence of fever and transitory character point to the affections being functional. The various reflex causes already mentioned should be sought out.

The causes of compression should be remembered. When present they are, as a rule, easily found. Abscesses may at first be difficult to discover. In some cases it is not easy to ascertain the seat of the obstruction, for bronchial dyspnea may closely simulate laryngeal or tracheal dyspnea. The laryngoscope, X-rays, auscultation and percussion may be necessary.

Treatment.—In dealing with laryngeal and tracheal obstruction there are four agents that must often be used—used with a skill that all should try to acquire, namely, the antitoxin syringe, the O'Dwyer tubes, the laryngeal forceps and the knife. Intubation, tracheotomy and, certainly the use of forceps for the extraction of foreign bodies and the removal of growths should be first practiced on the cadaver. Malformations, tumors and foreign bodies, while considered to belong to the domain of laryngology, often give rise to a dyspnea that brooks no delay, and with which the physician who is called in the urgency of the case must be prepared to deal.

Congenital glottic webs are divided by means of the laryngeal knife. The stridor due to the peculiar infantile shape of the epiglottis generally disappears at the third or fourth year.

Tumors are usually removed by evulsion or crushing, with the aid of the laryngoscope and local anesthesia. Tracheotomy may precede or accompany these measures. Laryngotomy is employed only as a last resort, but may be necessary in young infants where death from suffocation is imminent. Intubation may in some cases be employed for temporary relief.

Foreign bodies, if they can not be removed by means of the laryngeal forceps and mirror, may require tracheotomy, and usually do in infants; the high operation for bodies in the larynx and the low one for those in the primary bronchi. The administrations of emetics and the reversal of the patient's body, as formerly practiced are dangerous, for if the foreign body be in the trachea, it may become wedged in the glottis. Inflammations may render necessary scarification, intubation or tracheotomy. They are best treated by applications of ice from the beginning. Derivatives and antispasmodics may be required to check accompanying spasm. The best remedy is probably codein, of which one milligram may be given at a dose to a child one year old, or morphin one-third of a milligram. Congenital syphilis requires mercurial inunctions and the internal administration of syrup of iodid of iron. When in the course of any of the acute diseases mentioned, a progressive, urgent dyspnea, accompanied by anemia and asthenia arises, it is best, as before remarked, to administer antitoxin at once, for nearly all such cases will prove to be due to the presence of the Loeffler bacillus. Prompt use of the serum will arrest the stenosis and render intubation unnecessary. Often, however, that operation will be required, not only in membranous but also in edematous, spasmodic and cicatricial stenosis. The tubes can be retained for long periods, a week or more without injury, those of hard rubber are best for long retention. Tracheotomy is not often required. For the relief of aphthous stenosis, Massei considers the ordinary catheter the best instrument. It can be used often and for brief periods to relieve the stenosis and detach the masses of oidium albicans. This instrument is invaluable for any form of dyspnea where the O'Dwyer tubes are not at hand. Cicatricial stenosis may render necessary repeated dilatation, prolonged retention of tubes or tracheotomy.

Aside from the treatment of the predisposing systemic condition, spasmodic stenosis is relieved by chloroform, codein, chloral, bromids and other antispasmodics and by the removal of adenoids and other excitants. Intubation or catheterization will sometimes be indispensable.

Pressure stenoses are treated by removal of enlarged glands, evacuation of abscess. and sometimes intubation or tracheotomy.

PHARYNGEAL OBSTRUCTION.

In the pharyngeal region hypertrophied tonsils, peritonsillar abscesses, retropharyngeal abscesses, elongated uvulæ, cicatricial contraction and the presence of foreign bodies, are causes.

Hypertrophied tonsils, although often congenital, rarely gives much trouble before the second year. They cause snoring, imperfect articulation, dysphagia and offensive breath. Often concurrent adenoids add their symptoms. If the tonsils nearly meet they should be excised; if they project but slightly, they should be let alone. Peritonsillar abscesses should be opened just outside the upper edge of the tonsil. Foreign bodies are to be carefully sought for and removed. The epiglottis has been found fastened down by pins and fish-bones. Cicatricial stenosis from syphilis sometimes occurs in infancy. The soft palate may become adherent to the pharynx, so as to completely shut off the nasopharyngeal tract. Operation is not then very successful. Elongated uvulæ may cause reflex cough and need removal. The palatopharyngeal space may be so narrow as to impede respiration.

The one very important and often fatal obstruction met with in this region is retropharyngeal abscess from suppurating lymph nodes or vertebral caries. This disease belongs to infancy, three-fourths of the cases occurring in the first year. Influenza is perhaps the most frequent cause. Sometimes it follows scarlet fever. The symptoms are fever, prostration, dyspnea, pain, dysphagia, aphonia or dysphonia, the cry being of a peculiar guttural character. Inspiration is accompanied by a very characteristic snoring sound which attracts the attention of the examiner, to whom the fauces and pharynx appear normal where the abscess is low. The abscess, although bulging most frequently directly behind the mouth, may be hidden above the palate, latterly by the faucial pillars or below, opposite the larynx. In all cases of infantile dyspnea where the diagnosis is not clear, the pharynx should be explored with the finger. Called once to intubate a nearly suffocated child, considered by two physicians in charge to have laryngeal stenosis, the author found a large abscess at the level of the larynx. Incision gave prompt and permanent relief. These are often dangerous cases. Death has occurred from the slight increase of obstruction due to the insertion of a mouth gag preliminary to operation. If not found and evacuated, the abscess may kill by eroding large blood vessels or by bursting into the larynx. Starvation and dyspnea usually kill. In scrofulous children the abscess may refill many times. In such cases general hygienic treatment and the administration of small doses of calomel for long periods has given the best results.

The abscesses of Pott's disease are of rather rare occurrence and long duration. They surely refill. Occasionally they can be opened externally and should be.

NASAL OBSTRUCTION.

Passing now to the study of abnormal respiration from obstruction in the nasal and retronasal spaces, we find effects and symptoms of another order. Not from interference with the free entrance of air to the lungs does the patient suffer, but because of interference with the passage of air through organs designed for purifying; warming and moistening it preparatory to its reception by the delicate organs through which it is assimilated; for such is the function of the mucous membrance of the nasal chambers, whose superior half, moreover, depends upon the air current for the stimuli of the myriad olfactory impressions conveyed by its nerves and so necessary to mental development and the enjoyment of life. Just as the digestive organs prepare food for absorption do the nasal passages prepare air.

Since the free passage of air is necessary for maintaining an equal atmospheric pressure on both sides of the tympanic membrane, impeded nasal respiration must cause imperfect hearing.

Again, the nasal chambers and antra modify the phonatory vibrations that pass through them. Their obstruction therefore renders imperfect vocalization inevitable. Not only is mouth breathing present and audition, olfaction, articulation, respiration, and consequently growth and development of mind and body seriously impaired, but the lungs, ears and eyes are rendered prone to catarrhal inflammations. Anemia is almost constant.

The effects of nasal obstructions are now becoming generally recognized. No one now doubts that the early relief of this condition enables a stunted backward child to grow and develop marvelously, reaching a perfection impossible without it. Indeed, the recognition and treatment of this condition should be a national care, for it means higher racial development. All familiar with the extraordinary improvement in a child after the removal of adenoid growths, will readily admit this. The peculiar physiognomy of some backward races, the Esquimaux for instance, is believed to be due to the presence of these last-named growths during childhood.

Causes.—Apart from malformations, the most important of which are absence of the septum and floor of the nose, which render respiration abnormal, and imperforate or extremely narrow nostrils, any of the following causes of obstruction may be congenital: Complete or partial occlusion from exostosis, ecchondrosis and deviations of the septum, hypertrophy of the turbinated bodies, bony cysts of the middle turbinated, polyps, abscesses of the septum. Frequent causes are, foreign bodies, fractures, diphtheritic membranes, syphilitic lesions and what is not at all rare, and yet has received little or no mention so far as the author knows, in the literature of the subject, collapse of the alæ nasi.

The acute inflammations are but transient.

In the nasopharynx is found by far the most frequent and important cause of nasal obstruction in infants, the so-called adenoid growths. Although often present in the new-born, it is toward the end of the first year that they are generally found. They are idiopathic or the result of acute infectious inflammations, especially influenza, a disease which few children escape during its prevalence.

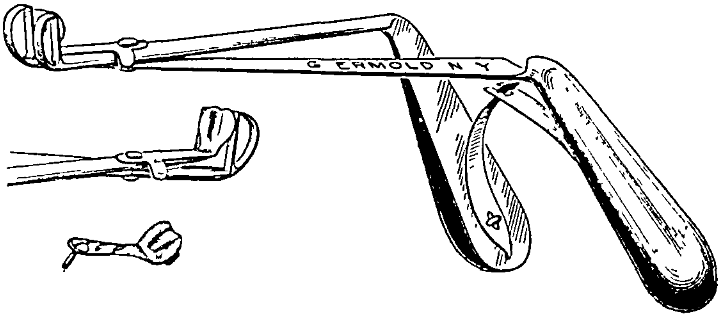
Symptoms.—An infant having nasal obstruction from any cause presents an expressionless face, with open mouth and flabby folds, stretching down from the alæ of the generally flattened and running nose. This has been called the veiled face of adenoids. Deafness, otitis, mutism, anemia and eye affections are often present. The voice has a dead, nasal character, that of cold in the head. Snoring, restlessness, night terrors, inability to nurse are always present in cases of large growths. Postnasal, laryngeal, bronchial, aural and conjunctival catarrh are frequent accompaniments. Not only is nasal obstruction often the reflex of very distant irritants, but it may be the cause of apparently widely separated affections, such an enuresis. Fits of crying and continued frowning indicate headache. The mouth-breathing infant is generally anemic, puny, ill-developed and frequently affected by diathetic diseases. The rachitic are frequently mouth breathers; while predisposing to other diseases, the presence of nasal obstruction causes infants ill from any cause to do badly. An interesting case was recently reported in the *New York Medical Journal* of a child which having complete nasal obstruction from birth, with inability to nurse, died when one week old. At the autopsy the turbinated bodies were found congested to such an extent as to cause complete occlusion. Surgical treatment had not been attempted.

Diagnosis.—The first diagnostic procedure should be an examination of the nasopharynx; for adenoid growth will be found in four-fifths of the infants with chronic nasal obstruction. In a few seconds the physician's index or little finger slipped behind the palate, over the vomer and down the posterior pharyngeal surface, will not only have met the soft, pendant, easily bleeding masses, blocking the posterior nares, but will be found blood stained when withdrawn. In infants under six months, such examination being impossible, an applicator armed with a cotton nob introduced behind the palate or through the nose, touching the masses ever so gently, causes them to bleed, showing their presence. Anterior rhinoscopy requires some practice before a reliable diagnosis can be made of the obstructions in the nasal chambers. A novice in rhinology is most likely to fail in even so simple a matter as distinguishing a red fleshy hypertrophy of the inferior turbinated body from the gray oyster-like polyp of the middle turbinated. Nor can he easily determine whether it be a growth or a deflection that affects the septum.

Intranasal obstructions are, however, comparatively rare in infants. Abscesses of the septum have been found five times in the author's practice. It is easily recognized by the bilateral bulging of the septum. The probe detects bony or cartilaginous growths that completely or partly occlude. Collapse of alæ should always be thought of before a speculum is introduced. Unilateral occlusion with purulent discharge often means the presence of a foreign body, such as a shoe button or grain of corn. In diphtheria the anterior nares are usually excoriated and covered with a gray pellicle. The Loeffler bacillus is always present. The membranes may be confined to the posterior part of the nose and retronasal space.

Treatment.—Apart from the finding and removal of the reflex and other causes, when general treatment fails, hypertrophy of the turbinated bodies are reduced by the galvanocautery or snare; exostosis and ecchondroses are drilled through with the electric trephine. Bone cysts and polyps are snared away, abscesses opened and foreign bodies removed by means of forceps or hooks. Syphilitic lesions require mercurial inunctions and thorough cleansing. Nasal diphtheria demands prompt injection with antitoxin, in large doses and repeated until the membranes cease to recur. This form of the disease indicates not only its virulence, but that the patient is non-resistant. When collapse of the alæ exists it is treated by means of springs or frames that maintain the form and size of the nostril.

Practically, however, the treatment of nasal obstruction in infants means removal of retronasal adenoid growths. The operation requires but a few seconds of time and no anesthetic. Cutting forceps and Gottstein curettes are employed. For growths on the posterior wall of the retronasal space the latter is the best. The forceps better reach the high growths which hang into the posterior nares and cause most of the obstruction. To prevent the injuries to the vomer, uvula and Eustachian tubes, which often occur with inexpert operators, and to guide the instrument into proper position for effective work, the author has devised a plate of peculiar shape which fits over the open jaws of the forceps and, when introduced, over the posterior edge of the vomer, also enables the operator to bring all the growths within the blades. This instrument accomplishes the operation at one application. Only when there are extensive posterior growths a single sweep of the curette may supplement the forceps. The latter instrument has the advantage that the growths are always brought away with it, while with the curette they are usually swallowed.



Hemorrhage nearly always ceases in a few moments. Three fatal cases have been reported. To check it, pledgets of cotton, saturated with solution of acetate of aluminum, should be drawn up into the nasopharynx by means of cords passed through the nose, and tied over the columna. Salt water irrigation, thrice daily for two or three days, is the only after treatment. Over two hundred cases have been treated in this way in dispensary practice with no evil effects whatever. The operation is invariably successful.

Rachitis, rhinitis, chorea, reflex cough, eye troubles, deafness, malnutrition, laryngismus, laryngitis, enuresis, night terrors and aprosexia will often resist the most careful treatment until the accompanying adenoids are removed, when convalescence will be rapidly established.

Having thus briefly dealt with the important subject of dyspnea in children under three years of age, it may be permissible to emphasize: The importance of laryngology in pediatrics; the facility with which the larynx may be examined even in infants; the necessity for ascertaining the condition of the upper air passages in all children, and for the removal of obstructive adenoid growths; the many causes of nasal and laryngeal dyspnea in infants, amongst which drawing in of the nasal alæ, sprue, inhaled irritants and foreign bodies are often overlooked; *the frequency of* retropharyngal abscesses, necessitating digital exploration of the pharynx; that the bacillus of Loeffler is often the cause of laryngeal stenosis in acute diseases, and demands prompt use of antitoxin; that these helpless little beings, who can not, often will not, give a history, should receive the benefit of all modern methods in diagnosis that they may enjoy normal respiration.

PUERPERAL INFECTION.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

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As this does not pretend to be an exhaustive treatise on puerperal fever, so-called, I will make no apology for slighting certain parts of the subject; and if I seem to wander too near the boundary line of the undiscovered, it will not be for the sake of the theorizing, but with the desire to draw, from reasonable inferences, certain conclusions that may assist in our every-day work. In regard to a choice of name for the puerperal condition now under consideration, there is not entire unanimity among medical men. Garrigues objects to the term puerperal fever, principally on the ground of its expressing only a symptom and in exceptional cases not even that, as he states there is sometimes no fever at all. Metria, he thinks too vague, and septicemia too strong a term for mild cases; therefore, he prefers the term "puerperal infection" and while admitting that it refers more particularly to etiology, he thinks it may also stand for the pathologic process, just as "cold" is used by the laity and profession also for both conditions. He claims for it the great advantage of pointing out that the disease comes from without, thus impressing on us the necessity of taking measures to prevent it. Puerperal infection, then, being the most available term in the present state of our knowledge, may be used as a general term, and the words septicemia, pyemia, etc., may stand for peculiar and grave states of this infected condition. The time-honored name, puerperal fever, may be retained also for association's sake, even if we can not find any rational basis on which to rest its claims, looked at from the standpoint of a purely scientific classification. As to the identity of the causes of surgical and puerperal infections, about which there has been so much discussion in times past, I believe the consensus of medical opinion of today is on the affirmative side of the question. In view of the accumulated experience of the most enlightened physicians of the last two decades, aided by the revelations of the microscope and the results of bacteriologic research, all tending to establish beyond the peradventure of a doubt, the identity so far as cause is concerned, of the two conditions, it should be hard indeed to find an advocate of the dual theory. The idea of identity, as I understand it, is not that the two conditions are dependent on a particular kind of germ, the poison *sui generis* of Barker, but that they are both dependent on the presence of germs, be they all of one kind (if it were possible), or of many kinds, and that there may be as much similarity, or, if you please, identity, between a given case of puerperal infection and surgical infection as there would be between two cases of surgical infection all the time allowing for the greatly differing conditions of the two cases. For, as Lusk expresses it: "In the puerperal state it is necessary to take into account the blood changes induced by pregnancy, the effects of shock and exhaustion in protracted labor, the frequency of hemorrhage, the deep situation of puerperal wounds, the presence of clots, decidua and dead tissues in a state of disintegration or decomposition, the ease with which deleterious substances are absorbed by the wide lymphatic interspaces, the serous infiltration of the pelvic tissues, the exaggerated size of the lymphatics and veins, and the proximity of the peritoneal cavity;" and, therefore, he concludes "that the differences between surgical and puerperal septicemia are due to differences partly structural and partly physiologic in the wounded surfaces exposed to septic contamination, but that the two conditions are not only analogous but essentially one and the same process."

That the puerpera is much more liable to infection than any surgical case will hardly be denied, for "it is a fact independent of all theories."

Blood clots and decidual shreds most certainly furnish good material for infection, but from experiments made by Prudden, a detailed account of which was given in the New York *Medical Record* of Jan. 25, 1890, he conclusively shows that, whereas, all the other body fluids have more or less germicidal effect, amniotic fluid, on the contrary, proved to be such a good culture-medium that typhoid bacilli planted therein almost quadrupled their number in six hours after implantation.

Etiology.—The query as to what is puerperal fever is answered by a practical obstetrician as follows: "It is a disease due to a poison coming from without, the cause of which seems to be produced by certain microbes. That the severe cases are due to septic organisms is proved by the fact, that by antiseptic measures we succeed in preventing the disease and if it has made its appearance they have great power in conquering it. Another proof is, that microbes have been found in such numbers and under such conditions that they must be regarded as intimately connected with the disease—but this properly belongs to the bacteriologist."

That scientist adds: "Emphatically, yes. Bacteria *are* connected with this disease as causal factors." When asked for his reasons for such a statement he reminds us that, following Tyndall, a number of investigators have proven beyond a doubt "that bacteria do not arise by spontaneous generation anywhere," thus establishing the law *omnis cellula e cellula*, the only law, so far as I know, without an exception. "This being true, as well as the fact that bacteria have never been found in the body in a state of health their presence there in disease must be ascribed to an entrance from without and the finding of suitable conditions for their development after this entrance has been effected. Therefore we can confidently affirm that bacteria or their products are the exciting causes of such affections as the pyemias and septicemias."

Pasteur and Doleris give as results of their work, four varieties of bacteria occurring in cases of puerperal infection, which they classify as follows: 1. Cylindric bacteria or bacilli, developing into large filaments about the time of the death of the patient and called *bacteries septiques.* and commonly found in malignant septicemia. 2. Mi [illegible] in [illegible] ns, called streptococci. 3. Diploco [illegible] ring in pyemia, as the micr [illegible] Micrococci *occurring singly* [illegible] From the nature of the subj surrounding it, it is impossible at this stage of investigation, to associate any one or several of the different species of micro-organisms, as causing a definite array of symptoms in any given case of septic trouble, except to say in a general way that the most serious infections are due to the bacilli and streptococci. "If we have chills and a rise of temperature to 40 degrees C., we may assume, almost with certainty, the presence of the streptococcus." So far, the following bacteria have been found in causative relation to, or thought capable of causing puerperal fevers, viz:—The streptococcus pyogenes of Passet; the streptococcus erysipelatis of Fehleisen; the streptococcus septicus of Nicolairer; the staphylococcus pyogenes aureus of Rosenbach; the staphylococcus pyogenes albus; the staphylococcus pyogenes citreus of Passet; the staphylococcus pyogenes circus albus of Passet; the bacillus coli communis of Escherich; the bacillus saprogenes of Rosenbach; the bacilli of rabbits and mice septicemia; the bacillus pyogenes fetidus of Passet; Noeggerath's saprocyte and others.

As to the modes of entrance of these poisons into the system, unquestionably the vast majority of cases are infected through a solution of continuity, at some point or points within the genital tract, but there are a few cases on record that can only be reasonably explained upon the supposition that the germs gained admission through the respiratory or digestive tracts; but the percentage of these cases is so small as hardly to merit consideration.

Pathology.—As infection may cause a septic vulvitis, vaginitis, endometritis, salpingitis, ovaritis, peritonitis, lymphangitis, phlebitis, pleuritis, pneumonitis, etc., so will be added the special pathology of one or more of these inflammations, as they exist, plus the peculiar pathology of the particular bacteria present, such as pus, diphtheritic membranes, etc. It is thought that, where the round bacteria exist in great quantities, you are apt to find emboli and infarctions, ending in metastatic abscesses characteristic of pyemia and so frequently found in the liver, kidneys, spleen, parotid gland and other glands; or, if the more virulent bacilli predominate, we are told that the only pathologic change, sometimes observed, is a very coagulable blood and at other times an excessively fluid state of the blood, each condition supposedly due to the chemic action of the animal alkaloids produced by the germs.

Mortality and prognosis.—We are all familiar with Max Boehr's statistics and the report of the Berlin Society, and since we gather from them that before the period of antiseptic midwifery 10 to 15 per cent. of all deaths occurring in women, during the period of sexual activity, was due to childbed fever" and that at a later period with imperfect antisepsis this appalling mortality was reduced to 4 per cent. at the New York Maternity Hospital and later to a quarter of 1 per cent. with a more perfect system, we can praise the Lord that he put it into the minds of men to study this much neglected subject.

In addition to this great saving of life antiseptic midwifery, as Garrigues tells us, has reduced morbidity from 25 to 3 or 4 per cent. The prognosis of puerperal infection depends upon the *character* and amount of poison absorbed in the particular case under consideration, together with the character of the tissues or organs involved. As a material help to prognosis and treatment, a microscopic examination of some of the cervical discharge should be made by a competent microscopist.

The symptoms of puerperal infection may be as varied as its pathology. They may vary from a slight headache, anorexia and mild fever for a few days, the so-called milk fever, to a case with severe and prolonged chill or recurring chills, rapid pulse, high temperature, sweet breath, dusky or jaundiced skin and anxious face of acute septicemia, soon terminating in collapse and death. The local inflammation, as a peritonitis, may impress its symptoms in a given case. Again, we may have an array of symptoms characteristic of pyemia, with such sudden rises of temperature followed by profuse sweating and marked remissions of temperature, as often to be confounded with malaria. If it is true that micro-organisms have the power of producing animal alkaloids, with properties as varied and with effects as marked as are characteristics of those vegetable alkaloids with which we are familiar, such as atropia, aconitia, etc., then it should not appear strange, if we should note symptoms in certain cases similar to those produced by large or toxic doses of these powerful medicines. Bearing this possibility in mind, we should be on the alert for symptoms caused by these little understood but none the less real and potent substances. In case of a sudden collapse and death (and who of us have not heard of such during supposed puerperal convalescence, with a death certificate given of "heart failure") due, perhaps, to the leucomain analogous to aconitia, secreted within the individual herself where we were giving aconite in large doses, to know of the possible presence of this leucomain, might save us from unmerited reproach and qualms of conscience.

Prophylaxis.—By far the most important consideration during the lying-in period is to obtain as conscientiously perfect asepsis as is possible and no amount of trouble either to the accoucheur or attendants should be declined to secure this *sine qua non* to the puerpera. "For here if anywhere, a man is weighted with responsibilities of a momentous nature, even such as he is called upon to sustain in no other social, professional or individual capacity." I maintain that considerations of delicacy or false modesty as in the past, should not be allowed such paramount importance, as to prevent such a careful aseptic toilet of vagina, vulva and contiguous parts as an up-to-date surgeon would order given as a preliminary to a vaginal hysterectomy.

If the obstetrician is not sure that the nurse knows how to scrub out and disinfect a vagina thoroughly, he should do it himself, after all hair has been removed from around the vulva, and order antiseptic pads changed *pro re nata* or frequently, both before and after the completion of labor.

A word of explanation as to the necessity and importance of this cleansing should be impressed on the puerpera herself, and a caution as to keeping her hands away from the cleansed parts should not be overlooked, as every observant accoucheur can testify. The writer rigidly adheres to Garrigues' rules "for and in such cases provided" and he thinks he has cause for gratulation and gratitude, as in from 1,200 to 1,500 cases attended by him, he has had no death from puerperal fever and but few cases of morbidity. In 18[illegible]0, writing on this subject, I used the following language: "While I do not use the intra-uterine douche as a routine measure, I know of no good reason why it should not be done, and if, as seems certain, liquor amnii is such a good culture-fluid for bacteria, it would seem but in the line of common prudence to wash it away and by the same process and at the same time, get rid of placental shreds and blood clots, generally recognized as sources of danger. Besides, the hot uterine douche assures good uterine contraction, and I believe it is but a question of time, until this excellent prophylactic measure will be advocated ex cathedra, as correct practice after every delivery, at least where there is no trouble about having satisfactory antiseptic arrangements. Until then, I shall consider the surgeons a step in advance of the obstetricians."

I notice that Alexander Duke, of Cheltenham, England, writing to the *Medical Press and Circular* of London, in September 1895, states that he thinks "that an antiseptic treatment in midwifery would be seldom required, if the aseptic were more attended to, one of the most important plans being thorough flushing of the *entire genital tract* directly after labor. Those who have not taken the trouble on themselves to thoroughly wash out the uterine cavity directly after labor, the time when it can be best and easiest accomplished, can have little idea of the amount of débris which, if left behind, must take a considerable time to be expelled and is certainly likely, to say the least, to prove a source of danger to the lying-in patient."

A prophylactic caution that should be observed in every case, is to examine rarely and not to introduce the finger within the os in ordinary cases. When it is absolutely necessary, follow it with an antiseptic douche, also express placenta by Credé's method. Squibb's fluid extract of ergot in half teaspoonful doses, or one-thirtieth grain of strychnia, three times a day for five or six days, as well as immediate suturing of any laceration worthy the name, is important prophylactic treatment.

I shall make no apology for thus having dwelt at length on the most important part of this very important subject. I must say in passing, that I have had great comfort in postpartum douching of the uterus, in using a thick-walled, properly curved, glass tube, nine or ten inches long and as large as the thumb, which I think could be improved by deeply fenestrating the outer curve at its distal end for four or five inches.

Treatment.—If proper attention has been paid to prophylaxis, there will seldom arise a necessity for other treatment, but I believe that once in a great while one will run across a case of autogenetic infection from a ruptured pus tube or abscess sac, ovarian dermoid or other abnormality within the pelvis. In such cases evidently celiotomy with careful toilet of the peritoneum and drainage would be the remedy. In case the genital tract has been infected, I am an earnest advocate of early and very careful curettage and swabbing the uterine cavity with iodized phenol, without irrigation, but insufflating boric acid and packing lightly with iodoform or acetanilid gauze; or, what I sometimes like better, sew into the cervix a perforated one-fourth of an inch glass tube and fill the vagina with iodoform gauze. If, in spite of this treatment, faithfully tried, general infection ensues, it would certainly be proper to inject hypodermically the antitoxin serum appropriate for the preponderating germ present.

The most modern treatment of general septicemia is that of hypodermic injections of creosote recommended by Frank of Cologne. Its administration is said to be attended with remarkable results, rapidly reducing the temperature from 104 degrees F. to normal.

The solution that I have used in 20 minim doses, three or four times in the twenty-four hours, consists of equal parts of pure beech-wood creosote and sterilized camphorated oil. It is a beautiful, light amber colored liquid with only a slight smell of creosote and its injection does not seem to be attended with any disturbance or reaction. Failing in this special treatment, coupled with strongly supportive and stimulating general remedies, if the uterus and adnexa are thought to be a hotbed of infection, one would be derelict in his duty, if he did not give the patient her last chance by removing them; and I would most earnestly urge the vaginal method where possible, as causing less shock and securing better drainage.

314 Wilcox Building.

ANTI-STREPTOCOCCUS SERUM.

BY C. P. THOMAS, M.D.

SPOKANE, WASH.

During the last four months we have used this new remedy eight times, and notwithstanding that the cases treated were of very severe nature, the results have been so universally good that I feel it a duty I owe to the profession to report them.

I will be unable to give a correct clinical report of the cases, for no notes were kept, but they are sufficiently recent I hope to make them plain to you from the mental picture which I still have.

Mrs. A. was being treated by Dr. Button for acute cellulitis of the arm following an infection of a slight wound on the finger. She came to him after having been treated indifferently for two weeks, with a much swollen arm considerably distended with pus. Her temperature at this time was not very high. Under strict asepsis, free incisions were made into the arm, much pus evacuated, and the arm enveloped in a moist bichlorid dressing. Three days later, a violent erysipelatous condition came on, the temperature rose to 104 degrees, the patient suffering great pain; she was almost pulseless and death seemed imminent. She was given 10 c.c. of Marmorek's anti-streptococcus serum and also the usual stimulating treatment; and on his return twelve hours later, the Doctor found the temperature to be 100 degrees, and she continued to improve until complete recovery took place.

Mr. B., who was under the care of Dr. Byrne, came into the hospital the second or third day of the disease with acute erysipelas involving one entire leg; place of inoculation, a small varicose ulcer. The entire leg was swollen and from the knee down the limb was almost black with edema. His temperature was 106 degrees and he was unconscious. He was given 10 c.c. of the serum in the evening, and next morning his temperature was nearly normal, tongue moist, the swelling subsiding, and he went on to a rapid recovery.

The third case was also under the care of Dr. Button, and was one of acute suppurating appendicitis, in which we flooded the general peritoneal cavity with pus during the operation by the breaking of a very thin wall of protective membrane. Twelve hours later the patient showed great restlessness and other symptoms, well known to abdominal operators, of beginning peritonitis. He was given the usual dose of the serum and all these unpleasant symptoms disappeared and he made a rapid recovery.

The fourth case was a boy of 14 years of age, with acute obstruction of the bowels, who had recently been operated on for an abscess of some sort in the region of the vermiform appendix. He came under my care forty-eight hours after the attack began, with a high temperature, greatly distended abdomen and every indication of acute peritonitis. The abdomen was opened in a line with the old scar, which was parallel with Poupart's ligament and about an inch above it, adhesions broken up throughout the intestines, mesentery and omentum, the appendix removed, an operation done for the cure of the incisional hernia, which was very marked and the wound closed without drainage. All parts of the abdominal viscera showed marked evidence of acute inflammation. He was given the serum injection at once and recovered.

The fifth was a case of erysipelas beginning in an axillary abscess which involved the skin and muscles of one entire side of the chest. He was also greatly prostrated and suffering from a very high temperature; one injection of the serum was given him, with the same results as the others.

The sixth was a case of ruptured pus-tube of probable specific origin, which also had the usual high temperature, tympanites and great prostration. She was operated on through the vagina, the leaking tube removed and the general cavity thoroughly drained with rubber tubes and gauze. She was given at the time of the operation, the usual dose of serum, and although she was greatly improved, the next day it was repeated and her recovery has also been uneventful.

The seventh was a case of a large leaking pelvic abscess. The patient was in worse condition than any of the others, the bowels greatly distended, and very tender on pressure; she was vomiting persistently and there had been no passage for three days. Up to this time, she had been under the care of a colleague and given the opium and saline treatment. She was given the serum and immediately opened through the posterior fornix and about a pint of foul smelling pus evacuated from the abscess cavity. Both it and the general peritoneal cavity were thoroughly irrigated and drained. At the end of twelve hours her bowels moved with but little effort, the vomiting gradually subsided, and she is now almost recovered.

The eighth was a case of acute sepsis coming on about nine days after a very difficult labor, in which she was severely lacerated. She was irrigated and curetted two or three times before being sent in from the country, but her temperature remained high and there was some distention of the abdomen. She was given the serum treatment after the temperature had remained up for four days, all intra-uterine treatment stopped and, within twelve hours, the temperature became almost normal and remained so for ten days, when she was again suddenly taken with a chill and very high temperature, which resisted all constitutional treatment for three days, when she was again given 10 c.c. of the serum. The next day it was found that her temperature was not so high and there was some bogginess in the posterior fornix. The serum was repeated, the fornix opened and drained of a small accumulation of serum, and the uterus again thoroughly curetted, considerable placental tissue being removed. The following day she still had a very high temperature, showed evidence of the most profound toxemia and the serum was again given, and from this time on she continued to improve, the temperature remaining normal after the eighth day. This case would doubtless have been subjected to a hysterectomy by some of our advanced surgeons, but I consider her in a much better condition than if she had lost her uterus.

While it is true that some of the above reported cases might have recovered without the serum, considering the fact that so eminent an operator as Dr. Nicholas Senn has just admitted that out of over fifty operations for general peritonitis which he has done, not one has recovered, it appears to me that much credit must be given the serum in these cases. This represents my entire experience with the serum and I have used only that which was prepared by the Pasteur Institute and obtained from their branch house in Chicago, the Pasteur Vaccine Co. It comes in single bottles of 10 c.c. each, and is given with the antitoxin or ordinary hypodermic syringe.

URTICARIA, A THERAPEUTIC NOTE.

BY BERNARD WOLFF, M.D.

ATLANTA, GA.

The list of remedies suggested for the relief of urticaria is already so voluminous that I would have some hesitation in further adding to it, were I not thoroughly convinced of the value of phosphate of soda in the treatment of this common complaint.

I have used this drug for the past year in quite a large number of cases, and with such uniform success that I have come to regard it as absolute master of the disease, and have ceased to have any of my former misgivings of my ability to promptly relieve the patient.

In acute cases in adults my plan is to give dram doses of a supersaturated solution of phosphate of soda, *i. e.*, sixty to eighty grains to the dram, the salt being dissolved in its own water of crystallization. This is to be repeated every three hours, and in addition the following antipruritic lotion is recommended:

℞	Pulvis Calamin		
	Zinc. Oxid.	āā ʒiss	6
	Acid. Carbolic	ʒ ss	2
	Aq. Calcis	℥ ij	64
	Aq. Rosæ	ad ℥ iv	128

This is to be applied frequently and freely. The dose of the salt may be appropriately reduced in the case of children, and the quantity of carbolic acid in the lotion diminished. The effect is prompt, within a few hours the acute symptoms subside, and in from twelve to twenty-four hours the eruption ceases to appear.

In the chronic type of the disease the relief afforded is equally prompt, but recurrences are apt to follow. The remedy should be given in doses of one dram or more after meals, and should be persisted in until all tendency to recurrence of the attacks has disappeared. Patients do not acquire a tolerance for the drug and therefore, it may be administered in unchanging doses for as long as is necessary without any injurious effect.

The remedy is especially applicable in urticaria of gastro-intestinal origin, and is consequently applicable to fully 90 per cent. of all cases.

Sodium phosphate is regarded as one of the most reliable hepatic stimulants and intestinal antiseptics, and its curative influence over urticaria is probably based upon this physiologic action.

The Paris Hospitals.—It is stated by the correspondent of the *Medical Press and Circular* that the hospitals of Paris need the expenditure at least of one million pounds to make them habitable, and a further outlay of another million to make them what they really ought to be.

ACNE ROSACEA TREATED BY INTRADERMAL INJECTIONS OF FORMALDEHYDE.

BY J. T. McSHANE, M.D.
INDIANAPOLIS, IND.

The patient, an unmarried lady 30 years of age, has suffered from acne rosacea, with pustulation and papulation for about ten years. The entire face was involved with redness, most marked over cheeks and nose, and always worse during menstruation. The patient is well nourished but has suffered from nervousness and [illegible], perhaps due largely to her necessary [illegible] society on account of the bad appearance of her face. She has been under the professional care of several first-class physicians and all the usual means of treatment have been resorted to, but without avail.

I decided with the consent of my patient to use intradermal injections of formaldehyde in the strength of 1 drop of the 40 per cent. solution to 100 drops of water. These injections are attended with a stinging pain which the patient compares to the sting of a bee. One-half to one minim was injected in each point selected, care being taken to pass the needle into but not under the skin. In a few moments a spot about the size of a 10-cent piece, immediately surrounding the point, presents an elevated surface resembling urticaria. A sufficient number of injections were made at each treatment to thus affect the whole area of the disease and the treatments repeated at intervals of one week. The results have been most gratifying, and now, after three months' observation and treatment, the face is normally white with little or no tendency to recurrence of the disease.

26 East Ohio Street.

OVARIAN CYST.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY A. M. CARTLEDGE, M.D.
LOUISVILLE, KY.

I desire to report a rather unique case. The woman from whom this cyst was removed was 37 years of age and lived in a hovel a great distance in the country. I saw her May 13 and operated the same day. The tumor had been growing for thirteen years, and for the last four years very rapidly, so that she was unable to assume the reclining posture for more than a year and a half. The circumference at the umbilicus was seventy-nine inches. The woman was five feet four inches in height and well formed, except that she was very much emaciated from carrying this enormous cyst. Twenty-four gallons of ovarian fluid were removed before she was placed in position to be anesthetized. After that she was placed on her back and ten additional gallons of fluid withdrawn. The adhesions to the anterior parietal wall were terrific. Many ligatures were used and the operation consumed about two hours under unfavorable circumstances. The woman survived the operation fairly well, leaving the table with a pulse of 114. On the fifth day she had a normal temperature and a pulse of 108. Beginning with the sixth day symptoms of intestinal obstruction developed and she finally died. The fluid withdrawn weighed 240 pounds and the sac 5 pounds.

WRITE TO US for a copy of Department of Public Health Bill.

LENSES FOR THE STUDY OF THE SCISSOR MOVEMENT, CONIC CORNEA AND SPHERIC ABERRATION WITH THE RETINOSCOPE.

BY JAMES THORINGTON, M.D.
Adjunct Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine, etc.
PHILADELPHIA, PA.

As the scissor movement, conic cornea and spheric aberration, as recognized by the retinoscope, are so difficult of demonstration, except in the individual patient, the writer has had made three lenses which will illustrate these conditions respectively, when placed in front of his schematic eye; and thus the beginner in retinoscopy may have the opportunity to see, know and study these important and interesting manifestations, before proceeding direct and in comparative ignorance to his patient.

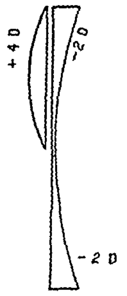


Fig. 1

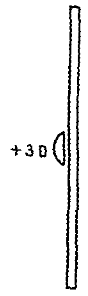


Fig. 2

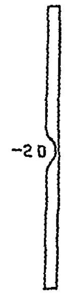
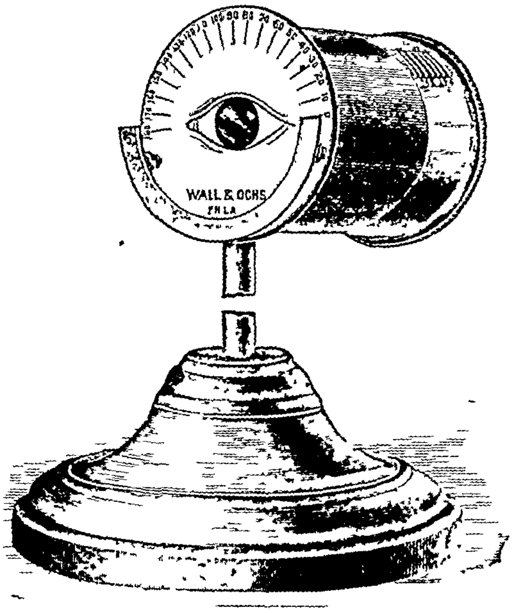


Fig. 3

Figure 1, is a plano-concave cylinder of 2 D., mounted in a cell of the trial case and to one half of its plane surface is cemented (at the same axis) a plano-convex cylinder of 4. D., thus making a combination lens, one-half of which is a —2 D., and the other half a +2 D. Placing this lens with its axis at 180 degrees, before the schematic eye at emmetropia (zero) and the observer at one meter distance with his plane retinoscope, the two light areas, so characteristic of the scissor movement, with their straight edges and dark interspace may be seen approaching each other from above and below (and the dark interspace disappearing) as the [illegible] or i[illegible]d in the vertical meridian.



Thorington's Schematic Eye.

Figure 2 is a section of thin

as in figure 1, and has cemented at its center a small plano-convex sphere of 3 D., whose base is about 4 mm. in diameter. Placing this lens in front of the schematic eye at emmetropia (zero) and reflecting the light from the plane mirror at one meter, there will will be seen in the pupillary area a small central illumination which moves against or opposite to the movement of the mirror, and a peripheral ring (at edge of the iris) which moves rapidly with the movement of the mirror; between these two light areas is a dark ring. This is the retinoscopic picture and movement of the light areas, so indicative of conic cornea. It is also an exaggerated picture of negative aberration.

Figure 3, is made similar to figure 2, except at its center is ground a —2 D. sphere of about 4 mm. in diameter.

Placing this lens in front of the schematic eye at emmetropia and the observer seated as before and with the plane mirror, he sees in the pupillary area a central illumination which moves *slower* than the peripheral area (at the edge of the iris) which moves rapidly, both areas moving *with* the movement of the mirror.

After the observer has carefully studied these pictures, it will be obvious that changes other than those mentioned, can be made with these lenses and he should proceed to note them, by: 1, changing the focus of the schematic eye; 2, by placing both the convex and concave spheres in combination; 3, by varying his distance from the eye; 4, by placing a concave cylinder in front of the double cylinder at an oblique axis, thus getting the picture of compound irregular astigmatism; 5, by placing a concave cylinder of 1 D., in front of the convex sphere and developing astigmatism with the conic cornea, which is the usual condition. It is also obvious that the scissor movement can be produced by a prism which is made to cover one-half of the pupillary area, but the resulting picture is not as satisfactory for demonstration as that given by the combination lens referred to in figure 1. The instrument is manufactured by Messrs. Wall & Ochs of Philadelphia.

120 South Eighteenth St.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

XVIII.—DISEASES OF THE THROAT, CHEST AND ABDOMEN.

(Continued from page 1219.)

Abscess of the liver required surgical treatment when it presented a fluctuating swelling on the outside. It could make its way through the diaphragm and appear outside on the thorax (Petit, Morand) or break through into the lung (Fourcroy), the intestine (Bajon) and stomach, and then heal. Generally it appeared on the lower short ribs, but seldom between the abdominal muscles and the iliac bone, in the right hand groin region, above on the inner side of the thigh (Bajon), where the diagnosis was very difficult. Also a well filled gall bladder was delusive and could be mistaken for an abscess in the liver. This was often and successfully opened: the sooner it was done the more certain was the cure, for there was no dependence on a spontaneous breaking of the same on the outside. Later the pus could separate the adhesions between the liver and the peritoneum and flow into the abdominal cavity. The abscess was opened with a rather large lancet, not by cauterizing, which would be apt to make the aperture too large. Schwartze had to pierce two inches deep before he reached the pus. When this smelled foul, camomile tea and honey were cautiously injected. A fistula might remain or death ensue from consumption. *Opening the gall bladder* was taken into consideration in fistulas and great accumulations. To effect a cure of the fistula it was usually necessary to extract the gallstones which caused the same, but only if the patient suffered excruciating pain. By means of catgut or a chisel the opening was enlarged until it admitted the finger, on which the forceps was introduced for the extraction. In this wise Zacharias Vogel of Lübeck had performed "one of the very finest of operations." In swellings of the gall bladder, which attained such a size sometimes that they were mistaken for encysted dropsy, an attempt to force the bile into the duodenum by gentle rubbing was made upon the presence of inflammatory symptoms. If it failed, the bladder was opened with the trocar according to Petit's mode of procedure, a very harmless interference as, on account of the inflammation, adhesion was assured and the tube was allowed to remain for a few days. Without a simultaneous inflammation it was not permissible to open the gall bladder, for fear of the probable adhesion with the abdominal wall. In order to produce the inflammation the peritoneum was exposed, spread with caustic, and after a few days the bladder was pierced.

A partial *extirpation of the spleen* was achieved by Ferguson. For twenty-four hours the spleen protruded from a wound and a portion of it was gangrenous. Around this piece, weighing three and one-half ounces, a piece of twine was placed; then it was cut off and a large, violently bleeding artery was tied. The remaining portion of the spleen was replaced, the threads hanging out of the wound wore off after ten days and the patient was soon cured.

We will now speak of *hernias*, in the study of which a lively interest was manifested. Their history is especially glorified by the names of J. L. Petit, Arnaud, Garengeot, Morand, Pott, Guenz and Richter. The latter arranged the scattered material in his classical book in such a brilliant manner that his work was the authority on the above subject until A. Cooper's time. As early as the beginning of the century, attempts were made to scientifically explain the mechanism of the formation of ruptures, and to end the strife whether the nature of hernia was due to displacement of the peritoneum or to rupture of the same. The latter idea was the more prevalent one. German surgeons manifested but little interest in these researches. Heister did not know for which opinion to decide, compared the different views expressed, and produced authorities for the one and the other. Wideman (1719), a lithotomist and cataract curer in Augsburg, expressed himself more clearly and earlier than Heister, saying that "in reality no tear exists, only a distention, discharge and obstruction are found." The first scientific attempts were made by Reneaulme ("Essai d'un traité des hernies." Latin edition, 1721; French, 1762), who looked upon the rupture portals as fissures, from which the outer membrane of the peritoneum along the vessels, which protrude from the abdomen, continues as a divide; the peritoneum is always well and unimpaired, if not maltreated in some peculiar way. His theory was more fully executed in detail by Garengeot (1732), whose writings enjoyed a great circulation. But he as well as Arnaud had experienced, that after a violent thrust or great exertions the peritoneum burst and thus a rupture ensued without a hernial bag. Soon there appeared in Germany, almost simultaneously, the works of Günz, Mauchard and Vogel. Günz reproduced Garengeot's theory, furnished exact anatomic descriptions of various sheaths for the different ruptures, described also those into the oval orifice. Mauchard tried experiments to ascertain the possibility of displacing the peritoneum. Vogel is credited with the important remark that strangulated hernia does not necessarily lie in the inguinal ring, but often in the hernial sac, even in the protruding viscera at times; I have not found the place in his book where it says so.

Regarding the treatment of reducible hernia, we have read, in the second chapter, of the outrageous malpractice carried on by the lithotomists with the radical cure. In the middle of the century Sharp and Günz favored the "king's suture," a method so-called because by sparing the generative organ its procreative power would be preserved and thus save subjects for the king. Vitriol was recommended by Renton for cauterizing, and in the year 1774 was again used by Maget and his friend Gauthier, who caused a great sensation with his ill-reputed writing. In it a thorough cure of all ruptures, no matter how large, was assured, taking for granted that they had not grown to any of the organs or the walls; but the details of the operation were concealed. The Académie de Chirurgie used its entire authority against the same; and above all others, A. Petit, who accused Gauthier of the famous de la Condamine's death; also Bordenave opposed him, although it appeared that both of these men were somewhat the victims of envy and jealousy. A third method of the radical cure consisted not only in compressing the neck of the hernial sac but to produce a counter-irritation to incite an adhesion. This was accomplished by means of a truss with a hard pad which was tightly put on the tumor and allowed to remain until intense pain ensued; then a softer pad was substituted. The closing of the neck of the hernial sac could be achieved by operative interference, if its anterior surface was scarified to cause an inflammation and then closed by a light weight truss. There was also a method extant to separate the hernial sac from the cellular tissue of the testicle and tie it close beneath the abdominal ring or return it into the abdominal cavity (Petit–Arnaud). Subligation Schmucker deemed the most reliable method of the radical cure and, on account of employing this in an operation on the body physician Zimmerman, became involved in a quarrel with Richter. The radical cure was often successfully carried out by Acrel, but he, like Petit and Sharp, saw patients die with it. He asserted that in many old ruptures the abdominal ring had been so greatly distended, that the best truss could not keep back the rupture, while by means of the operation, the same, if it could not be closed, could at least be sufficiently narrowed to permit of the use of the truss afterward. Operative interference in reducible hernia was opposed by Pott, B. Bell and Richter. The last surgeon rejected it entirely, with a few exceptions, having known the easiest, simplest and quickest operation to end fatally; and according to J. L. Petit's view, it was more dangerous than in strangulated hernia. Of course, Richter admitted the possibility of obtaining a complete cure with the aid of a truss and caustic and scarification of the neck of the hernial sac, yet all methods were uncertain and perilous. For the opponents of the radical cure there existed no other method but the truss, for the shape and application of which Richter's directions were very accurate. The inelastic rupture bands, which were very popular for a time, he absolutely rejected, and he had no use for the movable pads. The truss should always be put on by the surgeon the first time and then worn by the patient day and night. There was a difference of opinion regarding ruptures in children. Mohrenheim advised not to use the truss, the child being too weak to stand it; besides, the band would ever be wet through with urine. He gave wine with sal ammoniac, had enemas administered daily and saw the hernia disappear gradually. Pott, on the other hand, ordered every child, however young, to wear a truss of feathers; he thought the prevalent idea that it was impossible for a child to wear one, erroneous.

In strangulated hernia we follow especially Richter's methods. The cause of the strangulation was most frequently located in the abdominal ring, which, consisting of sinews that were continuations of the m. obliq. ext., might become constricted. A second cause, probably first observed by Saviard, arose from the constriction of the neck of the hernial sac due to the thickening and callosity of the same (resulting from pressure caused by the truss, Monro), also an aperture in the hernial sac, sustained through injury (Garengeot); or a partition wall in the same (Mohrenheim) could constrict the intestine; likewise the omentum becoming twisted with a portion of the intestine and driven into a pre-existing hernia (Callisen), or the hardened omentum pressing upon the intestine (Pott). Often the excrement was the cause of the strangulation. Richter distinguished an inflammatory strangulation, one caused by excrement, and added a third, the spasmodic. In this, the symptoms, with their intermissions and exacerbations, were mitigated by quieting remedies. It was often very difficult to determine the cause of the strangulation, which could also be conditioned by acrid bile and worms, and yet the success of the cure depended upon it. "Rational treatment of strangulated hernia requires far more knowledge and skill than an operation," Richter proclaimed to the surgeons.

There were various curious methods of taxis. One of the most favored was to tie up the patient to a strong man in such a way that his knees rested on the shoulders of the latter, the body hanging down from him (Sharp, Morand, Louis). The pressure, at first mild, was gradually increased, continued for a long time, and in inguinal ruptures was effected from below toward the top and from the inside toward the outside against the abdominal ring. Another manipulation consisted in pressing all parts of the entire rupture toward the inside toward the center of the swelling; a third method was to draw out the rupture and unfold the intestines; particularly was this used when there was an accumulation of fecal matters. The fourth manipulation, especially adapted to small ruptures, was to place one or two fingers at the side of the neck of the hernial sac on the abdominal ring and gradually press them back into the cavity of the abdomen.

Richter demand [illegible] is be c[illegible]d for an hour, but called attention to the exaggerated desire on part of the surgeons to continue the pressing in the following words: "Although I am free from being inclined to absolutely reject taxis, I must confess, pursuant to my experiences, that I think less of that manipulation than do the majority of the surgeons who consider it the principal method; and I am convinced that it is often harmful, seldom successful, but if successful seldom effects a complete cure. Rarely have I seen that a highly dangerous form of strangulated hernia could be returned into the abdomen, and in cases where it was returned, so many other remedies had assisted to mitigate the conditions, and after the preceding fruitless attempts the rupture retreated so unexpectedly and easily that I was always inclined to believe it would have gone back after a few hours, of its own accord." Likewise Pott did not strictly rely on the taxis, as at times it could be successfully employed after a week, and in other cases death ensued the same day. Desault considered it of great value never to employ the taxis immediately after the strangulation, as had been the general custom, but to precede the same by baths and softening poultices; furthermore it should be carried out very gently, since after vigorous manipulations the operation usually ended fatally. "There is always hope in a rupture that has not been touched before the operation." Unfortunately nearly every consulting physician who had been summoned allowed the tumor to pass through his hand, pressing it with great delight. If the entire hernial sac, the neck of which was constricted, with the intestines had been returned into the abdominal ring then the strangulation could continue. This fact had been observed by le Dran, la Faye and Arnaud, who produced dissections to prove the same. Louis, on the other hand, considered this reposition impossible on account of the firmness of the cellular tissue between the hernial sac and the testicle, and on account of the abdominal ring being too narrow; in short, he was very much in doubt about it, because he did not understand the matter. This vexed Richter and he replied: "If everything that we can not explain is not true then 100,000 truths which are daily before us would be false and we would no longer have the sun. But if in spite of this fact Mr. Louis continues, and because he can not comprehend the matter declares it an impossibility, and thereby intimates that the aforesaid three surgeons had fabricated their observations, then he is guilty of great impudence, and I, for my part, must confess that I by far more appreciate the experience of an Arnaud, the greatest authority on hernia that ever lived, than all the theories and over-refined reasonings of Mr. Louis, and that to me the trustworthiness of a le Dran and la Faye is of greater importance than all the assertions of Mr. Louis."

Various internal and external remedies are used to assist the taxis. Mild purgatives (Epsom salts according to le Grand's directions. or a decoction of herb nicotian. and rhubarb) were recommended by Richter in strangulations due to excrement and worms, but he advised against them in case of inflammations. Pott, however, did not think much of purgatives, because the constipation resulted from the constriction of the hernia, therefore the treatment must be directed toward the latter; according to Bell's and Wilmer's ideas they caused more harm by irritating the intestine and increasing the vomiting. Among the injections the one of tobacco smoke was thought the best, especially in spasmodic strangulations. It is said that Heister was always so successful in employing it that he never found an opportunity to perform the hernial operation. Yet there was a difference of opinions. While a few obtained good results but seldom from the use of the tobacco enema (B. Bell), or rejected it altogether and used water instead (Latta of Edinburgh), others were full of its praise (Pott, Wilmer, Richter). The last surgeon demanded that the smoke of a good and strong tobacco be blown into the hernia for at least an hour. For "this is the most common error on the part of surgeons in strangulated hernia; they like the frequent changes in methods and do not use one persistently, and yet there is seldom one that affords a speedy relief; generally we gain our purpose only by persistence." Injections of cold water and vinegar were also recommended (Theden). Of the antispasmodic remedies, the tepid baths chiefly assisted the taxis. It was always the first method employed by Desault; the baths were given two or three times daily, lasting for hours at a time. With the aid of warm baths, poultices and plain injections, Desault saw serious strangulations disappear without necessitating a taxis. Then linimentum volatile was rubbed in and poultices of camomile and linseed applied, for internal use ipecacuanha and poppy juice were given. General bleeding to the verge of faintness was the method resorted to in inflammatory strangulations, which was rejected by a few who did not see the taxis succeed through the exhausted condition (Wilmer, Alonson). Warm poultices, especially indicated by spasmodic and fecal strangulations, Richter ordered put over the entire abdominal region, not on the rupture alone. Many parties opposed the same (Pott, Monro, B. Bell, Wilmer and Keate). They did not think much of the poultices because the effect produced did not penetrate deeply enough, because the intestines were distended and the swelling increased. Pott even believed that the faith in them on account of the irretrievable loss of time had killed more people than saved them. Instead of warm poultices cold compresses were advocated. These (according to Richter) "incited the intestines to greater activity, thereby distributing the excrement and flatulence, contracted the blood vessels, freed them from the impeding fluids, reduced the size of the rupture, mitigated the pain and assisted the return of the hernia into the abdomen." The rupture and the limbs were suddenly treated to a shower bath of ice-water (J. L. Petit, Arnaud), or poultices of ice were made (Monro, Richter, Schmucker, Theden). Also by means of sugar of lead, water mixed with vinegar (B. Bell), by a solution of sal ammoniac (Wilmer), and evaporation of ether on the rupture (Hughes), frigidity was produced. Richter thought it contra-indicated by serious inflammation and violent pain, and by spasmodic strangulation, but wished this method only as a last recourse for a few hours when all others had failed.

When all methods proved of no avail, the operation became a necessity. But when was it to be performed? To designate the proper time, Sharp considered a more difficult task than to accomplish the operation, and Pott held the opinion that there was probably no subject in surgery which required greater power of judgment, more firmness and care than was necessary to determine the period beyond which it would be dangerous to defer the operation. By the majority of the German surgeons the operation of herniotomy was carried out too seldom and too late.

They experimented principally with internal and external remedies in the hope of diffusing the hernia, and tried everything imaginable. Thus, precious time was wasted, the symptoms increased in intensity and then came gangrene or mortification. The reason for this delay is found in the fear of resorting to the knife. It was otherwise in France, where, in the 90's, herniotomy was performed unusually often and the taxis seemed to have been neglected. Desault is credited with the honor of having revived herniotomy. At one time eleven whom he had operated on died in succession, while at another time fourteen patients similarly treated survived the operation and recovered. All good surgeons were convinced that it was best to operate immediately if the symptoms did not abate after applying the usual remedies for several hours. Pott asserted that if the operation was performed at the proper moment it would always fulfil the desired purpose, and believed himself justified in saying that not one case out of fifty would prove fatal if the operation be performed carefully and in good season. B. Bell wished all treatments energetically applied, but never longer than three or four hours, to be followed at once by operative interference; every minute of delay increased the danger. This principle was followed in Germany by Heister, Bilguer, Steidele and Richter, who said: "It is better to interfere too early than too late. The operation is in itself not dangerous nor very painful. The danger is not the result of the wound, but is generally caused by the length of time it is deferred. As soon as the hernia becomes so painful that a slight pressure can not longer be borne, no time must be lost and the operation must be performed, partly because the rupture is already highly inflamed and the danger of gangrene not far distant, and partly because the palliative methods are of no more use. . . . The smaller and the more recent the hernia, the more tightly constricted is the strangulation, the more pressing the danger. . . When all methods vigorously applied have been fruitless the operation should be made without delay. The strangulation is worse tomorrow than it is today; hence, tomorrow these remedies will avail less than today." Pott reasoned similarly and said that no one can tell when a hernia becomes mortified. For several days the strangulated intestine might remain well and then again it might be gangrenous within twenty-four hours after the protrusion. Steidele had a similar experience of finding a hernia mortified, although the symptoms were very mild, the fever scarcely perceptible and the pain endurable. The cause of Morand's exceptional success in herniotomy was that he never deferred the operation long and preceded it with a mild taxis two or three times.

Concerning the technique of herniotomy, the incision was made above the abdominal ring, penetrating to the bottom of the tumor (Louis). Opening the neck of the hernial sac was, since Garengeot's time, universally believed to be necessary. Upon his and Mauchard's advice, the knife was held obliquely and the several layers of the cellular tissue separated by raising each one with a pair of forceps. Pott and Richter split the hernial sac upward, but not, as was usually taught, to the abdominal ring, but only within an inch or an inch and a half beneath the strangulation, only far enough for the finger to enter. As a living probe Richter considered the finger the safest means to prevent all injuries. If the hernial sac was very large, a portion of it could be cut off; the ligature recommended by Günz, Pott disapproved of. Light injuries were not considered as dangerous by Richter as many others believed them to be; they could be returned without any symptoms. "I am not all inclined to induce the surgeons to become inconsiderate and audacious, but I think it is my duty to encourage them when I see them being instilled with fear without a cause." The mode of procedure of not opening the hernial sac and only distending the abdominal ring was a method already used by Franco, who was the first to operate on a strangulated hernia (1561), and by Paré, but was not introduced into the practice of medicine until later by J. L. Petit. Consequently it bears his name. He had practiced the method for more than thirty years, refuted all objections and laid great stress upon there being less danger, no contact of air, etc. He protested that he did not reject the opening of the sac in every instance, for there was no question that it was necessary in gangrenous hernia. Petit's method, however, was not generally adopted. With the exception of A. Monro, Vater, Acrel, Richter and J. G. Wagner, the method was rejected by all the surgeons of the various nations. They cared nothing about it on account of the intestine and the omentum adhering to the sac, the eventual mortified condition of these parts, also the easy relapses, and the putrid fluid of the hernia. Pott regarded this method very contemptuously, spoke of writers who mentioned things of which they had no experience, but what they produced one copied from the other; he had but little to say of it and did not consider it worth his while to subject it to an examination. Richter compromised matters by saying: "It has become a sort of duty in these modern times to reject this method absolutely and in all cases. The one has repeated the words of the other, no one heeding the inventor's purpose and the cases in which he recommends them. The reasons for not opening the hernial sac are truly striking, but they are by far not so good and demonstrative as many seem to think. Ordinarily there is too much praise and too much censure. This method is not practicable in all cases, nor can it be positively rejected in all cases. Besides, the inventor did not intend its general use; he recommended it in special cases only. The idea of the general utility of this method seems to have been forced upon Mr. Petit, and at the same falsely attributed to him so as to be able to reject it. I hold the opinion that this *modus operandi* ought not to be rejected in all instances but employed wherever it would be of use and advantage and be permissible under the circumstances." Contraindications to him were adhesions of the parts in the rupture; great thickness of the hernial sac so great that on the outside of the same no instrument could be inserted for the distension of the abdominal ring; also, gangrenous hernia and strangulation in the neck of the hernial sac.

For extending the abdominal ring the incision was either made toward the navel (Heister, [illegible] Bertrandi, Richter), or toward the outside [illegible] (Sharp, Pott, le Faye). Desault was [illegible] ating by the position of the spermatic [illegible] canal; if it lay behind or inside the sac [illegible] upward and outward: if it [illegible] the sac he distended the opening [illegible] The instrument used for the [illegible] scalpel with a dull and [illegible] (Richter), or the well known [illegible] this operation the French invented a number of useless instruments (Méry's winged sound, Morand's hernial bistoury, le Dran's hernial bistoury and other instruments). The knife was pushed in on the hollow probe, or on the finger, allowing it to press more than to cut. The distension sufficed, if it permitted the admission of the finger in the abdominal ring. Le Blanc and Arnaud wished to insert the finger and the hook, respectively, in order to distend the abdominal ring. This method was rejected by most of the surgeons. B. Bell considered it *next to an impossibility*, because Poupart's ligament was already so stretched that it was not capable of being distended any more, and Louis ridiculed such procedure. But Richter advocated the method in femoral hernia, so as to avoid the danger of injuring the epigastric region or the spermatic vessels: "I can not easily make up my mind to cut into the Poupart band in males, but will ever strive to widen the ring by this method. In inguinal hernia this method may be dispensed with, because then the cut can be made without danger, and yet the method ought not to be absolutely rejected." Intestines that had become discolored, either deep red, brown, or even black, could be successfully returned into the abdominal ring (Desault, Schmucker); only when they had become disgustingly mortified could they be treated as gangrenous hernia. After the reposition, Richter deemed it advisable to scarify and compress the neck of the hernial sac, thereby sometimes effecting a radical cure. After the operation a T-bandage and, during the entire treatment, dry charpie was applied, besides which fomentations were put upon the abdomen and mild purgatives as well as injections were given. If a part of an intestine had become gangrenous, it was fastened on the outside of the abdominal ring by means of a thread drawn through the mesentery; then the gangrenous portion was cut out and the sound portion reposited. But if the mortification covered a large surface, joining of the parts was *not to be thought of unless both ends of* the intestines protruded from the abdominal ring, otherwise all was left to Nature. La Peyronie and Ramdohr invented special intestinal sutures; du erger joined both ends over the dry trachea of a goose one another, etc. J. L. Petit principally favored e *idea that* Nature *alone* effects a cure, for he had seen several gangrenous herniæ heal almost without artificial means; therefore he thought most remedies for joining superfluous, yes, even dangerous. Richter held the same opinion. In an intestinal fistula he ordered a common elastic truss worn and under the pad of which a sponge or wad of charpie was placed on the opening. There was much dispute in regard to the treatment of the abnormal omentum. The first method used was the ligature. Most surgeons favored cutting it off and rejected Arnaud's special method of tying it off. At the most it was allowed when greatly developed arteries promised violent hemorrhages in connection with the incision. The dead portion of the gangrenous omentum was cut out and then it was returned, or if this was not possible it was left lying in the neck of the hernial sac; also the hardened omentum was left alone and only the abdominal ring distended in order to raise the strangulation.

Space does not permit us to enter more fully into the various kinds of hernia. The true nature of the congenital rupture was first determined by Haller, and William Hunter improved upon his work. There originated with Richter, for umbilical rupture in children, a bandage still used, which consisted of half of a nutmeg wrapped in linen, the application of which with the assistance of plasters and strips he described clearly enough, so that he alone merits the honor of the invention. For adults he suggested a special kind of umbilical truss. For the radical cure of hernia Desault resurrected the ligature heretofore recommended by Celsus, and prized it as a reliabe painless as well as safe method in the tenderest age of a child; this mode he had successfully used more than thirty times in the Hôtel Dieu within eighteen months. In femoral hernia, in which Gimbernat thought the seat of the strangulation located in the crural curve of the m. obliq. ext., to avoid the epigastric region the direction of the incision should depend upon the position of the rupture. If situated on the inner side of the femoral vessels the incision was directed obliquely toward the linea alba (Günz, Camper, Richter) and as closely as possible to the inner angle of the fissure. If the hernia lay on pulsating vessels or outside of them, then the cut was made outward and upward in the outer angle of the fissure. Wilmer cut directly upward, while B. Bell made several small incisions. If the epigastrica was injured, which was considered a very dangerous matter, it was necessary to interfere very energetically to reach the vessel, compress the same by means of Chopart's forceps, or ligature in order to stanch the flow of blood.

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

Stated meeting, Oct. 15, 1897.

Dr. G. FRANK LYDSTON in the Chair.

The subject for discussion was "Hysteria," which was opened by Dr. BANNISTER.

DEFINITION OF HYSTERIA.

Dr. H. M. BANNISTER—The average conception of hysteria by those who have not given the subject more than casual attention is probably an indefinite one. It is considered as a condition without a very precise definition and into which may be thrown an infinity of morbid symptoms that can not well be referred elsewhere. The definitions that are given of it also show a considerable variety. Quoting only the most recent ones the following may be offered:

Lowenfeld says that it "is a general neurosis in which nevertheless a peculiar participation of the cortex or a primary predisposition renders possible a reference of a part of the symptom to the psychic sphere." Bartholow defines hysteria as "a functional nervous trouble characterized by various motor, sensory and intellectual disturbances, and by excessive variability in their seat and manifestations." Landon Carter Gray calls it "a peculiar increased reflex excitability of the cerebro-spinal nervous system, possibly also of the sympathetic, with decrease of cortical inhibitory power." In one of the most recent text books, Dr. J. Hendrie Lloyd defines hysteria as "a psychoneurosis of which the physical symptoms are the most conspicuous, tending to disguise the mental phenomena and to simulate superficially the effects of various organic diseases."

Of those who consider the disorder more especially a psychosis in its pathologic sense, or a mental disease, following the example of Charcot, I will quote the following definitions: Moebius defines as hysterical "all those alterations of the body which are produced by ideas." Osler, quoting Moebius, gives as his definition "a state in which ideas control the body and produce morbid changes in its functions." Oppenheim's definition is as *follows*: "*A mental disease that* reveals itself not in intellectual disorders but in anomalies of character and emotion and conceals its real nature behind an almost unlimited number of physical symptoms."

It will be seen that in these definitions there are embodied two conceptions of the disorder; one that it is a neurosis, understanding by the term a disease of the nervous system of rather indefinite nature and pathology, and the other that it is in the proper sense of the word a mental disease. All mental disorders depend upon the derangement of function of the organ of the mind, or the cortical substance of the brain. For myself I would adopt the view of those who consider hysteria a mental disorder and would offer as a definition, which I do not consider, however, as necessarily better than those that have been given, but simply as conveying my present conception of the condition, the following: Hysteria is the manifestation of an original or acquired degeneracy in an ill-equilibriated action of the various cortical centers, characterized by lack of inhibition and heightened suggestibility. Reduced to its simplest expression this definition might be stated as that hysteria is an undisciplined functioning of the cortex. This, however, is not a perfectly accurate condensation.

The essential of hysteria as a disease is a degenerative basis. Every one has in him or herself the potentiality of hysteric symptoms, and under special stress of circumstances any one is liable to manifest them. But it is only in degenerates, and in proportion to the degree of degeneracy that it becomes a disease.

RELATIONS OF TRAUMATISM TO HYSTERIA.

Dr. Hugh T. Patrick—The questions of most practical interest regarding the relation of traumatism to hysteria are two in number: 1. Does traumatism cause hysteria? 2. If so, does hysteria of this etiology differ from that due to other causes? Each question is to be answered in the affirmative, with certain qualifications.

For any morbid influence to produce disease there must be a susceptibility or a vulnerability of the organism so proportioned to the noxious agent as to allow of its domination. This axiom applies to hysteria as naturally as to fracture, toxemia or vicious education. In current parlance, then, traumatism may be the exciting cause of hysteria. But there are many diseases in which the exciting cause constitutes practically the entire etiology. A violent blow properly administered will invariably break the human fibula, and the injection of strychnin in a sufficient dose will be uniformly fatal. In such instances, however, the fragility of the bone or the comparatively feeble resistance made by the nervous system to the overwhelming power of a poison can not be regarded as a predisposing etiology, because the strength and vitality overcome are up to the normal average vigor of our present physical status. Is the case of trauma and hysteria somewhat analogous? In brief, may traumatism cause hysteria in a normal person? I shall certainly not assert that this can not be, but I believe that such an occurrence must be of an extreme rarity and I can state positively that an indubitable instance has not come within my personal knowledge. To enunciate a rule, then, in answer to the first question, it may be said that traumatism may cause hysteria, but, as a rule, only in persons with a certain abnormal somatopsychic susceptibility. For the practicing physician it is of considerable importance to know whether this morbid frailty can be affirmed in individual cases. In my experience it can, if a fairly good history be obtainable. Evidence of nervous instability, of nervous symptoms out of proportion to the cause, or of foregoing outspoken hysteria will become patent to the expert inquirer.

In attempting to designate the distinctive traits of hysteria excited by trauma, if any such exist, the subject may also be approached by the etiologic gate. Whether or not hysteria be a well defined pathologic entity, the ascendance of the more striking features in each single case are largely determined by the nature of the exciting etiology and the circumstances of its application. It is true that "traumatism" covers a broad domain of physical and mental injury associated in a melange of infinite variety, and imperceptibly loses its identity in related morbific agents; still, in the ordinary course of human affairs, it possesses certain leading characteristics by which it is currently and readily recognized as a something apart. So the hysteia of traumatism, while it can be said to present no single pathognomonic sign and, in an absolute ignorance of the etiology, it can be asserted of no case of the disease that it has been excited by traumatism and by traumatism alone, yet as a group, the traumatic cases may be said to present a certain somewhat vague but perceptible facies and to evidence somewhat characteristic tendencies. The most prominent of these distinguishing features relate to localization, pain, the admixture of symptoms of neurasthenia, hypochondria or melancholia, the rarity of general convulsions, to tremor and backache.

In the nature of things a traumatism injures one part of the body more than others and in harmony with an etiology more or less locally defined in its application, the more salient symptoms of traumatic hysteria are apt to be local, the point of injury determining the place where the more obtrusive of these will be manifest. Hence, monoplegia, localized spasm, isolated amblyopia and regional anesthesia are relatively frequent.

Almost a universal accompaniment of traumatism is pain, and hence it would be but natural to suppose that pain would be more constant and severe in hysteria caused by injury than in the same malady due to higher or more purely psychic influences. Experience has shown this to be the case.

As before noted, traumatism, with the immediately succeeding mental and bodily states, involves a most complex concatenation of pathogenetic influences and it is no wonder that the results are so widely discrete; the individual cases of consequent nervous trouble so atypical. In brief, with so mixed an etiology, a mixed clinical picture is inevitable, hence the anomalous so-called hysteroneurasthenia, hysteromelancholia, neurasthenomelancholia, etc. It is for this reason, I think, that the patient hysteric from trauma, is apt to show the ready exhaustion, agorophobia and irritable weakness of the neurasthenic or the depression and lack of courage of the melancholiac, or both.

Traumatism rarely causes a powerful and general mental commotion without the intrusion of particular bodily harm, which would probably explain, what I believe to be a fact, that general convulsions (hystero-epilepsy) are somewhat rarer in traumatic hysteria than in other forms of the disease; but it is not uncommon for a scar or point of injury to constitute a so called hysterogenic zone, pressure on which will cause a hysteric convulsion.

Tremor of some kind or another, often reaching in degree a marked shaking or jerking, is seldom absent in hysteria from trauma, and the relation of this symptom to the etiology seems clear. It is physiologic for a person physically or mentally shocked to tremble, especially after the moment of impact, when reaction and realizing consciousness supervene.

Finally, there can be no doubt that pain in the back, more or less spinal rigidity and tenderness along the vertebræ are more frequent in the traumatic cases than in others. The *rationale* of this prominence of back symptoms is obscure and I would not wish to speak positively on the subject, but I am quite willing to express a tentative opinion. The evidence tends to show that man was not always a biped; to stand erect is not always his prerogative. The dorsal and lumbar muscles and the vertebral ligaments are amply sufficient to maintain the perpendicular station under favorable circumstances, but they have not yet become equal to all the exigencies arising from modern civilization. The spinal column and its appendages are somewhat behind in the process of differentiation and specialization constituting development and thus remain a *locus minoris resistentiæ.*

THE RELATIONS OF HYSTERIA AND EPILEPSY.

Dr. Sidney Kuh—Both hysteria and epilepsy are degenerative diseases of the brain. Therefore, they both develop most frequently in those whose central nervous system is congenitally weak. In both diseases the exciting causes may be the same. Violent emotions; injuries; intoxication with lead, alcohol, nicotin, morphin; acute infectious diseases; certain constitutional diseases may precede the first symptoms either of epilepsy or of hysteria. The influence of menstruation, pregnancy, the menopause, venereal excesses, overexertion upon both neuroses has been known for a long time. But even as we study the etiology of the two diseases, the fundamental difference between them becomes evident. Who has ever heard that a faulty education, that idleness had caused the signs of epilepsy to appear, two factors which undoubtedly play a most important role in the causation of hysteria and afford a satisfactory explanation for the pronounced prevalence of the latter trouble among the female sex in most civilized nations as well as for the remarkable fact ascertained by Briquet, that hysteria is very much more common in those religious orders in which all day is devoted to prayer and pious thought, than among those nuns who are active in nursing and in other charitable work.

While epilepsy seems to be a disease that has found its victims among all races and at all times, hysteria is more probably a relatively recent acquisition of humanity, one that came only with civilization and one with which even today the more barbarous races have barely met. The similarity in the symptoms of the two diseases is due to the fact that both must be localized in the same portion of the nervous system, and that both are in the majority of cases due to a congenital weakness of those organs. Hence both the hysteric and epileptic character have certain traits in common with that of the degenerate, and until the secondary mental changes due to frequent epileptic seizures develop, the epileptic, the hysteric and the degenerate are mentally very much alike. If there is any difference between them, it consists in the fact that in hysteria the exaggeration of self-consciousness, emotionalism, craving for sympathy and exaggeration of suffering, are more pronounced than in epilepsy, that in the former trouble there is occasionally a great display of, usually misdirected, energy or of theatrical unselfishness, which does not occur in epileptics.

In both neuroses, psychic and motor symptoms occur simultaneously, but in epilepsy the motor, in hysteria the mental phenomena prevail. How strongly hysteria is influenced by the mind is shown by the occurrence of epidemics of that disease. It is true that the witnessing of an epileptic seizure in another person does occasionally produce a spasm in a predisposed individual, but who has ever heard of such epidemics of epilepsy as we read of in the history of hysteria in the Middle Ages and witness occasionally in our day in girls schools and cloisters. It is the psychic element, too, that is responsible for the frequent changes so characteristic of most cases of hysteria, while in epilepsy the symptoms, though most of them occur only periodically, are in the main constant and unvarying. In the so-called hystero-epileptic seizure the mental element is evident in the "attitudes passionelles."

In their effect upon the human organism the two diseases differ widely. Neither the single hysteric attack, nor a series of them produce the same disastrous results as the epileptic fit. In the one stupor, violent headache and complete amnesia usually follow the explosion; in the other amnesia is as rarely complete as it is incomplete in the epileptic, and mind and body appear none the worse for the preceding violent exertion. In the one we see a series of attacks, a *status epilepticus* accompanied by hyperpyrexia; in the other, attack follows attack with no elevation of temperature at all, or at the worst only a slight one. The one disease exists for a lifetime, without reducing the mental condition to a lower level than it was at the beginning of the trouble; the other often within a few years, reduces the sufferer to a state of pronounced dementia.

All of this tends to show that while both neuroses are due to changes in the same organ, the nature of these lesions must be totally different. Epilepsy is a disease which we are today hardly justified in counting among the functional maladies. For besides those pathologic signs due to degeneracy, as asymmetry of skull and face, malformation of palate, irregularity of teeth, adherence of lobules of ears, etc., which are common to all troubles arising upon that same basis, we find organic changes in epilepsy, such as we do not see in hysteria. Chaslin, Féré, Bleuler and others have described hypertrophy of the neuroglia in certain parts of the brain, and one of these authors (Bleuler) states that this lesion, while distinct in the brains of all of his twenty-six cases of epilepsy, was not found in any of the fifty-four cerebra of non-epileptics. While there is some similarity in the etiology of epilepsy and hysteria, as well as in their symptoms, due to the fact that both neuroses are ascribed to the action of similar conditions upon the same organ, they are pathologically as widely different from each other as a diabetes inspidus is from chronic interstitial nephritis.

ABDOMINAL RELATIONS OF HYSTERIA.

Dr. F. S. Coolidge- I can not believe that hysteria is caused directly by any derangement of the sexual organs. I believe, however, that certain derangements of the sexual organs by their repeated irritation can bring about such a state of the nervous system in a person who has a taint toward hysteria, that the taint becomes manifest and hysteria develops. You will remember that Stevens thought that eye strain was the cause of epilepsy, and that by cutting the muscles of the eye epilepsy could be cured. He failed in the majority of cases, but in some cases he was successful in relieving epilepsy by removing the exciting cause, the constant irritation of the nervous system, although the epileptic taint was still there ready to reappear should any other exciting cause manifest itself. So with reference to the abdominal and gynecologic relations of hysteria, I think in certain cases, if we can overcome the derangements of the sexual organs and do away with the constant irritation of painful menstruation, and other nervous phenomena incidental to them, we may often be able to materially relieve hysteria. But the old belief that hysteria was undoubtedly due to the sexual organs, and that the removal of these organs would cure hysteria, is passing away. Bushels of healthy ovaries, and tubes have been removed under that belief, and it is a fad that is yet running in certain localities. Recent statistics, however, disprove this theory. The most recent statistics I have seen are those given in the *Boston Medical and Surgical Journal*, in an abstract of a paper by Dr. Angelucci of Italy, who collected his statistics from asylums where the patients could be watched, and not where they were operated on in a hospital, then dismissed, or discharged as cured, no further record being kept of the patients. He collected forty-one cases which were operated on for pure hysteria, in which healthy organs were removed for the purpose of curing the disease. Of these forty-one cases, seventeen became insane, ten became worse, eleven were unaffected by the operation and three were cured by it. In other words, nearly three-fourths of the forty one cases either became insane or grew worse, and only three were cured. Of eighteen cases in which diseased sexual organs were removed, three became insane, six were not affected one way or the other and nine were cured. At the same time he collected six cases of pure hysteria in which a pretended operation was done, namely, a laparotomy, or possibly an incision not going through the peritoneum. All of these cases were cured.

It seems to me there is reason for this. In the first place, by removing the sexual organs, the ovaries and tubes, or the ovaries alone, there is brought about the menopause; and the menopause even in normal life produces what we might call a nervous shock, this shock extending over a period of some time causing a nervous condition which is of certain importance in the life of any woman. Not only does the menopause bring about a nervous shock in normal life, but if brought about early, by operation, the shock is augmented. This is one explanation why, in these cases of hysteria oophorectomy, with or without removal of the uterus, three-fourths of the patients are made worse. The operation produces a nervous shock in addition to the hysteria which is already present and makes the patient worse. In the case of unhealthy tubes and ovaries removed for hysteria, one-half are cured and the other half remain either unaffected or are made worse. In them we have dealt not with the true cause, but only the exciting cause of hysteria. In the six cases of hysteria in which a pretended operation was done, all of which were cured, we had the influence of suggestion.

So in any operation of this kind we have the value, on the one hand, of the influence of suggestion against, on the other hand, the bad influence of induced menopause, if I may so call it, and much in accordance with Angelucci's statistics, the feeling at the present time is that the suggestion caused by the operation is not of as great value as the harm done by removing healthy ovaries. My belief at present is that it is absolutely wrong to operate for the removal of the ovaries in cases of hysteria unless there is sufficient disease in those organs to warrant it, and it is only in those cases in which the diseased organs are presumably the exciting cause of the hysteria that such an operation is justifiable.

I have had one experience in removing the ovaries of a woman who had difficult menstruation. The hysteria at all times was marked, but particularly so at the menstrual period. She died of acute mania on the fourth day after the operation. It was a single experience, but it was to me a lesson.

To sum up: According to the present status of this subject, it is unjustifiable to remove healthy organs in cases of hysteria without any palpable disease of those organs.

AUTO INTOXICATION IN ITS RELATION TO HYSTERIA.

Dr. W. A. Evans—By the term auto-intoxication I mean the poisoning of an individual by the poisons that he himself produces. It does not include poisons produced by bacteria or other organisms in any of his cavities, and whose absorption he does in some measure control. It does include products of incomplete digestion or incomplete assimilation, the incompleteness being due to his fault or condition. For example, if by change in intestinal epithelium proteoses are not converted into serum albumin, or if anti-peptone is not transformed by liver cells, intoxication results. It then does not include intestinal putrefaction. It does include poisoning with leukomains and with proteoses and anti peptones. Auto-intoxication can produce hysteria. Hysteria can cause auto intoxication. Auto-intoxication can produce hysteria by changing the anatomy and physiology of the higher nervous centers so that they lack "balance," or by upsetting an equilibrium rendered unstable by this or other causes. Hysteria can produce auto-intoxication by excessive leukomain production, *e. g.*, by violent nervous or muscular effort, or by diminished excretion, *e. g.*, hysteric anuria.

THE ORTHOPEDIC ASPECT OF HYSTERIA.

Dr. John Ridlon—It is more than likely that hysteria may simulate any disease or deformity in the province of the orthopedic surgeon. Personally, I have met with only the following: The hysteric spine may be mistaken for spondylitis or for scoliosis. In simulating spondylitis it may have a posterior curvature, but never a posterior angle. The spine may be more or less rigid, but the rigidity is rarely confined to the posterior curvature, and it is not equal in all directions, that is to say, there is often normal motion in one direction. The range of voluntary motion is greater than the range of passive motion, especially if the patient's attention is directed elsewhere. Pain is usually local, whereas the pain of spondylitis is distant. Tender points along the spine are always, or almost always, found in the hysteric spine, and never found in spondylitis unless there be such local manifestations of inflammation as the development of an abscess. The hysteric spine is usually accompanied by other manifestations of hysteria.

When the curve of an hysteric spine is lateral it may be said to simulate scoliosis. In such cases it presents all the symptoms above enumerated, whereas a true scoliosis presents rigidity only after years of deformity, never presents local tenderness, and rarely either local or distant pain.

Simulating hip disease, it often presents very great rigidity without deformity, whereas in hip disease the deformity develops step by step with the rigidity. To passive motion, the rigidity of the hysteric hip is uncertain and shifting and has an elastic feel; the rigidity of true disease at the hip is always a fixed quantity at any single examination, that is, it is never more and never less, though it may be greater (or slightly less) at a second examination some days later. There is usually local tenderness, which is rare in true disease except during the formation of an abscess. The pain is usually at or about the joint; the pain in true disease is usually at the knee. Muscular-atrophy is not present in hysteric hip; it is a constant symptom in true disease.

The same symptoms may be applied when differentiating disease at the knee. But at the knee the differentiation is not so easy, since in some instances there is present a puffiness and false fluctuation which closely resembles beginning tubercular synovitis.

The same may be said of hysteria at the ankle joint.

When hysteria affects the tarsus it is more likely to simulate talipes equino-varus than tuberculosis of that part.

When hysteric equino-varus is present the resemblance to the deformity resulting from infantile spinal paralysis is very great. Indeed, it may even imitate a congenital clubfoot except for the history. In both instances atrophy of the leg muscles, from disease in the congenital form and from paralysis in the paralytic form, is found wanting in the hysteric case.

In all diseases of hysteric deformity, profound anesthesia would seem to offer the key to the problem; but it should be remembered that recent deformity due to tubercular joint disease may disappear under profound anesthesia and, on the other hand, prolonged hysteric deformity may result in a structural shortening of the muscles on the concave side, which does not yield to even profound anesthesia.

There should be no difficulty in differentiating true wryneck from an hysteric condition in this region. In true wryneck the only symptoms present are those depending upon a structurally shortened sternomastoid muscle, whereas the hysteric condition closely simulates cervical spondylitis, from which it must be differentiated by the rules laid down in discussing spondylitis and the hysteric spine.

HYSTERIA AND ITS RELATION TO PREGNANCY.

Dr. C. E. Paddock—"The causes that directly determine the development of hysteria in an individual may be either physical or mental influences, or both. Of the two, the mental and moral influences are the more potent and the most frequent. The only disturbance common to all forms of the affection is that of cerebral functions, and we are not justified in looking beyond these for the primary development" (Gowers).

The physical conditions that may influence the development of hysteria are many, but disorders of the generative organs have always claimed the most attention. "Some morbid state of these organs is present in many cases, but the estimate that at least one-half of the sufferers from hysteria are free from such, is probably near the truth" (Jolly).

It is evident that whatever influence disorders of organs may exert, they are really the manifestations of the disease already in existence. As the term hysteria implies some uterine trouble, it is probably one reason why so much importance has been given to that organ in this relation. The etymology of the term is therefore misleading. To define hysteria, an accurate description of the individual with the ancestry and environments which surround the particular person seems necessary.

That hysteria is prevalent in all classes of society is apparent, but that heredity, education, climate and environment have their influence, there is no question. In the higher classes of society, idleness, social duties, dress, a sedentary life, furnish sufficient reason for the development of the disease. In the lower walks of life, unless it be among the dissipated and vicious, hysteria is seldom known.

In mild attacks hysteria may be controlled or modified by the will, but when the hysteric habit has got control of a person, the least mental or physical fatigue may produce a fit of nervous excitement due to exhaustion of nervous force, and the patient is no longer able to control this paroxysm by will power. It is a mistake, therefore, to look at these cases as controllable. They can no more be influenced by the will and stopped than can an eclamptic attack. Hysteria occurring in the pregnant woman means more to the obstetrician than the same does in diseases in general. Pregnancy is considered a physiologic process, but only when it occurs in a woman free from disease. In every case of pregnancy when hysteria develops, I will prove to you a previous hysteric tendency.

The causes of hysteria in gestation are the same as in the non-pregnant woman. Authors generally agree upon this. "Playfair's System:" "A pregnant woman may suffer from hysteric convulsions, but this condition is identical with the same disease in the non-pregnant, and they are in no way special in their nature." "Gleson's Midwifery:" "Hysteria is quite common at the commencement of gestation and hysteric convulsions are most frequent at this stage. It does not differ from hysteria in the non-pregnant." Similar extracts may be taken from writings by Tarnier, Lusk, Galubin and others.

Professor Valenta, in the *Arch. Gynäkol.*, XLIX, Vol. I, p. 189, 1895, reports a case of hysteria in first pregnancy. The patient was in the fourth month, was very hysteric, and wished to get rid of the child. The case threatened to pass from a nervous to a psychotic state. Abortion was performed. As soon as the membrane was ruptured all signs of hysteria ceased. There was an absence of any pathologic condition of the genitalia, but that there was a lesion somewhere is proven by the further statement that the case had been hysteric from childhood. Her father died of delirium tremens, and her paternal aunt was insane.

I can quote cases, in my own practice, of pronounced hysteric tendency, increased perhaps from psychic and physical reasons, such as maternal impressions, vomiting, etc., but in all these cases we do not have to look far for a cause.

From my own observations I formulate the following:

1. Pregnancy itself is not a cause of hysteria.
2. Hysteria in pregnancy has the same primary formation as hysteria in any other form.
3. Heredity plays a very important part in its etiology, and the womb is no more a factor than any other organ which may be diseased.
4. Cases previously hysteric are not benefited by pregnancy, their offspring are alike hysteric and degenerate, and our social and moral obligations are not enhanced by bringing such children into the world.

HISTORY AND MEDICINAL THERAPEUSIS OF HYSTERIA.

Dr. Geo. F. Butler—The earliest medical conception of hysteria is presented by Shakespeare in Lear, when that king ere his madness says:

> "O, how this mother swells up toward my heart,
> Hysterica passio down, thou climbing sorrow,
> Thy element's below."

In this, Shakespeare fully represents the old conception of Hippocrates, that hysteria was due to strangulation by the womb. To this strangulation, which resulted not from the womb moving about, but from some supposed reflex nerve performances akin to those utilized so lucratively today, were due, according to the Greek physician, six hundred and odd disorders of various types closely allied to those now ascribed to hysteria. As the male, in the hermaphroditic conception of the Greeks, was supposed to have a "spice of the mother," as the womb was called equally by Greek, Celt and Teuton, Hippocrates, like Shakespeare, naturally finds these disorders in men also; a conception that was supposed to be peculiar to the nineteenth century. During the centuries down to the sixteenth, many diverse notions of hysteria obtained, varying between the limits observed today. Rislau, Diemerbock and Bonnet attempted to establish, in the sixteenth century, that relationship between the female genitals and hysteria which has proven so lucrative to *fin-de-siecle* gynecologists. Nearly coeval with Shakespeare, Harsnet showed that when devils were cast out by miracle, the alleged devil was merely *hysterica passio*. About this time Dr. Jorden, in a treatise on "Suffocation by the Mother,' strongly urged the reflex notions common to Hippocrates and modern gynecologists. In 1620 Lepois claimed a cerebral basis for hysteria. Indeed, during the sixteenth, seventeenth and eighteenth centuries, medical disputes as to the genital or reflex or cere[illegible] of hysteria were as animated as at [illegible] ng the term "animal spirit" for [illegible] be [illegible] *force*, supported the cerebral [illegible] and neurologist c[illegible] th [illegible] bral theory, anticipated many of the views of Brown-Séquard and Charcot. A fair idea of the views entertained by general practitioners of the eighteenth century as to hysteria may be gleaned from Smollett's description of the hysteric servant girl in "Humphrey Clinker." The girl displayed all the convulsive conditions and emotional outbursts supposed to be characteristic of the modern fine lady. This servant girl (being in Edinburgh, where the practice then, as in Chicago today, was to throw all garbage into the alleys), remarks: "A sweet savor comes from such a number of perfuming pans, but they say it is wholesome, and, truly, I believe it is, for being in the vapors and thinking of Isabel and Mr. Clinker I was going into a fit of asterisks, when this fiff, saving your presence, took me by the nose so powerfully that I sneezed three times, and found myself wonderfully refreshed, and this to be sure is the raisin why there are no fits in Hadding burrough."

The peculiar effects here ascribed to odors survive in much of the medicinal therapeusis of hysteria today. Certainly the use of musk, castoreum, assafetida and the valerianates suggests the potent effect of stimulus to the olfactory anesthesia of the hysteric.

Medicinal treatment for centuries has practically ranged along the lines of the antispasmodics. In the early sixteenth, seventeenth and even eighteenth centuries, skatologic therapeusis of the type indicated by Smollett was not an uncommon phenomenon. Of this therapeusis the *mistura diabolicum* of the first half of the present century was a sturdy survivor. Its essential ingredients of olfactory unsavoriness were added according to the taste and fancy of the prescriber and his sense of the exigencies of the case. The medicinal treatment of hysteria should be based on certain essential principles: The avoidance of excess in drugging; the avoidance of narcotics in order to prevent the formation of drug habits; discretion in the use of the bromids in order to avoid bromism and resultant debility; the careful use of cathartics that constipation with its frequent serious effects on the general, mental and nervous state of the patient may be avoided; counterirritants to protect the patient against local vasomotor results of auto-suggestion so frequent in hysteria.

For the relief of the vasomotor instability resultant in the various emotional states, zinc and other valerianates are often useful. Against this, and the erotism, camphor monobromate is frequently beneficial.

To secure slumber, whose non-existence should first be ascertained, trional, phenacetin and sulphonal, rather than chloral or morphin, should be used.

For the relief of the pseudo-anginas, glonoin or strychnin is of value. In the convulsions of grave hysteria, the hypodermic administration of apomorphia will often prove beneficial or glonoin, or the inhalation of amyl nitrite may prove equally valuable.

Hysteric aphonia and deafness have frequently been removed by amyl nitrite.

LOCAL AND GYNECOLOGIC PROCESS OF HYSTERIA.

Dr. W. H. Rumpf—Dr. Coolidge has said so much concerning the relations between hysteria and gynecologic diseases, that there is very little left for me to add. Undoubtedly, impairment of the functions or disease of the genital organs have a great influence upon the nervous system, and any derangement of these would naturally increase the neurosis that might be present. Any disease of these organs would be treated either locally or by operation according to the rules that govern us in our gynecologic work, whether hysteria is present or not. It is very essential to warn against unnecessary treatment when hysteria is present, and in many cases better results are obtained by mere suggestion and mental treatment than by actual operations.

(To be continued.)

American Public Health Association.

Twenty-fifth Annual Session Held in Philadelphia, Oct. 26-29, 1897, at the Hotel Walton.

(Concluded from page 1222.)

A BRIEF REVIEW OF THE WORK OF THE SAND FILTERS AT LAWRENCE, MASS.,

was a paper by H. W. Clark, chemist in charge of the Lawrence Experiment Station. Up to 1875, the water of the city used for all domestic purposes was obtained from ordinary wells. In that year, however, a public water supply system was constructed and the water pumped to the reservoir and distributed to the citizens from the river at a point about one mile above the city. Nine miles up the river from the intake was the city of Lowell, having at that time a population of 85,000. The sewage of Lowell was and is still discharged into the river, and above Lowell are other cities and towns also discharging their sewage into the river. This water supplied to Lowell was then, from the first, beginning to be badly polluted, but was evidently purer than the average well water previously used, as shown by a considerable decrease in the death rate following its introduction. Gradually, however, typhoid fever became more and more prevalent, and finally the death rate in the city from this disease became the highest in the State, being about three times as great per 10,000 population as the average city of the State. The cause of the epidemics which prevailed during months when other cities were comparatively free from it was the polluted water-supply, and the question of a new supply began to be agitated. In the meantime, investigations in regard to the purification of Merrimac river water by sand filtration had been carried on at the Lawrence experiment station of the State Board of Health, and had resulted so satisfactorily that as early as 1891, the city was advised to construct a sand filter large enough to filter the entire water-supply, and in 1892 the city government made an appropriation for beginning its construction under the State Board of Health. In January following the starting of the filter, the number of cases of typhoid fever was nine, or one eighth as many as during the previous January. This fact is more striking when we note that in Lowell during this month there were ninety-nine cases, or three times as many as during the previous January. In January, 1896, there were six cases; January, 1897, two cases. A more satisfactory demonstration of the effect of the filter upon the health of the people of Lawrence can be made, however, by stating that in 1887 the deaths from typhoid fever were 12 per 10,000; in 1889, 13.75 per 10,000; 1890, 13,33; in 1891, 12.20; in 1892, 11.11. During 1893 the filter was built, and hence a portion of the year filtered water was being used. In 1894, filtered water was in use during the entire year, and the death rate from this disease was five per 10,000; during 1895, it was 3.07; 1896, 1.86, and the rate for the present year promises to be exactly the same as for 1896. Besides giving a water free from disease germs, the filter is also giving a cleaner water, more attractive and palatable and containing but 50 per cent. of the organic matter of the river water.

In the evening the Association was received formally by the Mayor, and were given an opportunity to go through the public buildings, which were brilliantly lighted for that purpose.

Friday Session.

By invitation of the trustees and faculty of the University of Pennsylvania and by special permission of the students, the Association met in Houston Hall.

After the usual report of the Executive Committee, the nominations for officers for the ensuing year were announced: President, Dr. Charles A. Lindsley, New Haven, Conn., Secretary of the State Board of Health; first vice president, Dr. Benjamin Lee, Philadelphia, Secretary of the State Board of Health of Pennsylvania; second vice-president, Dr. John C. Shrader, Iowa City, Iowa; secretary to fill the unexpired term of Dr. Irving A. Watson, resigned, Dr. C. O. Probst, Columbus, Ohio, Secretary of the State Board of Health; treasurer, Dr. Henry D. Holton, Brattleboro, Vt., member of the State Board of Health. Next place of meeting, Ottawa, Canada.

Mr. Rudolph Hering, C. E., of New York. reported on "Disposal of Garbage and Refuse." He made the statement that besides the reduction of the garbage to grease and as a fertilizer, or its total destruction by cremation, there is no other process the committee can mention as commendable from an economic or sanitary point of view.

Dr. C. O. Probst of Ohio reported for the Committee on Transportation and Disposal of the Dead and favored the shipment of bodies previously prepared by a licensed embalmer, the body placed in a hermetically sealed casket. Dr. Henry Mitchell, Secretary of the State Board of Health of New Jersey, objected to this as creating a special class of workers to whom all such work would necessarily be referred. He offered a motion which was adopted, striking out licensed embalmer and inserting under the supervision of the provincial or State sanitary authorities.

Dr. Mitchell presented the report of a committee to examine and report on the existing sanitary municipal organizations of the countries belonging to the Association with a view to mention those which had been most successful in practical results.

UNIFORM AND CO-OPERATIVE HEALTH LAWS

was presented by S. P. Heilman, M.D., of Heilmandale, Pa., Medical Inspector for the County of Lebanon, Pa. He said: "I appear before you today in a dual capacity as an officer of the State Board of Health of Pennsylvania and as a member of the Farmers' National Congress. At the recent session of this

Congress held at St. Paul a resolution was adopted favoring uniform and co-operative health laws, and a committee of three appointed to further the matter of the resolution. As a system of uniform and co-operative health laws applicable to all parts of the wide domain of our United States can hardly be thought of as attainable without the pre existent establishment of a National Department of Public Health, headed by a Secretary of Health or a Commissioner of Health. Our committee assumes that that is what was really in view when the resolution favoring uniform and co operative health laws was offered and adopted. You are aware that at the last meeting of the American Medical Association, held in Philadelphia June 1 to 4, 1897, a committee was appointed to draft a bill for a Department of Public Health and to define its duties, with instructions to present said bill to the United States Congress at the next meeting of the same. Such a bill has now been drafted by that committee. This measure, if presented to the United States Congress by an Association as distinguished and learned as the American Medical Association, seconded by the Farmers' National Congress (whose part in the matter has just been explained) and reinforced by this most distinguished American Public Health Association, more largely concerned in the matter than either of the two associations named, and by far the better judge as to the necessity for a department of public health, and whose deliberate averment would be an invincible argument in favor of a department of public health, our committee respectfully submits, if presented with the recommendation of the three bodies named ought to go to the Congress of the United States with a force commensurate with the dignity, learning and influence of the bodies making the recommendation.

Some considerations on the "Hygienic Influence of Forests" by Prof. Salvador Garcialdiego, Dean of the Medical College of Guadaljara, Mexico, was read by Dr. A. L. Gihon, U. S. N., retired.

The Executive Committee, as a part of its final report, recommended favorable action on the proposition to establish a National Department of Health; this caused much discussion before its final adoption.

Dr. P. H. Bailhache, U. S. Marine Hospital-Service urged delay and held it as improper for this an International Congress to take such action for one country, concerning which the others had no right to act. Whatever we of the United States might think of it, Canada and Mexico, a part of this Association, really had no right to give any advice.

Dr. A. L. Gihon opposed this view, and argued strongly in favor of the adoption of the report of the Committee.

Dr. E. O. Shakespeare of Philadelphia, regarded this most important and action should be taken with proper consideration. The proposed bill was too long and in some places the language was ambiguous; he objected to the bill. He urged the return of the bill to the Committee for further consideration.

A vote was taken adopting the report as read, and the following resolution:

Resolved, That this Association reaffirms its urgent opinion, and petitions the Congress of the United States to organize and establish a National Department of Health, and orders a copy of this resolution to be transmitted to Congress with the report of the Committee on Health Legislation, and the accompanying papers.

THE PRESENT MORTALITY RATE IN DIPHTHERIA

was presented by I. Newton Snively, M.D., Philadelphia. He said: The American Pediatric Society made the significant statement that, in its judgment, the results from the serum treatment of diphtheria would gradually further improve. The reasons given for this statement were that, 1, antitoxin is still frequently used too late, either from procrastination on the part of the physicians or objections on the part of friends; 2, it is given in a half-hearted way and often in doses one-tenth to one-fourth as large as they should be. It has been frequently observed that the percentage of recoveries under antitoxin treatment has steadily increased from the beginning. The present mortality, the lowest ever recorded, is pronounced by most observers of large experience with the remedy, especially in private practice, as being entirely too high to represent the power of the remedy. He quoted from Holt the statement that from the most trustworthy statistics it appears that the actual mortality from diphtheria, including membranous croup, has been reduced at least one-half by the general adoption of serum treatment, and that in cases injected reasonably early the mortality is less than 5 per cent. The present mortality, all cases being included irrespective of the brand of antitoxin employed, or the day on which the serum treatment was introduced, was given as follows: General, 8 to 10 per cent.; general (antitoxin used reasonably early) 5 to 7 per cent.: laryngeal types, 21 per cent.; operative laryngeal cases, 27 per cent.; non-operative laryngeal cases, 17 per cent.; number of laryngeal cases, requiring operation, 17 per cent.

The doctor then proceeded to show upon what a further reduction in the fatality from this disease must, in his opinion, depend. He observed that a study of the vast accumulation of reliable literature on the subject shows great improvement in three distinct lines: 1. In the production of the remedy, a more concentrated and potent product being now available. 2. The treatment is introduced earlier than formerly. 3. Appreciating more and more the efficiency and harmlessness of the remedy, the physician uses larger doses and, where repetition is found necessary, waits a much shorter time.

Speaking of improvements made in the remedy he observed what is now so generally conceded, namely, that the greatest improvement yet made has been in producing a much more concentrated product. The antitoxins now available to the profession vary in potency from 50 to 500 immunizing units to each cubic centimeter of serum. The major portion of the products range in strength from 100 to 200 units per cubic centimeter of serum. The most concentrated antitoxin in common use is that known to the profession as "Extra Potent" (Mulford's), containing 500 units to each cubic centimeter.

The advantages of concentration were then minutely pointed out. Such serums disturb the tissues but little because of the small quantity to be injected, they are quickly absorbed and always produce earlier results. The advantages of concentration in producing earlier and better results were compared with those of tinctures and fluid extracts over the infusions of the older pharmacopeias. Only such products are recognized in the recommendations of the American Pediatric Society.

In the early days of antitoxin treatment it was proper to speak of obtaining results from a curative dose in from twenty-four to forty-eight hours. At present effects are expected in from twelve to eighteen hours, and are secured early in proportion to the degree of concentration of the antitoxin employed. The general employment of concentrated antitoxins of uniform quality will insure increasing success in the treatment of diphtheria and membranous croup.

The importance of care in the selection of antitoxin was then pointed out and the fact cited that examinations made by the Pennsylvania and Massachusetts State Boards of Health and the *Medical News* all show the presence in the market of serums of weak, variable and uncertain quality. The importance of eliminating such either by proper State authorities or by the careful practitioner was emphasized as essential, if the fullest powers of the remedy are to be secured.

Reverting to the hostility which some physicians still show toward the treatment, the doctor observed that the principles upon which the remedy is obtained and employed are now so firmly established both experimentally and clinically, that there would seem to be no reason why the entire profession should not accept them.

The importance of instructing the laity to report all cases of throat ailment early was emphasized and the reasons for the superior results from early antitoxin treatment pointed out.

Antitoxin must be employed as any other antidote in order to obtain the greatest possible results. At present no rule for dosage can be laid down except that the dose should always be graded to the severity of the case and that no dose of less than 1,000 units should be considered a curative dose. The importance of the initial dose as compared with any other that may be required in an individual case was clearly pointed out. Experience has explicitly shown that in severe cases one dose of 2,000 units will result in a larger percentage of cures than will three or four doses of 1,000 units each, given at intervals of from twelve to thirty-six hours. No maximum limit of dose has yet been ascertained and probably does not exist. Reports from large users of antitoxin show that at present curative doses ranging from 1,000 to 6,000 units are employed with excellent results.

The further increase in the rate of recovery from diphtheria will depend upon:

1. The production and use of only concentrated antitoxin.
2. The elimination from our market of all serums of variable, weak and uncertain quality, no serum of less than 200 units per cubit centimeter being accepted.
3. The general employment of approved serum, according to the best teaching of the profession.
4. By treating each case of the disease as speedily as possible, aiming to neutralize the abso[illegible] [illegible] [illegible]xins and arrest the disease.
5. By treating the [illegible] sease in th[illegible] way, namely, by [illegible]
6. By guarding [illegible] due [illegible] psychic and physica

7. By endeavoring, as physician, to maintain a reliable mental equipoise.

A vote of thanks was passed for the hospitality shown the members by the city authorities, the entertainments by the ladies and the pleasant entertainments by the Committee of Arrangements, etc. The officers elect were then installed.

On Saturday those who had not left the city were taken down the Delaware River to visit the State quarantine station at Marcus Hook, where they were provided with a luncheon, thence to Reedy Island, where the disinfecting plant of the Marine Hospital Service was exhibited and explained, returning to New Castle, Del., where a special train was in waiting by courtesy of the Pennsylvania Railroad, which carried the party back to the City.

NEW INSTRUMENTS.

EXCISION OF THE TONSILS FOR HYPERTROPHY WITH RECURRING TONSILLITIS.

A MODIFIED INSTRUMENT AND THE TECHNIQUE OF ITS USE.

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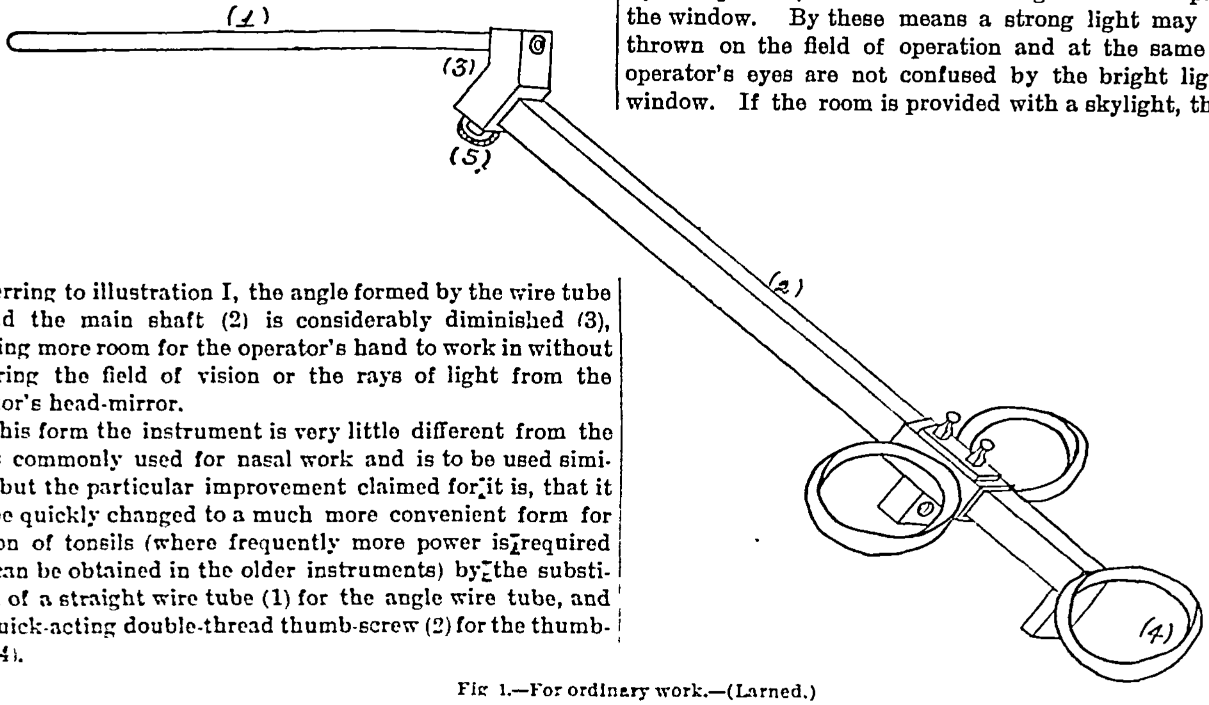
Excision of the tonsils in cases of hypertrophy, with frequently recurring attacks of tonsillitis, promises more for the patient's immediate relief, and affords a more certain cure, than partially removing the glands; and to facilitate this procedure I have devised a modification of the Ingals' or Bosworth cold wire snare, which has proven so satisfactory as to merit a description.



Referring to illustration I, the angle formed by the wire tube (1) and the main shaft (2) is considerably diminished (3), affording more room for the operator's hand to work in without obscuring the field of vision or the rays of light from the operator's head-mirror.

In this form the instrument is very little different from the snares commonly used for nasal work and is to be used similarly, but the particular improvement claimed for it is, that it may be quickly changed to a much more convenient form for excision of tonsils (where frequently more power is required than can be obtained in the older instruments) by the substitution of a straight wire tube (1) for the angle wire tube, and of a quick-acting double-thread thumb-screw (2) for the thumb-ring (4).

Fig 1.—For ordinary work.—(Larned.)

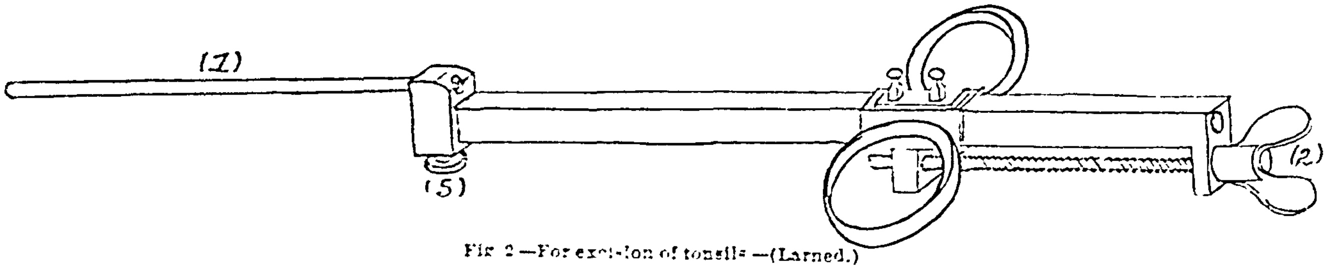


Fig 2.—For excision of tonsils.—(Larned.)

That this may be done, the wire tubes have been made interchangeable and held in place by a small set screw (5) and a place provided for the thumb ring to be screwed into the shaft. This changes the appearance of the instrument completely, as will be seen from illustration II.

The points embodied in this form of snare to which I wish to call especial attention are: *a*, The whole tensile strength of the wire is utilized instead of losing a good percentage of it by the friction at the proximal opening of the wire tube; *b*, the thumb-screw, with its double thread, acts quicker, easier and with more power than the milled nut used on the Ingals' snare. With this instrument complete excision of the tonsils can be made in only a little longer time than when using the ordinary tonsillotome.

The operation which this instrument was designed to facilitate is as follows: The patient complaining of attacks of quinsy each time a cold is contracted, is found upon examination to have hypertrophied tonsils.

This is a case where the ordinary partial removal would prove inadequate, if not actually adding to the patient's susceptibility to the recurring attacks of tonsillitis; nor would cauterization of the tonsillar crypts be of so much benefit. Frequently in these cases the tonsils are covered by the anterior pillars of the fauces and possibly this fact explains the frequent failure of tonsillotomy to permanently relieve the patient.

It is highly important that the field of operation be properly illuminated, and care be taken to select a room brightly lighted by a large window or a skylight, in which to conduct the operation. The patient is placed on a table parallel to and in front of the window. Back of the table a good-sized common mirror is placed, or held by an assistant, in such a manner that the light from the window is reflected to the head-mirror worn by the operator, who should be sitting between the patient and the window. By these means a strong light may be easily thrown on the field of operation and at the same time the operator's eyes are not confused by the bright light of the window. If the room is provided with a skylight, the light is reflected in the same manner, by holding the large mirror at the necessary angle to reflect the rays from the skylight to the operator's head-mirror.

If neither window nor skylight is available, a common "bull's eye" lantern, or a bicycle lamp, can be made to answer very well, if a regular laryngoscope is not at hand.

The operation should always be conducted with the patient thoroughly under the influence of a general anesthetic, chloroform being preferred for obvious reasons.

The posture of the patient is very important. After the patient is thoroughly anesthetized, a Waxham gag should be used to keep the jaws well apart, and held by the anesthetizer; he is then turned upon his abdomen, the face projecting over the side edge of the table (not the end), about half way, the head and uppermost arm being held by an assistant.

If, as is usually the case, the tonsil is more or less covered by the anterior pillar of the fauces, it must be separated from its covering by passing a blunt hook between it and the pillar.

The undermost tonsil is now seized with a forceps, preferably one made for this purpose, or a bullet forceps, or even ordinary hemostatic forceps, and the wire loop of the *ecraseur* passed over the locked handles of the forceps, being careful to have it encircle the gland completely; then steadily turning the thumb-screw will completely remove the tonsil, frequently without the loss of a drop of blood.

Turning the patient with his face to the other side of the table and then turning the table so that the patient faces the operator again, the remaining gland, which is now undermost, is quickly removed.

The entire operation can be carefully done in from ten to fifteen minutes, not counting the time used in anesthetizing the patient. There is no danger from hemorrhage and the tonsillitis can not recur.

The after-treatment should consist of gargling once an hour, except during sleep, for two or three days following the operation, with rather warm water containing five drops each of carbolic acid and oil of gaultheria to the ounce.

A careful observation of the many little points of technique in this description makes the operation neat and satisfactory to the patient's friends and the operator.

The snare has comparatively few parts and may be thoroughly sterilized by boiling. The instrument and sketches are the product of my leisure moments, but any instrument maker can manufacture the snare by reference to the drawings.

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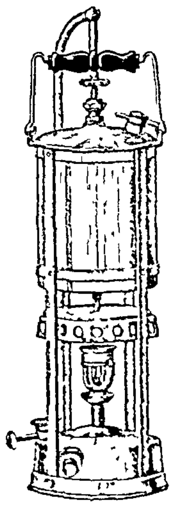
APARTMENT DISINFECTION.

The value of formic aldehyde gas in disinfecting is now generally recognized, but there have been many difficulties attending its efficient application. The volume used must be amply large and liberated with sufficient rapidity to overcome all the disadvantages. Dry heated gas is of highest value because it is most penetrating and, having a specific gravity equal to that of atmospheric air, mixes freely with air, thus producing it effects wherever air can penetrate.



In an effort to secure the best effects the following simpl apparatus (shown in the illustration) has been devised. I consists of a Swiss heating lamp beneath a reservoir for com mercial formaldehyde. Between these is a copper coil open ing into the receiver and ending in a short gum hose, at the dis tal end of which is a thin feeding-tube. The opening from th reservoir into the tube is protected by a valve. When the tub is red-hot, the valve is opened to admit a small stream of solu tion of formaldehyde. This is instantly vaporized aud the lib erated gas and vapor intensely heated as it passes through th coil. The gas is not liberated under pressure, hence there ca be no danger from inflammation or explosion. By means o the feeding-tube, an apartment is filled with gas through a key hole or other suitable opening.

The apparatus is always on the outside of the apartment be ing disinfected, and is capable of filling an ordinary room with in half an hour, so that one operator can easily disinfect a many as two dozen rooms per day, if not too remote one fro the other. The apparatus can be obtained of H. K. Mulford Co., Philadelphia.

SELECTIONS.

The "Carlsbad Springs" of the United States of North Americ — . . . The United States excels all other countries of th globe in the number and varying character of its minera springs. . . . In the Thirty second bulletin of the United States Geological Survey (1886) there is an elaborate, and a far as possible, exhaustive report, prepared by Albert C. Peale, M.D., in which there are mentioned 2,822 localities, containing 8,822 distinct springs. Of the latter but 634 have been quantitatively analyzed, and 153 tested simply for the nature of thei ingredients (qualitatively analyzed). Of these, 223 were being used commercially in 1896, 17 having been added to this number in 1890, which is the date of the last general report on th subject.

The figures as above given, incomplete as they are, demonstrate that while the number of springs which have been analyzed is less than a quarter of those of Europe, the sum total of those in the United States largely outnumbers those of that continent, as enumerated by Dr. Friedrich Raspe in his "Heilquellen Analysen." This author gives between 2,800 and 2,900 analyses of as many different springs situated in various parts of the continent of Europe. This great disparity is obviously due to the older civilization of Europe, and the greater facility and cheapness with which analyses are obtained there. Among the springs of our own country, with whose composition we are acquainted, and which, in spite of our youth, have been fully tested as to their intrinsic qualities as health restorers, there are a great many which may fearlessly take up the gauntlet and challenge the most celebrated health resorts of the Old World as to their value and efficacy in this direction. If Americans prefer European spas to the springs of their own land, it is doubtless due to their desire to travel "over the sea," the benefits of a voyage, or to lack of acquaintance with the resources of our country.

Among the oldest and most celebrated mineral springs and health resorts of Europe Carlsbad claims a prominent place, a claim readily granted by balneologic authors, as its springs have enjoyed for centuries a deservedly high reputation as a "resort for invalids and not for pleasure." . . . The hot waters here issue forth from a subterranean basin whose nature and contents have been plainly elucidated by Berzelius, who demonstrated "that the incrustations produced by the decomposi[illegible] n contact with [illegible] phere has formed a [illegible] the wate[illegible] themselves to the surface, at a temperature higher or lower according to the distance they had to travel beneath the shell before finding exit." There are quite a number of springs differing from each other mainly in the temperature at which they emerge from the earth, the range being from 115 to 162 degrees, with but slight variation in the nature or quantity of their solid contents. It will be sufficient, therefore, to mention the analysis of the most prominent, the "Sprudel," one gallon (58,329 grains) of which contains 326 grains of solid ingredients as follow: Calcium carbonate, 18.012; ferrous carbonate, .205: lithium carbonate, .152; magnesium carbonate, 10.404; manganous carbonate, .045; sodium carbonate, 77.003; strontium carbonate, .053; sodium phosphate, .028; potassium sulphate, 8.446; sodium sulphate, 146.558; sodium bromid, .015; sodium chlorid, 60.610; sodium iodid, .001; calcium fluorid, .186; alumina, .129; silica, 4.385. Total, 326.232 grs.

There are no less than eight known mineral springs in the United States for which the term "Carlsbad" is chosen to at once demonstrate their superior efficiency. . . .

"*America's Carlsbad,*" *the Bowden Lithia Springs*, are situated among the granite hills of Northern Georgia, four miles west of Atlanta, at an altitude of 1,200 feet above the sea, with a mild and dry climate, whose temperature "rarely reaches 90 degrees in summer or goes below 40 degrees in winter." There are several springs on the grounds, which are encased, and used only partly for drinking purposes. The rest of their waters are pumped into a reservoir, from which the bath-house is supplied. "For the company has secured a competent physician, who is familiar with Hot Springs, Ark., to introduce the famous Hot Springs system of bathing at Lithia Springs." There are other arrangements for the comfort and benefit of the guests. A great stress is laid upon the presence of lithia in the water, and on this account it is most strenuously recommended as the water which "has been proven to be nature's remedy for rheumatism, bladder and kidney diseases." . . . A United States gallon of the Bowden Springs water contains 138 grains of solid ingredients, as follow: Calcium bicarbonate, 14.372; ferrous bicarbonate, .179; lithium bicarbonate, 3.706; magnesium bicarbonate, 2.395; aluminum sulphate, .442; calcium sulphate, 10.127; potassium sulphate, 1.221; sodium sulphate, .693; strontium sulphate, 1.013; sodium chlorid, 101.482; magnesium chlorid, 1.442; silica, 1.052. It is plainly observed that chlorid of sodium is the predominating substance in this analysis, and a water holding as small an amount of alkalies among its solid ingredients can not be classified with an "alkaline-saline purgative water" like Carlsbad; it is a *saline water*. It appears now that neither the constituents of the springs nor the temperature of their waters bear any resemblance to the springs whose title has been assumed, but as it can not be presumed that the assumption has been wanton and without any cause, it may be surmised that the therapeutic effects from both have been such as to justify the Bowden Springs taking to themselves the name of the older, renowned watering-place.

The "*West Baden Mineral Springs*, the 'Carlsbad' of America" . . . are located on a tract of land nearly 700 acres in extent, where they are "surrounded by a series of majestic hills, under whose beautiful groves of noble forest trees the walks and grounds are sheltered." There are seven springs announced, which yield from 30 to 120 gallons per minute, and "this quantity is not perceptibly increased or diminished during the longest spells of wet or dry weather." It has a uniform temperature of 53 degrees F. during summer and winter, and "the quantity and temperature being uniform under all circumstances, gives a confidence, which experience in its use has verified, of its uniform strength and efficacy." . . . Although there are seven springs mentioned, the analyses of but four have been published, Nos. 1, 3, 5 and 7, of which the latter two have the largest amount of solid ingredients, 351 and 372 grains in one gallon, respectively. No 1 contains about 283 grains of solid matter. Below you find the analysis, by E. T. Cox, State Geologist, of No. 7, the largest spring in the valley. It contains, in one United States gallon, the following substances in grains: Calcium carbonate, 31.487; ferrous carbonate, 2.915; magnesium carbonate, 32.784; potassium carbonate, .655; sodium carbonate, 9.687; aluminum sulphate, 2.573; calcium sulphate, 86.011; magnesium sulphate, 13.798; potassium sulphate, .843; sodium sulphate, 28.857; calcium chlorid, 7.851; magnesium chlorid, 13.102; sodium chlorid, [illegible]; total, 371.84 grs. The gaseous contents in one gallon, in cubic inches: Carbonic acid, [illegible]; nitric acid, 18.274; sulphuric acid, 4.205; oxygen, 6.147; sulphur. hydrogen, 9.987. According to this evidence, the water must be classed among the calcic waters with alkaline-saline properties, and should therefore be considered favorably in its comparison with Carlsbad water.

The "*American Carlsbad Springs*" are located at Nashville, Ill., . . . in altitude about 100 feet above St. Louis and 500 feet above the level of the sea. These so-called springs are actually artesian wells, which "after being bored yielded saline water in considerable abundance to warrant their commercial use." . . The temperature of the water is 65 degrees F. It has been analyzed by Dr. Chas. Ludeking of St. Louis and W. F. Hillebrand of the United States Geological Survey, and contains in one United States gallon 260 grains of the following mineral substances: Sodium chlorid, 10.0; sodium carbonate, 27.4; calcium sulphate, 65.8; magnesium sulphate, 103.7 sodium sulphate, 53.0. This analysis places the water in the class of purgative waters, allied to the Carlsbad by its sodium salts. . . .

"*The Colorado Carlsbad Mineral Water Springs*" are located four miles east of Barr, a station on the B. & M. R.R., eighteen miles from Denver. . . . Two analyses have been made of the water, which differ from each other by about 5 per cent., and also in the arrangement of the probable constituents; one is by Prof. S. A. Lattimore of Rochester, N.Y., and the other by Prof. Karl Langenbeck of Cincinnati. S. A. Lattimore found in one United States gallon, 111.2 grains: Calcium carbonate, 2.144 grains; calcium sulphate, 26.429 grains; magnesium sulphate, 10.764 grains; sodium sulphate, 61.108 grains; sodium chlorid, 10.734 grains. Karl Langenbeck found in one United States gallon, 116.8 grains: Calcium carbonate, 18.657 grains; magnesium carbonate, 3.393 grains; sodium carbonate, 2.318 grains; sodium sulphate, 82.984 grains; sodium chlorid, 9.476 grains. Traces of substances can not be taken into consideration.

Both of the analysts have accompanied their reports with statements of the therapeutic value of the water, and while Professor Lattimore satisfies himself with declaring that it "bears in its composition a striking resemblance to the well-known Carlsbad water of Bohemia," Professor Langenbeck is more enthusiastic and positive in calling it "a water exactly of the Carlsbad and Franzensbrunnen type, although about one-third the strength of these." In their comparison of the Colorado spring they have neglected entirely one and the most important factors, to-wit: the temperature.

"*Hot Springs, S. D., in the famous Black Hills.*"—Its principal ingredients are the sulphates of calcium, sodium and potassium, together 65 grains, while the balance is divided among some other calcium and magnesium salts.

The "*Las Vegas Hot Springs*" are situated about six miles from the old town of Las Vegas, N. M., at an altitude of 6,767 feet, where "some forty springs bubble out of the hillside, varying in temperature from ice cold to boiling hot, but most of them ranging from 110 to 144 degrees F." The analyses of some twenty odd of these springs were made as early as January, 1882, when the water was collected and the temperatures taken by Prof. J. T. Lovewell, Washburn College, Topeka, Kan. He determined the carbonates of calcium and sodium, sodium sulphate, sodium chlorid and silicic acid, and mentions small quantities of magnesium and potassium and traces of lithium. Like in other localities where a number of hot springs are found to issue, the individual springs differ mainly in their temperature, but not very much in their solid constituents, which in this case, vary a fraction of a grain only in 10,000 parts, while the sum total of each of the twenty odd springs as mentioned above amounts to an average of 33 grains in a United States gallon.

A small, neat pamphlet entitled "The Land of Sunshine" mentions the analysis of one spring made by Walter S. Haines, M.D., Professor of Chemistry, Rush Medical College, in 1895, which is here selected as a sample, because it exhibits more details of the solid ingredients, and allows a more easy comparison with other known analyses. The following are the solid contents of one gallon in grains: Calcium carbonate, .89 grains; magnesium carbonate, .15; potassium carbonate, .28; sodium carbonate, 8.38; sodium sulphate, 3.35; sodium chlorid, 14.68; silica, 3.50; alumina, .10; volatile and organic matter, .32. Total, 31.65 grains. In the remarks which accompany his report, Dr. Haines states "that in many respects the springs resemble in chemic composition the waters of the famous ones of Teplitz and Carlsbad," which is correct, when we take into consideration only the relative proportion of the ingredients to each other, but when we compare the quantities of solids of the two different localities, we find that the Carlsbad springs contain about ten *times* as much solid matter as the Las Vegas springs. Otherwise there is really a great resemblance between the analyses of the two waters, and in the light of the recently advocated doctrine of flooding and washing out the system, the Las Vegas as ten times the weaker might be taken for ten times the superior. While the springs are surely the principal attraction of Las Vegas, there are other prominent features which ought to make it a decidedly delightful health resort. Its high elevation, its dry and uniform climate and its situation on a large tract of land which is surrounded by high hills that form almost a complete circle and protect the valley against the cold north winds, and especially the sand storms, the plague of these regions. The mean annual temperature is 59.07 degrees F.; during the summer it rarely rises above 90 degrees F. The rainfall is less than one inch during the same time, and about twelve inches during the whole year with an average number of 326 sunny days. The nights are always cool and a blanket comfortable even in summer. The Hot Springs of Arkansas also aspire to be classed among the competitors of Carlsbad. . . They are situated in 34 degrees 31 minutes N. latitude and 92 degrees 31 minutes W. longitude, at an elevation of 600 feet above the Gulf of Mexico. The climate is clear and beautiful, while the temperature rarely reaches an extreme in either direction, to render it uncomfortable. The sun passes down behind the west mountain early in the evening, giving a delightful long twilight and always insuring cool nights in summer. Its annual mean temperature is 76.67 degrees with lowest mean in January, 55.32 degrees, and highest in July, 95.48 degrees F. There are in all seventy-three springs which are discharged at a temperature from 77 to 157 degrees F. All of them have been neatly encased and their waters collected in one large reservoir, from which the hotels and the bath-houses are supplied with a daily output of 840,000 gallons. The water like that of many thermal springs carries in solution but a small quantity of solid ingredients. Prof. E. H. Larkin, in 1856, found eight and one-half grains to a gallon of water, which is still maintained as correct. He determined the proportion of its constituents, of which lime, silica and carbonic acid formed over 75 per cent. in almost equal quantities, the balance being alumina, iron, magnesia, soda, potash, chlorin and sulphuric acid to the amount of 15 per cent., and water and organic matter 10 per cent. It is obvious that if the quantity of solid constituents would decide the efficiency of a thermal spring, Hot Springs could not come into competition with Carlsbad and its 323 grains of solids in a gallon or about forty times the quantity of mineral ingredients. In all thermal waters, however, the natural high temperature is of the foremost importance, and should therefore be taken first into consideration. Thousands of sufferers stake their faith on Hot Springs every year, and have been rewarded for their confidence by being restored to health and activity. And it should always be remembered that if the high temperature be assisted by an almost absolutely pure water, its cleansing effect, whether it be employed for external or internal purposes, would be of the most intense quality. And if the dispensation of other medicines should be decided on, a purer menstruum could not be selected for their administration and even an artificial Carlsbad easily be prepared by the addition of the requisite substances. There is no doubt that the Hot Springs of Arkansas have the right to call themselves the "Carlsbad of America." *The Paraiso Hot Springs* are situated in California, 150 miles south of San Francisco, at an elevation of about 1,200 feet above the level of the sea, and nearly 1,000 feet above the valley. The temperature of the water is 118 degrees F., and the chief of its ingredients is sodium sulphate, although in decidedly less quantity than it occurs in the Carlsbad springs. However, a comparison of the analyses of the two springs makes it plain that there is a great similarity in the proportions of the active elements, and, therefore, we shall not antagonize the opinion of W. Anderson, M.D.: "This water is found to be very similar to the noted Carlsbad of Austria." According to his careful chemic analysis the water contains 61.45 grains in one U. S. gallon of the following mineral ingredients: Calcium carbonate, 1.30 grains; ferrous carbonate, .89; Magnesium, carbonate, .75; sodium carbonate, 5.06; calcium sulphate, 6.45; magnesium sulphate, 1.10; potassium sulphate, a trace; sodium sulphate 34.60; sodium chlorid, 3.37; potassium chlorid, .32; aluminum chlorid, .56; silica chlorid, 2.90; organic matter, 4.15. Total solids. 61.45.—Abstract of a paper by Enno Sander, M.D., in the *Medical Mirror.*

How We Feel When We Die.—In the *Review of Reviews* for September, 1892, is to be found an article bearing upon the above rather startling title, which is thus introduced to the readers of the magazine by its editor: "The July number of the 'Proceedings of the Society of Psychical Research' contains a paper of surpassing interest by Mr. T. W. H. Myers, . . . As it is appointed to all men to die, and as in the whole range of human literature there are hardly any authentic narratives as to how a man feels at the moment of death, the evidence in this paper is extremely interesting. Of the two narratives Mr. Myers gives us, the first is the most remarkable, although they are both exceedingly wonderful. The first was contributed by Dr. Wiltse of the *St. Louis Medical and Surgical Journal.* Dr. Wiltse is the authority for the statements which follow. . . . The second story is of a Huguenot minister, Bertrand by name. It is not so recent, but it is quite as remarkable in its way." Then follow the stories, which I shall give as briefly as possible, but verbatim. To begin with Dr. Wiltse's narrative: Dr. Wiltse "appeared to come to the moment of death in the last stage of typhus fever." He thus describes his experience: "I said to myself, 'I have died as men term death; I am about to get out of the body,' and I watched the interesting process of the separation of soul and body. By some power apparently not my own, the ego was rocked to and fro laterally, by which process its connection with the tissues was broken up. After a little time the lateral motion ceased and along the soles of the feet I felt and heard, as it seemed the snapping of innumerable small cords, when this was accomplished I began slowly to retreat from the feet toward the head. I remember saying to myself, 'now there is no life beyond the hips'; then, 'I am all in the head now and shall soon be free.' As I emerged from the head I distinctly recollect how I appeared to myself, something like a jelly-fish as regards form and color. I floated up and down like a soap bubble, until I broke loose from the body and fell lightly to the floor, where I slowly arose and expanded into the full stature of man. I seemed to be translucent and of a bluish color; as I neared the door I found myself clothed. I examined the fabric and judged it to be some kind of Scotch material, not handsome, I thought, but neat and good enough. . . . I discovered that a cord like the thread of a spider's web ran from my shoulders back to my old body, and was attached to it at the base of the neck. I stood and gazed at the couch I had just left and saw my own dead body. I noticed two women kneeling be my side, but had no conception of individuality; wife, sister or friend were as one to me. I could distinguish sex, but nothing further." He left the house and went out into the street, then he rose into the air, "upheld by a pair of hands," till he arrived at a narrow roadway, along which he walked for a while. At last he came to three great rocks barring the way, "and a voice spoke to him out of a cloud: 'Once you pass them you can no more return to the body.'" He desired to pass, but was stopped. He "became unconscious again, and when he awoke he was lying on his bed. He awoke to consciousness and soon recovered."

So much for the first story, now for the second. Pastor Bertrand was climbing a mountain with a party of students; feeling tired, he lay down to rest while the others proceeded, and was overtaken by "the sleep of the snow." He felt himself as if struck by apoplexy. His head was perfectly clear, but his body was powerless. He tells his story thus: "A kind of prayer was sent up, and then I resolved to study quietly the progress of death. . . . The sensation was not painful, but at last my head became unbearably cold, and it seemed to me that concave pincers squeezed my heart so as to extract my life. I never felt such pain, but it lasted only a minute and my life went out. 'Well,' thought I, 'I am what they call a dead man, and here I am, a captive balloon, attached to the earth by a kind of elastic string, and going up, and always up.' . . . When my companions return they will say, 'The Professor's dead!' They do not know I never was as alive as I am! The proof is, I see them now; the guide is stealing a leg of my chicken. 'Go on, old fellow, eat the whole if you choose, for I hope my corpse will never eat again! Hello, there is my wife going to Lucerne. Well, wife, good-bye!' I confess I did not call *dear* the one who has always been *very dear* to me. I felt neither regret nor joy at leaving her. My only regret was that I could not cut the string Suddenly a shock stopped my ascension, I felt [illegible] ing the balloon down. My grief was [illegible] ched [illegible] I had a last hope, the [illegible] Suddenly I uttered the awful roar of a wild beast; the corpse swallowed the balloon and Bertrand was Bertrand again!" In other words, the exertions of his friends were successful in resuscitating him.

So much for the stories themselves, now for the comments of the *Review of Reviews:* "Both of these stories," it tells us, "agree in the consciousness of the apparently dead person that he exists apart from the body with which he was connected by a very fine line, the severance of which would complete the process of dying. . . . The moral of both seems to be that what we call dying is no more death than the changing of a suit of clothes is dying. . . . The ugly part of both stories is the comparative indifference with which the liberated soul regarded those whom it loved on earth. This, however, is so contrary both to experience and to reason, that it may be regarded as exceptional and due solely to the novelty of the situation, which in these cases had no time to pass before the process of dying was rudely interrupted."

Now I would ask: What "experience" is here meant? Not the ordinary experience of the living, surely, for that is quite beside the mark? And if, as the *Review of Reviews* tells us, the significance and importance of these narratives lie in their being almost the *only* revelations we have of the condition of the soul *after* leaving the body, it seems hardly consistent to accept the statements of the narrators as authoritative on some points, yet attempt to explain them away on others. Why, for example, should we be willing to believe on Dr. Wiltse's authority that the soul as it first emerges from the brain is "of the color and consistency of a jelly-fish," yet refuse to belive, on the same authority, that it no longer loves or even recognizes those dear to it in life? more especially, as this loss of natural affection is testified to by both of our witnesses. Indeed, this fact and the existence of some kind of elastic connecting cord between the almost liberated soul and its cast off body, are the only two points in which their experiences are identical. As regards the character of these revelations, they are as singularly devoid of dignity and weight as the "revelations" vouchsafed by so-called "spirits" at a "séance." The idea of a "disembodied soul" keeping watch upon a thievish guide in his appropriation of a chicken-leg certainly strikes one with a sense of incongruity, while the conception of such a soul habited in "a suit of some Scotch material" is so grotesque that the gruesomeness of the situation is altogether lost sight of in its absurdity! Indeed, there is a purely mundane tone about these experiences throughout, which stamps them as being emphatically "of the earth earthy."

The absolute accuracy of the stories, so far as they relate what the narrators believe to be their actual experiences, I shall not call in question; taking it for granted that they have been thoroughly sifted and authenticated before being presented as "facts" to the readers of the *Review of Reviews*. [illegible] must, however, express my surprise at the importance attached to them by that periodical. To me, they appear to belong precisely to the same category as those wonderful experiences related by patients who have recovered from a cataleptic trance, or to the stories told by drowning persons. They [illegible] undoubtedly very curious and exceedingly interesting, as, from the nature of the case, evidence of the sort must always be most difficult to secure, for even in those cases where disease has left the mind unimpaired, death is in most instances preceded by unconsciousness. Were it possible to collect sufficient data on the subject, the physiologist might be enabled to trace the underlying law governing the physical phenomena of death, and discover that certain differences of sensation mark the approach of death in different forms. Such knowledge, from a scientific point of view, would of course be most interesting. Had the article in question borne the title: "How we feel when we come as near death as we can come *without* dying," it would exactly have described the subject-matter; but its actual title "How we feel *when* we die," is, I maintain, a misnomer. Still, as I have said, these experiences are of value (always supposing them to be well-authenticated facts), but I utterly fail to see their importance as bearing upon the elucidation of the problem of "death." For death, as I understand it, is the absolute extinction of animal life; the utter and complete severance of the bond between the material and the immaterial parts of the nature. So long as one spark of vitality remains, so long as the potentiality of life exists, it is not death, but only a more or less near approach *to* death. And the nearest approach to death is not death. The *consummation* of the act of dying *alone* is death! Hence it is that, so far as penetrating the mystery of death is concerned, these "experiences," with all their interest, leave us precisely where they find us—profoundly in the dark!—Abstract from *Review of Reviews*, by H. E. Burr.

PRACTICAL NOTES.

Etiology of Catarrh of the Upper Air-passages.—A writer in a Russian exchange mentions the universality of this affection, and emphasizes the resulting evils, especially in the young. He ascribes it largely to the fact that the mucous membranes are not supplied with the moisture required to keep them in normal activity, as soon as the weather compels us to heat our houses. The air is heated to a point when it would hold considerable moisture normally, but the little moisture in the cold outer air is dried out of it by the time it reaches our nostrils indoors.—*St. Pet. Med. Woch.*, October 23.

The Milk Diet in Kidney Lesions.—Dr. Ajello (*Blätter für Klinische Hydro-Therapie*) as quoted by the *Philadelphia Medical and Surgical Reporter*, does not believe that the milk diet is best for kidney lesion patients, but that, on the contrary, a "mixed" diet answers a better purpose in general. In his twenty-one cases he noted an increase in the quantity of urine in nine that were kept on a milk diet and eleven on a mixed diet. The albumin decreased in five cases and increased (quite considerably in some) in sixteen cases kept on milk. The urates diminished in ten milk cases, a rather unfavorable phenomenon. The phosphates diminished in seven kept on milk and thirteen on mixed diet.

The Action of X-Rays on Micro-organisms.—Bonomo and Gros have made researches in the military hospitals at Rome on this subject. They subjected cultures of various micro-organisms (B. subtilis, B. tuberculosis, B. anthracis and others) up to the third generation to the influence of the X-rays, applied vertically, for a period of about three hours each day. Some retardation or diminution of vitality, vegetative and pathogenic, was observed in every case; but the change was for the most part very slight except in the case of B. anthracis. With this microbe a well-marked diminution in motor activity, modification of chromogenic power and loss of spore-producing property was observed. With this, too, a complete attenuation of pathogenic effects was observed, so that the authors feel it might be possible through successful cultures exposed to the X-rays to make the B. anthracis innocuous. No such marked results were obtained with the other micro-organisms under the influence of the same rays. In every case such effects as were observed were more noticeable in the later than in the earlier cultures.—*British Medical Journal.*

A Pipe-stem Impacted in a Bronchus for Three Months.—The tolerance of the bronchi for large foreign bodies is well exemplified by the report by Francis (*British Medical Journal*, Sept. 25, 1897, p. 809) of a case in which a portion of pipe stem was impacted in the left bronchus for a space of three months. The patient was an army pensioner, who related that about a month before coming under observation, while standing quietly on the street smoking a briar pipe with a vulcanite stem, he was seized with a fainting fit and fell. On being raised from the ground by bystanders and recovering consciousness, he looked about for his pipe, but found that the shank was broken about an inch from the mouthpiece. The broken fragment could not be found and the man proceeded home, feeling little the worse for his accident. From this date he complained of pain more or less severe in the left breast with dyspnea on exertion and profuse mucopurulent expectoration. On examination there were heard a light systolic murmur and loud rhonchi all over the chest, which was hyperresonant. A belladonna plaster and a stimulating expectorating mixture were prescribed. A short time afterward, while carrying a heavy weight about a hundred yards in a stooping posture, the man suddenly felt something move inside his chest and following a fit of coughing the long lost pipe-shank dropped out of his mouth to the ground surrounded by a little coagulated blood and inspissated mucus, with immediate relief from the previous embarrassment of breathing. The piece of pipe-shank measured one and one-fourth by one-half inch, and must have been lodged low down in the left bronchus.

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SATURDAY, DECEMBER 18, 1897.

THE FREQUENCY OF DIABETES MELLITUS, AND ITS RELATION TO DISEASES OF THE PANCREAS.

There are a number of features in connection with the general frequency of diabetes mellitus, as well as with its occurrence in certain races and in certain classes that merit particular attention. Thus, for instance, it appears that the general frequency of this disease is steadily increasing, both in the United States and in the European countries, although the disease is as yet, at any rate, much less prevalent here than across the Atlantic.

The statistics of SAUNDBY[1] show that the mortality in the United States in 1870 was 2.1 to the one hundred thousand population; whereas in 1890 the death rate was 3.8 per hundred thousand. Now, these statistics show that diabetes in this country is gradually on the increase.

HARE,[2] in recently published statistics, also demonstrates that the frequency is on the increase. He points out that in thirty years, from 1850 to 1880, the mortality from diabetes in this country increased 150 per cent. in every hundred thousand deaths.

In Europe the mortality ranges between 5 and 9 to the hundred thousand. In the Island of Malta, where the mortality from diabetes is extraordinarily high, the census of 1891 showed a death rate of 13.1 to the hundred thousand. In Paris the death rate is gradually increasing during the last three or four decades, and in 1891 it reached 14 to the hundred thousand.

In the Johns Hopkins Hospital of Baltimore there have been treated, according to THOMAS B. FUTCHER,[3] in all sixty-nine cases of diabetes mellitus, in the ordinary acceptance of the term in the medical wards and the medical section of the dispensary during the last eight years. During these eight years 45,636 medical cases have passed through the wards and the out-patient department, so that the diabetic cases comprise only .15 per cent. of all the medical cases.

It is well known that some races are especially liable to diabetes. Hebrews are especially susceptible, one-fourth of FRERICHS's cases being of the Semitic race. It is rare in negroes and Africans, and the Mongolian races are rarely affected in their own countries. Chinese are comparatively exempt. In the colored races the disease is apparently rare; TYSON[4] has seen several cases, and of the sixty-nine cases of diabetes treated in the Johns Hopkins Hospital five were negroes.

The prevalent belief that persons living in the country are more exempt from diabetes than inhabitants of cities can not be traced back to any definite statistics; on the other hand, SAUNDBY[1] shows that for many of the counties of England this discrepancy does not exist.

The above statements, taken for the most part from FUTCHER's article, indicate that the distribution of diabetes is very unequal. The same is also observed with reference to its occurrence among the various classes of people; thus wealth and culture are said to increase the liability to diabetes ten-fold. Statistics for London and Berlin show that the number of cases in the upper ten thousand exceeds the number of cases in the lower hundred thousand inhabitants. The same occurs in India, where the disease is much more frequent in the educated upper class than in the ignorant lower class.

In recent years great interest has been created in the part played by the pancreas in the causation of diabetes. For more than a century, however, it has been recognized that lesions of the pancreas may cause diabetes. In 1788 CAWLEY[5] reported a case in which the pancreas was atrophic and contained calculi, but it was not until 1877 that LANCEREAUX[5] described a special form of diabetes under the name of *diabète pancréatique*, associated with lesions of the pancreas. He stated that this variety was characterized by suddeness of onset, unusual malignancy and rapidly progressing emaciation, and a special tendency toward tuberculosis of the lungs as a complication. BAUMEL.[5] in 1882, advanced the view that all the cases of diabetes were due to the absence of a diastatic pancreatic ferment in the intestine, and he was the first to claim that pancreatic disease was the regular cause of diabetes. These observations seemed to leave no lasting impression until the discovery by MINKOWSKI and VON MERING that permanent diabetes mellitus could be produced experimentally in animals by complete removal of the pancreas, and it is now generally recognized that diseases of the pancreas are responsible for a certain number of cases of diabetes. There are some who claim that all cases of diabetes are due to pancreatic disease, maintaining that where there are no structural lesions, gross or minute, then there exists a functional disturbance of the gland; but there are others who believe there is no association between diabetes and changes in the pancreas. HANSEMANN[6] analyzed the cases of diabetes which came to autopsy in the Berlin Pathological Institute during ten years, and the results follow:

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[1] Lectures on Renal and Urinary Diseases, 1896.

[2] Medical News, 1897.

[3] New York Medical Journal, Dec. 4, 1897.

[4] Practice of Medicine, 1896.

[5] Quoted by Futcher, loc. cit.

1. Diabetes without changes in the pancreas, eight cases.
2. Diabetes without any information regarding the pancreas, six cases.
3. Diabetes with pancreatic disease, forty cases.
4. Pancreatic disease without diabetes, nineteen cases.

Of the forty cases in which the pancreas was affected, thirty-six presented atrophy, three fibrous induration of the organ, and one was a case of cyst of the pancreas.

WILLIAMSON[7] has examined the pancreas in twenty-three consecutive cases of diabetes, and in only twelve was the pancreas normal. He also analyzed 100 cases of pancreatic lesions in diabetes, which he collected from the literature and found that in forty-eight it concerned essentially atrophic changes; in seventeen it concerned fatty degeneration; in seven, cystic transformation; in fourteen, chronic fibrous changes; in two, hemorrhagic pancreatitis; in three, suppurative pancreatitis; in eight, carcinoma of the pancreas, and in one, calculi were present.

In connection with this it is of interest to note that LEPINE[8] maintains that the pancreas produces an active glycolytic ferment, which enters the blood and chyle and destroys a large part of the sugar before it reaches the liver, and that this ferment is absent, or greatly reduced in animals whose pancreas has been extirpated. More abundant evidence, however, seems to be required, according to FUTCHER, before this view can be fully accepted.

THE POLITICAL RESPONSIBILITY OF THE PHYSICIAN.

On various occasions heretofore the JOURNAL has endeavored to impress upon the members of the medical profession the utility and need of their taking a more active part in the government of this country, both as regards National and municipal affairs. The subject is one, however, that is not exhaustible by one or a few editorial utterances, and it is one that in some one of its many aspects is always demanding consideration. While the secular and religious papers are continually demanding the co-operation of good citizens in political affairs to prevent their being controlled, as is too often the case, by the bad citizens, it is certainly not out of place for medical journals to call the attention of its readers from time to time to their responsibilities in this matter. This is the more justifiable and necessary from the fact that heretofore we have as a profession neglected our opportunities and sinned away our mercies, to use an old Scotch expression, far more than we can reasonably excuse ourselves for, and have suffered in consequence. Professional self-respect has not been preserved by this abstention from public affairs to any extent at all comparable to the damage it has received by the education of the public through our neglect, to consider all so-called professors of the healing art, quacks and charlatans of every kind, as equally deserving of popular favor and legal countenance with the educated and conscientious physician. Recent legislation and legal decisions in various parts of our country are witness to this fact.

The duty of our profession to itself has been already editorially pointed out in this journal, and is only reiterated here to keep up the interest in the reform that is needed. It has also been pointed out that we owe a duty to our fellows and that of all men the physician is his brother's keeper, and his responsibility as a citizen and voter is correspondingly heightened. As individuals we feel this responsibility, but as a collective body we are apt to be remiss and forgetful in this regard, and evils that we could prevent are allowed full play. The interest of a physician in good government is something more than that of merely a good citizen; he is himself a guardian of the public in their nearest and dearest relations, and as such he has it as his duty to do all in his power to protect his charge from all evil legislation or vicious maladministration of salutary laws. In the matter of direct sanitation alone, the value of medical knowledge in the forming and execution of the laws and municipal regulations, ought to be sufficiently evident to require no demonstration. A writer in a recent issue of a religious journal calls attention to the fact that the gradual reduction of the rate of mortality in New York City from 25.18 to 20 in the last three years saved 3,758 lives in 1895, 7,736 in 1896 and 9,920 in 1897, a total of 21,414 lives, due to better government and closer attention to sanitation. If such a saving of human life can occur in one case it can in others, and if it is to be brought about elsewhere, or generally, it will have to be through the co-operation of enlightened medical opinion acting on official ignorance and stupidity. So-called practical politicians are too generally ignorant and indifferent in regard to these matters, and the community as a whole can act intelligently only under medical supervision and advice. A sanitary issue is almost, if not altogether, an unknown thing in our politics, and when it occurs it is handled, as a rule, along party lines and with all the disadvantages that such a course involves. Our legislatures are made up of lawyers and professional politicians without other visible means of support, together with a sprinkling of farmers and others who, though well meaning and generally honest, are apt to be prejudiced and misled on all matters that are without the limited range of their knowledge. If there are any physicians they are few in number and, as a rule, have not the influence that they should exert, even in matters that fall directly within their professional sphere, and in regard to which they should have a predominant voice. In Congress. as regards this special point of view, matters are no better; there has been, since RUSH's time, no really eminent medical man amongst our National legislators—we have no VIRCHOW or VERGA in our Senate or House of Represenatives. In the French Chamber of Deputies, there have generally been a number of physicians, and while the leading parts that some of them have taken may not have always reflected the most credit upon them, in medical questions they have often combined, and we do not hear of their inactivity when unintelligent legislation on medical and sanitary matters is proposed. The debates on medical matters in the British Parliament are of enough interest to be reported in British medical journals, and legislation in these matters is not left uninfluenced by professional action and information.

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[6] Zeitschrift f. kl. Medizin, 1894.
[7] Med. Chronicle, May, 1897.
[8] Quoted by Futcher, loc. cit.

There is no reason why these conditions should not be attained in this country nor why, in our State legislatures especially, there should not be a working representation of the medical profession. who in all matters involving their special professional knowledge and the public health, should act together for the best interests of the community without regard to party lines Were this the case we might expect a beneficial reaction upon the profession itself; there would be less recognition of quackery and more appreciation of genuine scientific medicine on the part of politicians and the public, and with this a more satfactory status socially as well as politically. It would be a public benefit if we could have a few high-minded and able physicians to take part in National, State and municipal legislation in this country.

It is true that not every physician is fit to be a legislator and there are few probably that can afford it, and it is also true that some medical politicians have not been creditable representatives of their honorable profession. This, however, does not alter the facts we have stated, and further it does not at all affect the general question of the propriety of medical men recognizing their individual and collective responsibility as citizens, enlarged as it is by their special qualifications to judge and act in so many important matters affecting the public welfare.

MILITARY SURGEONS.

What's in a name?

This much: that the medical man of the military establishment has had his professional office limited in the popular mind to one, and that not the most important of his functions. As a "surgeon" he is supposed to lop off the limbs that the high intelligence directing the enemy's guns, and sometimes his own, has shattered, and, *ergo*, an amputating knife rather than a sword should be his distinctive badge of office; and *ergo*, again, a man whose badge is this has no fellowship in the military hierarchy.

The medical men of the military services have not acquiesced in this reasoning, but having been the under dogs in the fight, they have had to suffer and try to get strong, and the time has apparently come when they are strong enough to assert themselves and claim for their commissions the recognition and distinction merited by loyal service to the State from men of masterful acquirements in a profession requiring the highest order of ability—the very cornerstone of the military organization, without which the whole fabric would tumble to pieces.

The gun is useless without "the man behind the gun," and he is able and strong and intelligent as the military medical officer is empowered to select, domicile, feed, clothe and protect him from enemies within, as well as from those without, and when, rare event in his life. he may be disabled by hostile weapons, to repair and rehabilitate him.

The military surgeon is also military physician and especially military sanitarian. His forethought pervades the camp and ship, the regiment and fleet. Without him there can be no organized army and no disciplined navy. The military engineer may plan battles, the ordnance expert provide guns and ammunition, the steam engineer build mighty engines, and admirals and commodores, generals and colonels fulminate orders, but the blood and brawn and brains that are to fight the battles, operate the guns and animate the vessels are due to the professional prescience of the military medical officer, colleague and co-equal of the others.

The handsome volume of "Proceedings of the Seventh Annual Meeting of the Association of Military Surgeons of the United States," held at Columbus, Ohio, May 25–27, 1897, which has just been issued, demonstrates the *manifold functions of the military* medical officer. The papers contributed, without concert and on random topics, by officers of the Army, Navy and National Guard, from all parts of the country, have naturally fallen under certain heads, under which they have been appropriately grouped by the secretary-editor, Captain JAMES E. PILCHER of the United States Army, and these need only be enumerated to show the wi[illegible] c [illegible] medical c[illegible] province: naval [illegible] [illegible]gien[illegible] tary personal identification; clothing and accoutrements; military physical training; the proper type of the military medical officer; sanitary work among troops; transportation of the disabled; medical service in the field; the service of aid to the disabled; military surgery; military medicine; military medical problems, etc. The address of the President of the Association, Medical Director Gihon of the United States Navy, on "The Status of the Medical Officer in the Military and Naval Establishment," in terms lucid and unmistakable in intent, defines the place among military men to which these officers are entitled. By a happy coincidence the address in surgery at the sixty-fifth annual meeting of the British Medical Association, held at Montreal, Canada, September, 1897, by W. Mitchell Banks, M.D. Edin., on "The Surgeon of Old in War," in the words of the speaker, set forth "some of the most notable work done of old by a body of members of our profession, who have never received their due reward." After brief notices of Roman military and naval surgeons, of Ambroise Pare, Robert Clowes, Peter Lowe, John Woodall, Richard Wiseman, and Baron Larrey, of whom Napoleon wrote in his will made at St. Helena: "I bequeath to the Surgeon-in-Chief of the French Army, Larrey, 100,000 francs. He is the most virtuous man I have ever known." Dr. Banks referred to that enemy which assails fleets and armies, and against which only the medical officer is competent to lead and combat, "the pestilence more deadly than the sword," by which in the naval battles of the Seven Years' War as stated in the "Annual Register" for 1763, "it appeared there were but 1,512 sailors and marines killed, while 133,738 had died of disease or were missing." After narrating instances of conspicuous military courage on the battle-field in recent years by medical officers, who have been contemptuously designated "non-combatants," "brave civilians" and the like, Dr. Banks stated, "of the 118 wearers of the Victoria Cross, fourteen are surgeons, nearly 12 per cent. of the whole number and in the proportion of 9.5 per cent. of all the officers of the army." Despite all this, he concluded, "today Her Majesty's government can not induce candidates to come forward for the medical service of the Queen's army. And why? Because it has persistently treated the army medical department meanly and shabbily." Qualified medical graduates will not enter the British army, because the medical officer is not accorded the same status as to pay and precedence as officers of other corps. A similar reluctance to enter the medical department of our own Navy is indicated in the "Annual Report of the Acting Chief of the Bureau of Medicine and Surgery," just received, who states that there are "fifteen vacancies at the present time, nor does there appear to be any immediate prospect toward filling the corps."

It is not strange that civilians can not understand why, especially under a republican government, unfounded claims of inherent superiority of any one branch should operate to the extent of impairing the efficiency of the actual service. In fact, there is no tenable reason why there should be any lack of harmony in the composite organizations called the army and navy, in which each corps has well-defined equivalent duties, alike honorable and distinctive. The gist of Dr. Gihon's presidential address was a definition of the terms *grade, rank* and *title,* which indicates a seemingly practical basis of settlement of the vexed question of rank and precedence. "*Grade,*" he says, "is that something the law has conferred upon all commissioned officers, which serves to show each officer's place, position or status in a military organization." Grades are the steps, one above another, upon which the entire body of officers is grouped, irrespective of their special duties. *Rank* means simply seniority or precedence in the several grades, and depends solely upon the date of the officer's commission; thus one officer ranks another in his own grade. Grades are generic distinctions, and are practically the same all over the world. Rank is the relation of the individual officer to others of the same grade and naturally as well to those of other grades, so that in fact no two officers of the same service can have absolutely the same rank. Properly there is no name for rank, but custom has led to the identification of the name of the grade as rank. *Title,* the third of the terms used in the designation of officers, is the specific definition of their particular duties. Thus, surgeon-general in the army is the distinctive title by which an officer of the grade of brigadier general, who belongs to the medical department, is distinguished from brigadier generals of other departments. It is not desired nor would it be expedient, that specific corps titles should be abolished. Major Smith of the medical department does not wish to be confounded with Major Smith of the artillery, while he does wish it distinctly understood and admitted that he is as much a major in dignity, privilege and precedence as any other major. And herein lies the solution of the lamentable disputes which have estranged the staff, and it is, of course, the medical staff with which we have concern, and the line. Let the fact be distinctly understood that the military surgeon is not a mere make-believe soldier, an imitation officer, parading in borrowed plumes, seeking to hide his professional identity under distinctively military titles, nor that he is accorded by courtesy a quasi-status in military life to which in strict justice he has no legitimate claim. The honor and dignity of the profession of medicine require this and make it the duty of every physician in the United States to demand that the just recognition of the equivalent importance of military medicine, surgery and hygiene shall be made in the statutes, and this done, the Congress will be relieved of the importunities of those who charge on the one hand staff assumptions, and on the other line persecutions. When one or the other trenches upon statutory enactments, it is easy enough to punish the infraction. Physicians are law-abiding men, and it is certain that the military lawbreaker will find no more sympathy among his civil confrères than other offenders, but it will not do to assert that because a man is a "doctor," he and his field of work are not as honorable, as important, as responsible and as indispensable as those of other vocations inside or outside the military service. In our army, at least, if not in the British, the question is practically settled. In the rearrangement of the navy, it is hoped that the officers of the medical corps shall be placed on precisely the same footing as those of the army, in pay, privilege and precedence. If this be done, we predict there will be five applicants for every one of the fifteen vacancies which the chief of the medical bureau now laments.

PROFESSORS.

"I want a professor," cries the patient, and the ordinary every-day doctor who has no title must obey and call in consultation "Herr Professor." Of course, the patient does not know how professors are created; he does not know that any half dozen "scrubs" can start a medical school and dub themselves professors; he can have no knowledge of medical politics as they really are and therefore he insists on having a professor.

To the patient a professor means one who by years of study and experience has made himself so proficient in his special line that his fellow practitioners have deemed him worthy of appointment as a teacher and adviser. True, often a man has served a long apprenticeship as instructor, assistant, demonstrator, adjunct professor, etc., before he attains to the title of professor; but, too often, it is the man with the most "pull" who "gets there," the man who can obtain the best endowments for the college who is created professor over and above the faithful quiz-masters, privat-docents and clinical instructors.

About every large medical school is clustered a small army of assistants waiting for promotion, lobbying like ordinary politicians whenever a vacancy occurs, and as servile to those above them as a fourth-rate postmaster to his Senator.

What is there in the title of professor, that ma[illegible] so much to be desired?

It can not be altogether honor, since neith[illegible]dom nor great deeds are necessary to attain t[illegible] unworthy are as often made recipients of this [illegible] as the worthy. It is not the salary usually [illegible] with the office, since we know that many [illegible] go so far as to endow their own chairs. [illegible] others are at considerable outlay in keep[illegible] positions, and some have actually boug[illegible]fessorships. We fear that quite a num[illegible] about the colle[illegible] to compete for a professorship because indirectly there is money in it. A professor can command larger fees, because the layman thinks he has superior knowledge, and for the same reason those who can afford it prefer to visit the professors.

Certainly this can not apply to the teachers in such subjects as chemistry, pathology, anatomy and physiology, and most often there is some salary connected with these positions to compensate the incumbent. Indeed, in some schools the professors of so-called "practical" branches forego their own salaries for the sake of supporting these professorships. There was a time when medical colleges had only six or seven professors in their faculty; today the average is twenty-five. In one large Eastern city 7 per cent. of the medical profession have professorships in the colleges, and a great many more occupy positions as instructors and demonstrators.

But any one can become a professor of any subject providing he has the proper amount of influence. If no vacancy exists a new chair is created for his benefit. It does not matter whether he can teach or not; that is a minor consideration. All he needs to do is to compile a text-book, tell the students to buy it, and require daily recitations from this book. A book is very easily compiled; buy a few German and French books, translate them, or ask others to run over two or three late English and American books, get plenty of illustrations, change a word here and there and the book is complete. If the publisher own a medical journal, favorable reviews and plenty of advertising finishes the job, and the title of professor helps to sell the compound.

The publishers have not been slow to perceive this source of revenue, and by concentrating in one volume the products of many professors they produce a "text-book" which must be sold in many schools. No matter what the quality of the material, the profits [illegible] in this way, and the risk is nothing. for the [illegible] must buy this syndicate text-book nolens [illegible]

It is not always the men who compile books and [illegible] professorships who are the most learned or [illegible]ined physicians; and it is the great mistake of [illegible] medical profession that they put too much trust [illegible]ith in the words of men who possess such titles [illegible] they possess them. The character and stand[illegible] the school where he is professor should be [illegible] into account. The [illegible] medical man is too [illegible] to advise his patient to go to some professor, [illegible] of consulting with some honest, well balanced [illegible] practitioner. [illegible] studious and efficient [illegible] every city are [illegible] work, and yet are but [illegible] medical men who do [illegible] because they do not [illegible] known to the [illegible]. They do not hang [illegible] advertise. Adve[illegible] any case, they are not given to writing about wonderful cures obtained from strange remedies and reading reviews of other people's work before societies. They are not to be found in dispensaries, misunderstanding the poor patients who go there to receive relief, and because they do not do these things they are not invited to fill college chairs. But they are known to their patients, of whom they frequently possess more than many so-called professors. They are the men who keep alive the ethical spirit of medicine. They keep abreast of the times, even if they are silent. They are doing the heavy work, and the results they obtain, often amidst most unfavorable circumstances, are amazing. A time is coming when men who are prominent in the profession will not covet the title of professor, a time perhaps when the teaching of medicine will be a specialty in itself, and not merely a dodge to acquire practice.

When no medical schools shall be founded until there is need for it, and when all will put themselves on a scientific basis and look about them for teachers, for men who are qualified to instruct, the title of professor may have a real meaning, which at present it too often lacks. Let the general practitioner call the specialist to his aid because he is a specialist, and not because he is a professor.

CORRESPONDENCE.

Leprosy in Norway.

Vienna, Austria, Nov. 12, 1897.

To the Editor:—I was much surprised while visiting Norway during the last summer, to find that among a population of less than two million people, there existed three special hospitals for the confinement and treatment of lepers, and that in these institutions were domiciled over one thousand unfortunates, afflicted with this terrible disease.

By far the largest of these institutions is situated at Bergen, and while there I availed myself of the opportunity to visit it. The superintendent, Dr. Hansen, was away on a vacation, but his first assistant received me cordially, and answered all my queries in the politest manner possible.

Naturally, where a fish diet forms so large a part of the food of the population of this country, one asks the question whether this may not act as a strong causative factor in the production of the disease. I was told that this was not the opinion held by those most competent to judge; but that it was probably on account of the small, unhealthy and crowded habitations that the people occupy during the long cold winters in this rigorous climate, that the disease had gotten such a foothold.

Speaking to my host in a congratulatory tone of our almost entire exception from the disease in the United States, he answered me warmly and decidedly, saying: You have plenty of lepers in your country, but your physicians do not recognize the disease, and allow the patients to run at large, while here in Norway we diagnose the malady in its early stages and isolate the patients.

In a late visit of Dr. Hansen to the United States, he told me that the Doctor found three cases in the hospitals in Chicago, and twice as many in New York, as well as encountered several cases of true leprosy upon the streets of each city, all of whom were being treated for lupus, syphilis or some other form of skin disease. I asked why the disease did not spread if we allowed lepers to run at large. "Because," he replied, "where the hygienic conditions are favorable the disease is only very slightly contagious. None of the attendants in this hospital ever contracted the disease."

To fortify his position, the Doctor had me examine several cases where the disease only involved the skin, and asked me if these cases had consulted me at home, if I would have recognized the disease as leprosy; and I had to acknowledge that I would not have been able to have made a correct diagnosis if his was a correct one.

I have related this interview to a number of American physicians and all of them, except Dr. Moyer of Chicago, poohed at the idea what we could not correctly diagnose a case of leprosy. The latter related to me the case of a boy whom he used in his clinic to illustrate what he supposed to be one of syringomyelia, but which on further investigation he found to be one of true leprosy.

Medicine in Scandinavia.—Everywhere in Norway and in Sweden I find, both in medicine and surgery, everything to savor of a most distinctly German type. The physician speaks German, his medical books are largely German, and his surgical technique is often the fashion that one sees carried out in Berlin and Vienna.

Small children in Norway have a habit, it seems, of drinking a strong alkaline solution that their mothers use in washing clothes. This is likely to be followed by a stricture of the esophagus. I saw a case operated on in Christiania for the relief of this trouble, and there were two more cases under treatment for the same difficulty in the same hospital. If the case be a bad one a gastrotomy is first done, the walls of the stomach are united with the parietes of the abdominal walls, so that an external gastric fistula remains. A piece of rubber cord of suitable size has sewed to each end a thin piece of tape, so that when pulled upon, the rubber cord has a much smaller diameter than when not upon the stretch. A small bougie is fastened to one of these cords and is passed, via the esophagus, down through the stomach and out at the fistulous opening in the stomach. The rubber cord, now being put upon the stretch by means of the two pieces of tape, is drawn down into the esophagus in a condition where its caliber is greatly reduced. The traction upon the cords is now loosened and the rubber cord assumes its original size and thus expands the restricted esophageal tube. These rubber dilators are changed every three or four days, a larger one being used each time.

The patient is nourished for the first few days, per rectum, and after that through the gastric fistula. At Christiania I saw a number of cases of prostatic enlargement treated by a super-pubic cystotomy, and permanent drainage of the bladder through this incision.

The surgeon has devised an ingenious appliance for the after management of these cases, which allows the urine to pass off into a rubber bag, with little inconvenience to the patient and allowing him at the same time to be on his feet without being annoyed by being wet from the urine as it passes off.

At Odessa in Russia, I met Dr. Mariacholl, a bright man who devotes his entire attention to the diseases of the male genito-urinary organs. He is one of the surgeons of the general hospital in that city, and has an abundance of material at his disposal. He tells me he has castrated fourteen times and operated on the vas deferens thirteen times for enlarged prostate, with the result of benefiting none of his patients, and sending two victims to the insane asylum as a result of his interference.

He is bitterly opposed to the operation and says that the benefit surgeons claim to derive from it is only temporary in character, and is brought about solely by the patients being confined for a time in a horizontal position.

I was surprised to find on the table in the reading room of the general hospital at Odessa the latest medical journals in a half dozen different languages, and a set of men who seemed in all medical matters to be fully up to date.

To physicians who visit Sweden I can most warmly recommend that a few days be spent in the hospitals of the modern and thriving city of Stockholm, especially if you have some knowledge of German. Prof. Akermann, I believe, is one of the brightest men for his years I have ever heard teach or seen operate as a surgeon. Dr. Josephson does a large amount of abdominal work and is a great advocate of using buried silk sutures in closing up abdominal wounds, thus, he believes, avoiding the hernias that often follow these operations.

The surgeons here (I found the same thing in several other places) have abandoned catgut as a ligature, and are using fine silk in its stead, claiming that thereby they avoid suppuration and, if the silk used be fine, that it is absorbed without the manifestation of any local irritation.

Everywhere in Scotland, in Scandinavia, in Russia, in Turkey, in Greece and in Austria, I have found typhoid prevalent, and have been trying to do some missionary work as a Woodbridgeite, with what success I will tell the readers of the Journal in my next. W. S. Caldwell, M.D.

The Leprosy Question.

Translated from the French in *Janus* (July and August, 1897).

Copenhagen, June 26, 1897.

To the Editor (*of Janus*):—I see today with a certain displeasure that three of the publications, as numerous as they are little important, of Dr. Albert S. Ashmead, have been inserted in the sixth issue of your paper (May and June).

One of these publications, that entitled "Leprosy Overcome by Isolation in the Middle Ages," is absolutely useless. The author is pleased in this to attribute to me an opinion which I have never professed, *vide*, that the isolation of the lepers would be useless. *One will never find that opinion expressed in my works.* I am for isolation according to the Norwegian system, that is, the isolation of the diseased, who are incapable of taking care of and supporting themselves, and whose presence among other persons constitutes a real danger for the well. But I am not an admirer of the barbarians of the Middle Ages, who burned and imprisoned with horrible ceremonies the poor lepers, separating them from their families and their friends.

I know that Mr. Ashmead fights *for the wholesale isolation of the lepers* (even the 100,000 lepers in the English Indies), but I have the firm conviction that he will remain isolated himself with such a demand. The hygiene of our days does not act in the same manner as that of the Middle Ages.

Will you "kindly" ask Mr. Ashmead to quote in future the passages from my writings to which he refers, in order to avoid writing perfectly useless notes and attributing to me opinions which I do not have. I avail myself of this same occasion to interdict him, the copying without quotation of source, of photographs of my Icelandic lepers. These photographs were mine. I paid for them with two voyages, both perilous and disagreeable. Mr. Ashmead has inserted one of my photographs on the third page of his last pamphlet in the *Magazine of Medicine*, April, 1897, where he publishes, always without authorization of the correspondents, a number of letters, of which his own contains trifles, without interest, and also rude abuse of the leprologists of London, of Asmauer Hansen and myself. You will no doubt excuse me if I wish no longer to dispute with Mr. Ashmead, agree, Mr. Editor, the assurance of my perfect consideration. Dr. Ehlers.

New York, Dec. 6, 1897.

To the Editor of Janus, Amsterdam, Netherlands.—Dr. Ehlers says (*Janus*, July and August) I attribute to him opinions which he never professed.

Whether or not Dr. Ehlers stands for isolation was not the point at issue; it was, should isolation as a principle be promulgated by the Berlin Lepra-Conference? That was the important question. He stood an obstacle to our obtaining official delegates, claiming that governments *had always neglected the holy name of hygiene*, le saint nom de l'hygiène, in all countries and in all times. *It was not, in his opinion, the way that leads to the goal to try to stir up the governments. It is a congress which takes place between known leprologists and not a congress of leprology.* Our goal was not so much a congress of leprologists, which I have taken the liberty to call very frequently a congress for talk only. What we wanted with absolute singleness of purpose was a congress to take practical measures against a disease against which talk, disputations of leprologists, etc., had availed nothing, that is to do everything possible, in order to obtain universal measures of isolation. Therefore it was our object to stir up the governments. Although he does not speak against isolation in his works, his acts in opposing the call upon governments to take part in the Congress were against isolation. Some shadow of this government representation was nevertheless obtained, but it was due to *our* initiative, to the fight we made, not to Dr. Ehlers, and not even to *Asmauer Hansen*. Especially was it not due to the non contagion clique of London.

One word as to the photograph of which he interdicts the publication without quotation of source. Dr. Ehlers would seem to like such pleasant expressions as *interdict*, though he reproaches me with being *grossier:* but it is only fair to attribute the strength of his expressions to his imperfect knowledge of the delicacy of the French language. I published a photograph of an Icelandic leper woman, with his permission, giving him due credit in "Suppression and Prevention of Leprosy." I copied it as an instance of melancholia of leprosy, which is my own interpretation of it, in the *Magazine of Medicine* subsequently. His name did not appear in that second publication; it was simply forgotten. There is certainly in this no justification for such tremendous trumpeting about the world of the wrong done to his photograph, which he had paid for by two perilous and disagreeable voyages. I think it would be a useful exercise for Dr. Ehlers if he tried to insert the following truth into his brain: Dr. Ashmead had a perfect right to use subsequently without any ceremony a photograph which he had once published in the regular way, with permission and quotation.

Let me say to Dr. Ehlers that the mixed system of isolation of Norway has driven to the United States 17,000 Norwegian emigrants of *leprous families*, and thus served only to transfer the leper problem from Norway to America. *International* government laws, which I stand for, would prevent that.

If he considers this duly and seriously he will surely find that it is (though he says my publications are *inutiles*) more important, more useful to meditate upon than anything he has ever written in any of his works, published after such perilous and disagreeable voyages.

With a pleasant felicity, which is rare with Dr. Ehlers, he observes that it is I who shall *be isolated with my demand*, not so entirely isolated, however; for, as I said above, there was, in the presence of some government representatives, at Berlin something like a foreshadowing of international leper law.

We Americans are interested, I mean directly, not in our own leprosy, for we have none; we are interested in the leprosy of Norway, Japan, China, Hawaii and South America, to prevent the disease from being brought by emigration, which would easily be done by international arrangements, by stirring up the different governments. Even from the 159 lepers which Dr. Ehlers so successfully saw in Iceland, four have since escaped to this country, and almost while Dr. Ehlers gave himself up to the charms of the congressional, leprologist, non-international conference, these four contaminated Manitoba! Albert S. Ashmead, M.D.

License in Germany.

Toledo, Ohio, Dec. 10, 1897.

To the Editor:—Dr. Blech's ans[illegible] the inquiry as to the admission to the [illegible] edic[illegible] [illegible]rmany is not quite correct.

To be [illegible] [illegible]en [illegible] graduate from a gymnasium covering a classical course of nine years. These graduates are 20 years old on the average. After four semesters, usually during the fifth, the medical student passes the *tentamen physicum*, an examination in physiology, anatomy, physics, chemistry, physiologic chemistry, botany, mineralogy. Before passing the *tentamen physicum* the student is not admitted to the clinics. The candidate for *State examination* must have studied medicine and the allied branches for *at least* eight semesters, of which not more than three are allowed to be passed at a recognized foreign university. While eight semesters are the required time, it is by no means the average, which may be put at ten semesters.

A *foreign physician*, who wishes to practice in the German Empire, must furnish satisfactory proofs that his preliminary education is equal to the one required for matriculation from the German student of medicine. From the American physician the college degree of A.B. or A.M. is considered as equivalent. Upon the further proof that he is legally entitled to the practice of medicine in his native country, he will be admitted to the German State examination without attending one hour clinics or lectures or anything at the German school.

At this occasion I wish to correct the erroneous statement which is frequently heard, that the diplomas from a few American schools, like Ann Arbor, Harvard, Johns Hopkins, and some others, are recognized in Germany. It is not so! Their diplomas do not entitle to practice in Germany. Quite a number of foreign physicians are practicing in Germany, especially at watering places and similar sanitary institutions, and they had to fulfill the requirements as described.

Another class of foreign graduates in the German Empire is formed by professors at the universities, who not infrequently receive calls from one European State to another. These men only receive the State diploma without passing any examination. For instance: Billroth was a German graduate, but he received and accepted calls as professor to Zurich in Switzerland and to Vienna in Austria. Ziegler, the well known pathologist, is a Swiss graduate, and now in Germany. A number of Germans are professors in Switzerland, etc.

The requirements are about the same in all the different States in Europe. In whatever empire one wishes to practice medicine he has to procure the State diploma.

This explanation shows that Germany lays the most stress upon the preliminary education. The reasons are obvious.

B. BECKER, M.D.

Appendicitis.

EVANSVILLE, IND., Dec. 3, 1897.

To the Editor:—The alarming mortality rate following operative measures for the cure of appendicitis in this city has caused considerable comment of a questionable nature, recently and in the daily papers this morning the Board of Health has taken the matter into consideration. A recent case of operation during convalescence, and the patient's death in less than thirty-six hours, has opened the way to adverse criticism. In the case mentioned the operation seems to have been done through jealous rivalry, with a large fee as an incentive, which only too plainly demonstrates the fact that the surgeon above all others should be a man of unbiased mind.

During my twenty-six months of hospital work in Louisville, Chicago and this city, I have carefully observed the medical and surgical diagnosis and treatment of this disease and noted the difficulty in differentiating between it and typhlitis, perityphlitis, para-typhlitis, volvulus and intussusception and all forms of intestinal obstruction, and have arrived at the following conclusions;

1. An operation for appendicitis is usually demanded *the moment the diagnosis is absolute*, the condition of the patient and other indications justifying, provided the case is of the *progressive type* with the bowels locked, and treatment seems of no avail.

2. If the temperature is not high, the pulse is not irregular and not weak, if the pain is not intense; if the patient rests moderately well without, or with very little anodyne and the case seems to be of a *moderate type* and at a stand-still, then every effort should be made to move the bowel, reduce the inflammation and tympanites, soften down and carry out the inspissated feces, flush the bowel and *keep it open*, use intestinal antiseptics, tone up and sustain your patient and carry him through *without* surgical intervention.

3. If, after recovery, there still remains a sickening pain of a radiating character in the region of "McBurney's point," increased by the administration of strychnia or other agents stimulating peristalsis, denoting plastic adhesions and future trouble, a coated tongue and torpid constipated bowel, then tone up and build up your patient. Remove all offending material from the sigmoid colon and cecum by high enemas and hydragogue salines and remove the crippled disturber. Break up all adhesions under anti- and aseptic precautions, and your patient will stand every chance of a speedy and permanent recovery.

4. Do not as too many supposedly good surgeons have done, operate on a patient afflicted with appendicitis too soon after the crisis is over, and thereby stir up an inflammation afresh that is practically past.

Many a man's life has been lost by an operation performed at this time, when the patient was slowly but surely convalescing, with the bowel open, the pulse only slightly accelerated and temperature 99 or 99.5 degrees, and in fact when operative interference of any nature was *strictly contra-indicated.*

W. F. STERMAN, M.D.

"Edema Universalis."

NEW YORK, Dec. 10, 1897.

To the Editor:—Such little blunders, as forgetting that a word ending in "a" is not always a Latin feminine, but may be, and very often is, a Greek neuter, are exceedingly unpleasant and it takes a deal of philosophy to overcome the bitterness of being corrected. Yet, let me tell you of an instance whose mention must pour balsam into any such grammatic sore. When Victor Cousin published his Plato, he wrote the title thus or about thus: *Platonis Opera Omnia Victor Cousin Recollexit.* The book with that title was spread all over Europe, over all the world, in fact, causing everybody to ask how it could be that such a great man did not know the tenses of *recolligo.*

M.D.

The Word "Os."

SAN DIEGO, CAL., Dec. 11, 1897.

To the Editor:—Were I an editor I should not object perhaps to read the Old English *thon*, but I should draw the line as do you at the too common substitution of "orem" for the classic and correct accusative of that old neuter noun, *os.*

Truly yours. F.

PUBLIC HEALTH.

Control of Quarantine.

GOVERNOR BLOXHAM OF FLORIDA WRITES A LETTER ON THE SUBJECT.

GOVERNMENT SHOULD CO-OPERATE WITH THE STATES.

REASONS FOR A NATIONAL DEPARTMENT OF HEALTH GIVEN.

FLORIDA'S SYSTEM AN EXAMPLE OF EFFICIENCY.

TALLAHASSEE, FLA., Dec. 3, 1897.

Upon the request of the publishers of that journal, Governor Bloxham has written the following letter to the *New Orleans Picayune:*

T. G. RAPIER, ESQ., Manager *Picayune*, New Orleans, La.

Dear Sir:—I have the honor of acknowledging your favor of recent date requesting an expression of my views upon the question of State, interstate or Federal control of quarantine against the future invasion of disease. Never having worshiped at the shrine of Æsculapius, it will be impossible for me to present anything of a scientific character, but simply such thoughts as have been engrafted upon my mind by the experience of the last ten years in Florida and enforced by the views of the health authorities, in whose judgment I place great confidence. Were those thoughts summarized, they could be condensed in one expression:

Government co-operation with State control.

Our health authorities have frequently placed themselves on record in the matter of public health regulations. The State Board of Health of Florida is a unit upon the necessity of Federal legislation looking to the creation of a Department of Public Health with a recognized head. The members of the board at an annual meeting a year or two ago adopted a strong memorial to our State Legislature and our Congressional delegation, earnestly recommending concerted action in this direction. Could a cabinet officer be invested with a more responsible duty than looking after the health of seventy millions of people? Then why not create a Department of Health with a cabinet officer at its head, with ample power and authority to render assistance, when needed, but whose principle line of action and basis of union with the ideal public health system shall be co-operative and contributory to the several State boards of health?

NATIONAL DEPARTMENT OF HEALTH.

Let there be a "Secretary of Public Health," with State boards as his coadjutors. Let him formulate a uniform maritime quarantine and domestic or internal sanitary code to be enforced and operated by the several States.

The AMERICAN MEDICAL ASSOCIATION has embodied this idea, carried out in all its details, in a bill, which has received the indorsement of many of the leading sanitarians and public health organizations of the several States, and which I presume will be called to the attention of Congress with the indorsement of the great mass of the medical profession of the country. The country, and no portion so urgently as the Southern States, needs such a measure, or any course that will relieve a small bureau of the Treasury Department of the necessity of taking care of the lives of millions of people.

By what decree of Providence of common sense is it ordered that the financier of the Union—the Secretary of the Treasury—burdened with care beyond endurance, by environment and education harnessed to a most potential and engrossing charge—made the arbiter of matters of life and death to the countless thousands? Who more unfitted to deal with the great issues of public health than the steward of the nation's wealth? And why relegate to a mere departmental division a responsibility second to none, and one which should be confided to no care but that of the ablest and most experienced?

At present, Governmental health affairs are administered through and by the Marine-Hospital Service—an organization for the care of sick seamen, though nominally committed to the Secretary of the Treasury, who, perforce, both by reason or stress of other matters and the necessity of some medical culture, has to foist them upon a subordinate. And what record is attributed to this Marine-Hospital Service? It is claimed by those in a position to know that inadequate measures upon the part of this service not only admitted, but almost contributed to the infection at Key West and Tampa in 1887, which was followed by the epidemic of 1888. Who, then, was responsible for the epidemic of 1888?

Who was responsible for the entrance of yellow fever at Brunswick in 1893? Was there not mismanagement at that port? And who was in charge of its maritime quarantine?

Who is responsible for the introduction of the recent plague in the first instance, through Ship Island Quarantine Station, near Biloxi? Was anything accomplished by this service to prevent a further spread of the disease after its careless introduction? Was confidence established, without which the country may always expect the barbarities of the shotgun quarantine?

The answer to these inquiries, which are not aimed at individuals, but at the system, must necessarily have weight in determining future legislation. Let us have a Department of Public Health, most assuredly, but let it be advisory and co-operative, and upon lines that will be an earnest of satisfactory and successful administration. Florida has been virtually free from yellow fever for eight years, and what few cases have appeared have been promptly stamped out.

What more striking lesson than that presented by Florida's health record during the months of September, October and November of this year, when intercourse between the cities and towns of the neighboring States was hampered, when not totally inhibited, by local quarantines? While within this State no embargo of any description rested upon freight or passenger intercourse, and you came and went at will without even the suggestion of quarantine.

The reason is not obscure. Florida, after its experience of 1888, like the people of the whole country at this time, had its attention directed to a future invasion of the disease, and called into existence a system which its years and successes have demonstrated to be thoroughly efficient, and which has so won the confidence of the people that it has been enabled throughout the exigencies of the past summer to at once allay apprehension and suppress excitement.

To the student of the matter, Florida's part in the yellow fever history of this year evidences not only the capacity of our health officials, but the wisdom of our system, and arouses a desire for a similar condition in other States.

Should a co-operative and contributory system, as suggested, ripen into proper legislation, those in charge should be well qualified to take into consideration your inquiry as to the best means of preventing a recurrence of the epidemic, and at the same time minimizing the embargoes of commerce.

Very truly yours, W. D. BLOXHAM.

The Bubonic Plague still furnishes items to the press. Its ravages, according to a Bombay dispatch dated December 6, are still unabated at Poonah.

The War Against Typhoid Fever Germs is brisk in many centers of the milk supply in New York and New Jersey. The sources are found in the dilution with polluted water and the careless cleansing of cans. The Health Boards are to be hardly blamed for a want of vigilance, certainly not in this summary waste of the materia morbis.

Health in Chicago.—The report for October shows that the total number of deaths were 1,716 or 1.05 per 1,000; the rate for the same period in 1896 being 1.06 per 1,000. Of these 1,716 deaths, 419 were persons under 1 year old, 180 between 1 and 5 years old; 191 were due to acute intestinal diseases, 208 to nervous diseases, 193 to consumption, 134 to pneumonia, 96 to diseases of the heart, 61 to typhoid fever, 61 to diphtheria and membranous croup, 60 to bronchitis and 58 to cancer.

Health in Michigan.—Reports for November show consumption, remittent fever, typhoid fever, intermittent fever, pneumonia and erysipelas less prevalent as compared with the average for November during the 11 years, 1886-96. Consumption was reported in 172 places, typhoid fever in 111, diphtheria 66, scarlet fever 57, measles 37, whooping cough 18, and smallpox one place, this being a decrease from the October reports as to consumption and typhoid fever and an increase as to diphtheria, scarlet fever, measles, whooping cough and smallpox.

NECROLOGY.

JOHN BERRIEN LINDSLEY, M.D., Nashville, Tenn., died December 11. Dr. Lindsley was graduated from the University of Nashville in 1839, afterward taking his Master's degree there in 1841, in which year he began the study of medicine. He received the degree of M.D. from the University of Pennsylvania, Department of Medicine, in 1843. He devoted the years 1845 to 1850 to the study of natural science and in 1859 took courses of instruction in European institutions. In 1850 he began teaching medicine at Nashville, Tenn., where he has passed his life as a practical educator. From October, 1850 to April, 1873, he was Professor of Chemistry and Pharmacy in the Medical Department, University of Nashville, and was Dean of the Faculty until 1855, having been one of the founders of that institution in 1850. Largely through his influence was brought about the creation of a normal school, which has been in successful operation since 1875. From 1877 to 1879 he was Secretary and Executive Officer of the State Board of Health of Tennessee, and again since 1884, President of the Board from April 1 to July 1, 1884, and Professor of Chemistry in the Medical Department, University of Tennessee from 1889.

The Doctor was a prominent member of many societies, among them the Tennessee State Medical Society, American Medical Association, American Academy of Medicine, American Association for the Advancement of Science, American Public Health Association, etc. He served at Nashville during the cholera epidemics of 1849, 1854, 1866 and 1873, and in 1878 was in charge of the yellow fever refugees to that city. Dr. Lindsley edited the reports of the Nashville Board of Health for 1877-79, reports of the Nashville Board of Health 1880 to 1884, and the *State Board of Health Bulletin* 1889 and 1890 to 1894. Other works from his pen are numerous. In the reports of the American Historical Association, 1889 to 1892, twenty-nine titles of papers from his pen are mentioned. In addition to his medical and sanitary work, Dr. Lindsley devoted considerable time to ecclesiastic labors, being ordained in 1846 by the Presbytery of Nashville and for several years thereafter acting as minister to country churches and slaves connected therewith. The College of New Jersey (Princeton University) conferred the degree of S.T.D. on the Doctor in 1858, and since 1891 he has been Lecturer of Sociology in the Theological Department of the Cumberland University, Lebanon, Tenn. The Doctor was born at Princeton, N. J., Oct. 24, 1822, being a direct descendent from one of the earliest English settlers of the New Haven Colony.

Charles Harvey Quinlan, M.D., D.D.S., Evanston, Ill., December 6, aged 76 years. Dr. Quinlan had been a resident of Chicago and its suburbs since 1846. He came from Albany, N. Y., where he was born Feb. 19, 1821. Immediately after his graduation from a dental school at Buffalo he opened an office in Chicago. He at once became one of the most prominent men of his profession in the city. The introduction here of sulphuric ether as an anesthetic brought him fame. It was in the fall of 1846, when the method of application was discovered in Boston and full instructions for its manufacture and use were sent to Dr. Quinlan by his uncle, Dr. Harvey of Buffalo. Ether was then known as a letheon, and Chicago is the first city west of the Alleghanies where it was given a practical test. This test was given in a public clinic at Rush Medical College, where an amputation was to be performed. Dr. Quinlan was asked to be present and administer the anesthetic. Wide publicity was given the test, and the result was entirely satisfactory. The newspapers of the country teemed with accounts of the experiment and Dr. Quinlan was given great praise. Shortly after this, chloroform was discovered, and the formula was immediately procured by Dr. Quinlan. He was the first to distill this anesthetic in Chicago. Dr. Quinlan took the degree of M.D. from Rush Medical College in 1865, and practiced in Lake Forest until his removal to Evanston in 1875. Since then he has lived a quiet life at his residence, 1619 Chicago Avenue. He built the Avenue House, Evanston's fashionable hotel in 1882. He was one of the founders of the Lake Forest University, being one of four men to give $1,000 each to start that school.

Alexander W. Stein, M.D., New York University, 1864, died at his home in New York from cirrhosis of the liver, December 5. He was born in Buda-Pest, Hungary, fifty-seven years ago, and when 4 years old was brought to this country by his father, Louis Stein, surgeon-general of the revolutionary army and a friend of Kossuth. As a lecturer on surgery, professor of physiology in the New York College of Dentistry and a writer he was well known to the profession. He was delegate or attendant at most of the medical congresses here or in Europe.

J. Harvey Manning, M.D., Chicago, December 6, aged 38 years. He was educated at Cornell College, Iowa, and graduated from the College of Physicians and Surgeons in 1890. He afterward took a two years' course in Columbia College of Physicians and Surgeons, New York, graduating in 1892. He spent a year in St. Elizabeth's hospital, and later a year in the Iowa State Insane Asylum. He began regular practice in Chicago in 1895.

Mark H. Lackersteen, M.D., Chicago, December 7, aged 62 years. The Doctor was a professor in the Post Graduate Medical College. In his early years he took an active part in the famous Sepoy mutiny in India, besides holding high positions under the British government.

Joseph F. Edwards, M.D., Atlantic City, N. J., December 6. Dr. Edwards was born in Philadelphia, Dec. 8, 1853, and was a graduate from Georgetown College and the University of Pennsylvania and practiced medicine in his native city for sixteen years. He was formerly a surgeon of the Second Regiment, N. G. P. Dr. Edwards was the founder and former editor of the *Annals of Hygiene* and the author of *Edwards' Journal of Health*. He was a member of the Board of Managers of the Trenton Insane Asylum, also of the New Jersey Board of Health. He was formerly of the Pennsylvania Board of Health.

G. Perry Reynolds, M.D., New York University Medical College, 1852, medical examiner for Guilford, Conn., died December 9, aged 68 years.——Robert N. Short, M.D., Miami Medical College, Ohio, 1871, died suddenly of cardiac disease at his home in Mechanicsburg, Pa., December 1, aged 66 years.——Mark Van Winkle, M.D., College of Physicians and Surgeons, New York, 1855, died in Little Falls, N. J., aged 73 years.——James F. Murray, M.D., Albany, 1866, of Gloversville, N. Y., died from abscess of the liver December 5, aged 52 years.——Dr. Jacquemet, *agrégé*, professor in the medical faculty of Montpelier, aged 72 years.——Dr. Poisson, Professor of Surgical Pathology in the Medical School of Poitiers.——Dr. J. B. Bottero of Turin, editor of the *Gazzetta del Popolo*, and the oldest journalist in Italy, aged 81 years.——Dr. A. Jazenko, some time privat docent of surgery in the University of Kieff, aged 55 years.——Dr. Cristino Cebrian, Professor of Anatomy in the University of Salamanca.——Dr. Arthur Scheffer, some time Professor of Chemistry and Physics in the University of Moscow, aged 65 years.——Dr. A. Gadaud of Périgueux, Senator for La Dordogne, and for some time Minister of Agriculture, aged 56 years.—— Dr. Paul Guterbock, privat docent of surgery in the University of Berlin, and Dr. Zinn of Eberswalde, for many years one of the leading medical psychologists of Germany, aged 72 years.——W. M. Anderson, M.D., Charles City, Iowa, December 2, aged 63 years.——J. Spofford Hunt, M.D., Chicago, December 10, aged 63 years. During the war the Doctor served as surgeon of the Third Illinois Cavalry.— R. H. Johnston, M.D., Cromwell, Iowa, aged 61 years.——R. A. Kirkpatrick, M.D., Montreal, aged 34 years.——George A. Munro, M.D., Providence, R. I., a veteran of the Civil War, December 3, aged 60 years.——George Q. Orris, M.D., Seymour, Ind., December 3, aged 47 years.——John M. Small, M.D., Lewiston, Maine, December 4, aged 80 years.——R. T. Worley, M.D., Baton Rouge, La., of yellow fever, November 29.——James H. Pooley, M.D., Toledo, Ohio, December 10, Dean of the Toledo Medical College, suddenly.

BOOK NOTICES.

The Peritoneum. By Byron Robinson, B.S., M.D. Chicago. Part 1. Histology and Physiology with 247 illustrations. Chicago. 1897. 8vo. Cl. C. V. Waite & Co., 70 State Street.

Books of this character have not been very common in this country, but we are developing a class of students that by earnest plodding and scientific work will eventually bring our work up to a level with the best literature abroad. There are many expressions that we do not admire in this book, there are some specimens of the misuse of words and some mistakes of proof reading, but when the whole work is fairly examined it will be seen to be comprehensive, thorough, honest and creditable. We fear that Dr. Robinson will hardly receive the great credit he deserves for his hard labor, but let the reader of this handsome volume stop for a moment to reflect what great industry was required in its compilation alone, to say nothing of the vast number of original experiments undertaken. It is, we believe, safe to say that a very large percentage of practitioners have a quite imperfect knowledge of the peritoneum, and especially its histology and physiology. The work under consideration will greatly aid in acquiring the knowledge so generally lacking in the text books, and will be welcomed as filling a distinct gap in modern medical literature. The illustrations are well executed, the paper is good, and the type is large.

Pictorial Atlas of Skin Diseases and Syphilitic Affections, in Photo-lithochromes from the models in the museum of the Saint Louis Hospital, Paris. Ernest Beurier, A. Fournier, Tennyson, Hallopeau, Du Castel, physicians to Saint Louis Hospital, Paris, with the co operation of the Honorable Henri Feulard, Curator of the Museum and L. Jacquet, former House Physician. Edited by J. J. PRINGLE, M.B., F.R.C.P., Physician to the Department for Diseases of the Skin at the Middlesex Hospital, London. Part 12. London: Rebman Publishing Company. Philadelphia: W. B. Saunders; W. T. Keener, 52 Randolph Street, Chicago agent.

This part, which completes the set, contains five plates with seven illustrations, pictorial representations of the unrivaled models of Barreta, the original of which are in the museum of the St. Louis Hospital. The explanatory text accompanying these magnificent plates is the work of professional masters and therefore needs no special comment.

Plate 46 contains the hypertrophic form of syphilitic chancre of the nostrils. The diphtheroid form of syphilitic chancre of the tonsils by Alfred Fournier.

Plate 16 in the accompanying text, Xeroderma Pigmentosum, by R. Du Castel.

Plate 48, Impetigo Contagiosa, by Lucien Jacquet.

Plate 49, Urticaria Pigmentosa with Atrophic Spots, by H. Hallopeau.

Plate 50, Syphilitic Chancre of the Lip: 1. Scabbed form; 2, erosive form, syphilitic chancre of the tongue (ulcerative form) by Alfred Fournier.

The practitioner is fortunate who can secure for his library these beautiful reproductions of the collection of models in the famous Paris hospital.

Index Catalogue of the Library of the Surgeon General's Office, United States Army, Officers and subjects. Second series, Vol. 2. B-Bywater, Washington: Government Printing, 1897, pp. 954.

This volume, according to Dr. Huntington's statement, includes 15,732 author-titles, representing 6,383 volumes, 14,802 pamphlets; it also contains 5,774 special titles and special books and 21,725 titles of articles in periodicals.

This magnificent index, which has reflected more credit on American medical literature than almost any other work, and has done more to make the medical literature of the work available than any other, is progressing at the rate of two volumes a year, and in the same careful and accurate manner characteristic of the preceeding volumes.

We extend our congratulations to General Sternberg and Deputy Surgeon-General Huntington on the successful continuation of the work, and thanks to the wise Congress which by timely and liberal appropriations made possible this great undertaking.

Archives of the Roentgen Ray. We have received the July number of the "Archives of the Roentgen Ray," formerly Archives of Skiagraphy, London. Edited by W. S. HEDLEY, M.D., and SIDNEY ROWLAND, M.A., and the Editorial Committee. London: Rebman Publishing Company. Chicago agent, W. T. Keener, 52 Randolph Street.

The *Archives* has been modified in form and greatly increased in size from the former publication, and its scope is very materially broadened. By careful following of the pictures and studies of Roentgen one will be able to prevent the mistakes into which he otherwise would be liable to fall. The progressive surgeon can scarcely afford to be without the *Archives*.

Vade Mecum of Ophthalmological Therapeutics. By Dr. LANDOLT and Dr. GYGAX. Pages 138. Philadelphia: J. B. Lippincott Company. 1898.

This handbook is arranged in alphabetic order so that an index is not required, and is intended to give the essentials of ophthalmic medicine to the practitioner and students preparing for examinations.

It is a handbook for immediate reference. Translation has been well made by Dr. E. H. Neyman of Milwaukee with the consent of the author. Formula given in both decimal and English terms.

Lectures on Physiology. First Series. On Animal Electricity. By AUGUST D. WALLER, M.D., F.R.S. Pp. 144. London, New York and Bombay. 1897.

This work contains part of the material of course of twelve lectures on animal electricity delivered by the author at the Royal Institute during the spring of 1897.

There are six lectures giving the results of various experiments on animal tissue. These lectures are fully illustrated and are intended for advanced workers in the field of animal electricity. It also shows very fully how the modern lectureships depend more upon the laboratory than upon the lecture theater.

About Children. Six Lectures given to the Nurses in the Cleveland General Hospital in February, 1896. By SAMUEL W. KELLY, M.D. Cleveland Medical Gazette Publishing Company. 1897.

These lectures constitute a pretty successful attempt to bring technical information within the reach of nurses. Pupils at nurses' training schools generally will find the book full of information and therefore very useful to them, not only in acquiring necessary knowledge, but after graduation as a book of reference.

A Handbook of Midwifery. By W. R. DAKIN, M.D. Four hundred Illustrations, pp. 629. London, New York and Bombay: Longman, Green & Co. 1897.

This work is intended for students and junior practitioners. The subject is arranged in two divisions, those of physiology and pathology. The author has intended to make the work of high practical value without introducing any unnecessary details.

The printing is good, the illustrations are excellent and the work is very full and complete. By using fine type the publishers have succeeded in introducing as much matter as is usually found in the larger text-books.

Lippincott Company's Pocket Medical Dictionary; Including pronunciation and definition of twenty thousand of the principal terms used in Medicine and the allied sciences, together with many elaborate tables. Edited by RYLAND W. GREEN, M.D., Editor of Lippincott's Medical Dictionary. J. B. Lippincott Company, Philadelphia and London: 1897.

This is a pocket medical lexicon, handy in size, convenient, accurate and full, and contains more words than are to be found in most pocket lexicons, although it has omitted antique and obsolete terms. It will be found very useful.

MISCELLANY.

Medicine and Pharmacy in France.—The law which at present governs the practice of medicine in France, forbids the simultaneous practice of medicine and pharmacy, even by a person who may be in possession of diplomas in both subjects.

Bathing in London.—Foreign ideas of the British sense of propriety will receive a shock from the recent order of the London county council that men and boys bathing in public ponds must wear drawers. Hitherto they have bathed naked, and the minority in the council opposed the innovation as an "undemocratic step."

Pulmonary Phenomena of Hysteric Origin.—E. Leoni describes, in *Il Morgagni*, No. 6, a puzzling case of apparent pulmonary tuberculosis, with fever, râles and other symptoms of pulmonary trouble. They changed their position from one day to the other; sometimes on the right, the next day on the left, or absent altogether. Moral persuasion, suggestion and electricity resulted in rapid and complete recovery.—*Gazz. d. O. e d. C.*, August 15.

Clonic Movements in Syringomyelia Exclusively of Medullary Origin.—Marinesco has been studying, with various registering apparatus, the clinic movements in this disease, affecting mostly the fingers. They sometimes assume the character of a partial epileptic attack of cortical origin, and have been attributed to the motor zone of the brain. He finds, on the contrary, that they are convulsive attacks resulting solely from the medullary irritation, independent of any cortical intervention.—*Bulletin de l'Acad. de Méd.*, August 17.

Pathology of the Lachrymal Canaliculi.—Mitvalsky describes the cystoid protuberances that develop in these canaliculi, and states that besides those in which the actinomyces are found, he has observed a case in which the contents were the empty shells of starch grains, the starch having been removed by chemic action.—*Wien. Klin. Rund.*, October 31.

The Theory of the Toxic Effect of Extensive Burns is confirmed by the results of Tommasoli's recent experiments with dogs, to which he administered the serum or meat extracts of other dogs that had been burnt. The invariably fatal effect was averted however, if, at the same time, he injected artificial serum, which he considers the logical treatment for extensive burns. He reports one very severe case saved by injections of artificial serum and another which showed marked improvement after each injection, although the patient finally succumbed to his injuries.—*Cbl. f. Chir.* from *Monatsheft f. Prakt. Derm.*, Vol. xxv, No. 2.

Delay in Mailing.—For the first time since the fire, our mail was delayed last week. We had purchased at considerable expense a cutting machine known as Sheridan's "Auto." For the last three weeks the "*Auto*" failed to work when wanted by reason of breakage, breaking down when just in the midst of the edition. The Sheridan Company having received their money have taken little interest in its working, and left the office to fix up its machinery as best it could. We are sincerely sorry to have the delay inconvenience our members, but it has been unavoidable.

Construction of Medical Practice Act.—While some attack was made on the New Mexico statute "to regulate the practice of medicine," etc., approved Feb. 27, 1895, the supreme court of New Mexico assumes it to embrace a rightful subject of egislation. It also holds, in re Roe Chung, Aug. 25, 1897, at there is nothing unconstitutional in the provision of the atute that the penalty denounced is to be recovered in an action of debt, which is converted into a fine proceeding to enforce its collection. And it holds that a justice of the peace has jurisdiction of an action to recover the penalty for a first offense, which is $100. In this, it holds that a statute of 1889, providing that for all fines and costs imprisonment may be suffered at the rate of $1 per day until the days amount to the fine and costs, should be read into the act of 1895.

Can Refuse to Sell Coffins.—Not only may a heartless grocer refuse to sell a starving man provisions, but an undertaker can refuse to sell a coffin for the burial of a dead person and can refuse to accept employment in his capacity of an undertaker. Such is the decision of the court of appeals of Kentucky in the case of Brewster against Miller. More particularly does the court decide here that an undertaker is not bound to accept employment or furnish articles necessary for burial where the person asking for same is indebted to him for previous services. The court says that one has the right to decline to enter into a business undertaking with anyone. It also holds that to afford mutual protection against such persons, it is not unlawful for the undertakers of a community to associate themselves together and agree to refuse to render a like service to one who has refused or failed to pay such expenses in the past to some member of the association.

The Solubility of Gallstones in Oil.—To determine the solvent power of various oils on gallstones, Scott (*British Medical Journal*, No. 1917, p. 7[illegible]) exposed in a warm chamber at 98.4 degrees, beakers containing from 20 to 50 c.c. of oil, the quantity varying according to the size of the stone used in the experiment. After immersion the stones were removed from time to time, gently dried with filter paper and weighed. The oils employed were pure olive oil, pure almond oil and the odorless and tasteless purified petroleum oil known as parolein. The stones used in the first experiment were passed by a patient in whom treatment had been employed with olive oil with some success. They were about the size of dried green peas, facetted, friable, and dark greenish brown in color. As they dissolved, they showed a thin outer brownish layer of pigment, a thick middle layer light yellow in color consisting largely of cholesterin, and a small dark nucleus of pigment. They dissolved with about equal readiness in the different oils, losing approximately one-quarter of their weight in twelve hours, one-half in twenty-four hours, and three-quarters in forty-eight hours. After thirty-six hours' immersion, little was left but the nucleus. The stones used in the second experiment were removed from the gall bladder by operation. They were considerably greater in bulk than those of the first experiment, being somewhat larger than cherry stones. They were hard in consistence and appeared to dissolve uniformly, maintaining their original brownish yellow color. In the process of solution they exhibited no well defined layers. They seemed to contain a larger amount of pigment and salts than the other stones and lost a much smaller percentage of their weight during corresponding periods of immersion in the oil. After four days those immersed in olive oil had lost rather more than half their original weight, those immersed in almond oil exactly half, and those immersed in parolein less than one-third. The stones used in the third experiment were obtained from the same source as those used in the second. They were of enormous size, being as large as filberts. Although they commenced to dissolve in one hour, the loss of weight per cent., as time went on, was not nearly so great as in the previous experiment. At the end of the twenty-five days, those immersed in olive oil had lost rather more than half their original weight and those immersed in parolein rather more than one-quarter.

Earth Worms as Propagators of Disease.—Dr. Halsted Boylan of Paris has recently presented some ideas concerning the cause of yellow fever, charbon and tetanus, and he claims that the worms coming to the surface of the earth from the bodies of those buried who have died of these diseases frequently act as propagators of the germ or poison. The earth itself becomes contaminated and the poison is inhaled by man, eaten by cattle or infects the water, which afterward becomes a fruitful source of disease propagation. Verneuil has called attention to the fact that tetanus is most frequent among those coming in any way into contact with horses, it only being necessary for men under these conditions to have upon their hands a small cut, scratch or wound inadvertently brought into contact either with the manure containing the bacillus or with the ground infected thereby. The first experiment of this kind was made by Nicolaier, who demonstrated that the subcutaneous inoculation of earth taken in the fields, gardens and streets determined in mice, rabbits and guinea pigs, at times septicemia by septic vibrios and at others tetanus. The contamination from below the surface is two fold; miasma and emanations from the soil in paludial districts or when particles of organic substances rise to the surface in different states of alteration, coming from the tissues of decomposing animal matter and by the ordinary rain worm. W. Theobald in a recent lecture claimed that in 1850 yellow fever appeared in the Valley of the Amazon where it had been previously unknown, and a careful investigation traced its origin in that locality to the burial of a man from Jamaica who had died from the fever and had been landed at Para for burial. The soil on the surface was found to be charged with the microbes of yellow fever. The question now rises whether typhoid and malarial fevers may not be also disseminated in this manner. The one has its bacillus of Eberth and the other its hematozoon of Laveran. Both are very resistant and the worms may swallow particles of them and deposit them on the surface with the same facility as the bacilli of yellow fever, although this method of transmission of typhoid and malarial fevers is not generally admitted. Pasteur has found the germs of charbon in the superficial layers of the earth over ditches where sheep that had died of the disease several years previous had been buried. The earth worms are the first carriers. In the depths of the soil they swallow minute particles of earth containing the spores formed around the cadavers of men and animals, for the purpose of extracting from them what nutritive substances they may contain and rendering them on the surface in the form of little twisted cylinders of a dark brown color. The practice of cremation is strongly urged to destroy these dangerous elements of both the bodies of those having died of the contagious and infectious diseases and the soil surrounding their place of burial.

Telegraphy Without Wires by the Marconi and Rubens Methods.—The *Consular Reports*, September, has a communication from Consul General DeKay, at Berlin, regarding the present status of the above subject-matter, interesting to the profession. The latest work in this direction appears to have been done by Rubens of Frankfort who is an instructor in electric physics at the Berlin Policlinic. Marconi experimented from the British mainland to an island four marine miles distant. He used a generator of electric waves invented by the late Professor Herz, which generator throws the waves of electricity in all directions, as the rays of light emanate on all sides from a flame. The problem was to concentrate these waves of electricity in one direction, namely, toward the island. This he did by placing a concave mirror behind the Herz generator, by which the waves were reflected and made parallel in the required direction. On the island he placed what is called a "coherer," that is to say, a tube filled with particles of metal of just the right size and quality for the purposes now to be set forth. The coherer was set before another concave mirror, so placed that it would catch the electric waves coming parallel across the water from the concave mirror and Herz generator on the mainland. The coherer was set exactly at the focus. Imagine that the Herz generator on the mainland is a flame whose light rays are caught by a concave mirror, thrown over to the island, caught there in another concave mirror and focused on the coherer. Now, the metal particles in this coherer are so adjusted as to size that the whole may be likened to a violin string which vibrates when a certain sound is made by the voice. As one can tune a violin string to a certain note, so one can find the metal particles that will vibrate to an electric wave of a certain size. Try to pass an electric current through these particles at ordinary times and there will be no result; but when the waves generated by the Herz generator, coming from a distance, fall on these particles, a vibration is set up in them, they touch each other, and a charge of electricity applied to the tube is allowed to pass through and can be registered in the usual way. Thus, the coherer, being supplied with an ordinary battery and Morse electromagnet, permits the circuit to be closed when the electric waves from the mainland reach it. The click is registered only when the rays or waves from the Herz generator are reflected on it. The electric waves are not believed to be vibrations in the air itself, but rather in the ether between the particles of air. As compared to light waves, they are of enormous relative size. It will be noted that the electric current on the island sent through the coherer has no other office than to strengthen and register the effects of these waves or rays caught by the concave mirror and focused on the coherer. Professor Rubens, a young German of Dutch extraction, recently delivered an address at the Polytechnicum in Charlotten-Berlin, before a number of instructors, in the course of which he said:

"Since Herz's death in 1888, much progress has been made in reducing the size of the electric-wave generator. As the size of the apparatus has a relation to the length of the electric waves, and as it was desirable to shorten these waves, the decreased size of the apparatus has been of use in making air telegraphy more practicable. Shorter electric waves are more approximate in their action to waves of light, and go further. Up to the present, the shortest are those of the Russian experimenter Lebedew, who has produced them from 6 to 7 millimeters long. Professor Rubens showed a thermo-element or heat catcher, invented by himself to take the place of Marconi's coherer, which catches, like the coherer, the refracted and focused electric rays. The spark, he observed, was not at all a necessary phenomenon in electricity. He then made many curious experiments to show the similarity in action of waves of light and waves of electricity, and also drew attention to the very different way in which electric and light waves pass through different substances. Thus he reflected electric waves like light, refracted them with prisms, and diffracted them with a wire grating of parallel wires, as light is diffracted by Langley's grating. He then showed the polarization of these rays—freely, through the fibers of wood longitudinally; and badly, across the fiber; easily, through closed books with the leaves; and with difficulty, across. Thus a pile of books or sheets of glass showed polarization like crystals under light. He showed, also, that on account of the length of these waves, their energy was absorbed differently by different substances: thus, 1, water absorbs all the energy; 2, metals absorb all the energy; 3, glass absorbs nearly all; 4, paraffin absorbs hardly any, and 5, hard rubber absorbs hardly any. Thus they move through hard, black rubber and paraffin as light moves through air, glass or water, that is to say, with hardly any resistance, while glass lets very little of them through, and metal and water are impervious to them. Professor Rubens imbeds his Herz generator in petroleum for better isolation, and, as a handy concentrator of the electric waves or lens, uses a round glass bottle filled with petroleum. By placing in turn the glass prism, wire grating, block of wood, pile of books, water, paraffin and hard rubber in the line of the unseen electric waves pouring from the generator and concentrator toward the wave catcher, he showed on an indicator the passage, easy or retarded, of the unseen flow or its entire interruption."

Detroit.

The Regular Meeting of the Wayne County Medical Society was held December 2. Dr. W. T. Corlett of Cleveland, Ohio, read a paper on "Recent Researches in Ringworm." The paper was illustrated with lantern slides and microscopic specimens, showing the different clinical varieties of the disease and the microscopic features. The doctor, who is a disciple of Sabouraud of Paris, gave as the divisions of ringworm, tinea tonsurans, tinea sycosis and tinea circinata. He divided the fungi which cause ringworm into the trichophyton microsporon, trichophyton megalosporon endothrix and ectothrix, each of which produces a distinct clinical variety of ringworm. The first produces ringworm of the scalp in children of from 2 to 15 years of age. It is extremely rebellious to treatment except on hairless surfaces. The second produces nearly all cases of tinea circinata of the body, eczema marginatum and sycosis without folliculitis. It is much less contagious than the first variety and yields very readily to treatment. The third fungus is supposed to be of animal origin. In childhood it gives rise to kerion and in men to sycosis accompanied with deep suppurative folliculitis. The clinical features of each variety of the disease were minutely described, together with the microscopic features of the hairs involved. For the treatment, thorough cleanliness, epilation of the hairs, chrysophanic acid, oleate of mercury and of copper and boracic acid were recommended, and the specific treatment for each variety was thoroughly discussed.

A Meeting of the physicians of Detroit was called by the local board of health on Saturday afternoon, December 4, to discuss the necessity of placing tuberculosis and whooping cough in the same category with diphtheria, smallpox and such diseases, placarding the houses where tuberculosis and where whooping cough exist and isolating the patients infected with such diseases as proposed by the State Board of Health. There were about forty of the representative physicians of the city present. After discussion, the following resolution was unanimously passed: "That it is the sentiment of this meeting that it is unnecessary and inadvisable to placard, isolate, or in any way make public the fact that any person has consumption, but that it would be advisable to educate the public through the physician by suitable literature from the Board of Health. Further, in assisting the physicians, it would be advisable for the health board of the city to institute bacteriologic examination of sputum." Whooping cough was then taken up, and it required only three minutes to discuss and pass a motion discountenancing the proposal to include it in the list of contagious diseases.

HEALTH REPORT for week ending December 4: Births, male 39, female 36. Deaths 69, of which 25 were children under 5 years of age. Contagious diseases: Diphtheria, 13; scarlet fever, 61; deaths from diphtheria 4, none from scarlet fever.

Dr. C. B. EGGEMAN of this city died on November 30. He was the son of the late Dr. Rudolph Eggeman, and was born in Detroit, March 23, 1857. He was a graduate of the Detroit College of Medicine, class of 1879. After taking his degree he went to Philadelphia and attended the Ophthalmic College, and then began the practice of his specialty of diseases of eye and ear in Detroit in 1881. He was a member of the Masonic fraternity and of several other local societies.

THE 44TH SANITARY CONVENTION OF MICHIGAN was held in Detroit under the auspices of the State Board of Health, December 9 and 10. President Thomas W. Palmer addressed the convention. Papers were read by Prof. Frederick G. Novy, M.D., of Ann Arbor, "Germs, What they are and how they Produce Disease;" by Hon. Frank Wells, President State Board of Health, Lansing, "Statement of the Objects of the Convention;" by Guy L. Kiefer, M.D., Detroit, "Isolation and Disinfection of Persons and Things;" by Miss Harriett Marsh, Principal of Hancock School, "Popular Education in Sanitary Science;" discussion of the subject by Prof. S. Emory Whitney, principal of Cass School, Detroit, and Prof. Delos Fall, member of State Board of Health, Albion; by Charles T. McClintock, M.D., Detroit, "From the Purely Scientific Standpoint;" by Chas. G. Jennings, M.D., Detroit, "From the Physician's Standpoint;" by Oscar Le Seure, M.D., member of Detroit Board of Health, "From the Standpoint of the Local Board of Health;" by John McVicar, president of the Board of Public Works, "Streets and Alleys and Their Relation to the Public Health," discussed by Mrs. L. H. Trowbridge, Dr. J. E. Clark and Dr. Longyear.

Washington.

HEALTH OF THE DISTRICT.—The report of the health officer for the week ended December 4 shows the total number of deaths to have been 83, of which number 44 were white and 39 colored. The principal causes of death were: consumption 11, heart disease 5, pneumonia 14, typhoid fever 2.

MEDICAL SOCIETY.—At the recent meeting of the Medical Society Dr. Deale read an essay entitled the "Climatic Treatment of Pulmonary Tuberculosis," and presented specimens of fibrosarcoma of the uterus. Dr. Stone presented specimens of extrauterine pregnancy and appendicitis. Dr. Allen read a paper on "Senile Epilepsy." Dr. Caldwell presented a specimen of cancer of the stomach, and Dr. Acker presented a specimen of tubercular tumor of the brain involving the cerebellum and pons.

WASHINGTON OBSTETRICAL AND GYNECOLOGICAL SOCIETY.—The 271st meeting of the Society was held on December 3. Dr. Acker read a report on two cases of acute purulent peritonitis in infancy.

Hospitals.

ST. LUKE'S HOSPITAL, Borough of Manhattan, New York City, at the annual meeting in December showed that the death rate from all causes for the year was 10.3 per cent. In the medical department 1,201 cases were treated, and 1,243 in the surgical department. In the patient or dispensary department, which was opened on Nov. 4, 1896, 2,608 new patients have been treated and 9,930 visits made. The total house expenses for the year were $153,299.04. A report made by the building committee stated the cost of the new buildings to be $1,749,605, which, added to $530,000, the cost of the land, brings the total outlay up to $2,279,605. The deficiency of income as against expenses for the year ending Sept. 30, 1897, was $57,499.25.

Societies.

The following meetings are noted:

Connecticut.—New Haven Medical Association, December 2.

Georgia.—Athens Medical Society, December 2.

Illinois.—McLean County Medical Society, Bloomington, December 2.

Indiana.—The Perry County Medico-Surgical Society, Tell City, was organized December 4.

Iowa.—Iowa Central Medical Society, Marshalltown, December 14; Polk County Medical Society, Des Moines, December 7.

Maine.—Portland Medical Club, December 2.

Massachusetts.—Eastern Hampden Medical Association, Springfield, December 2.

Minnesota.—Hennepin County Medical Society, Minneapolis, December 6; Minnesota Academy of Medicine, Minneapolis, December 1; Minnesota Valley Medical Association Mankato, December 6.

New York.—Glens Falls Medical and Surgical Society, December 2.

Ohio.—Cuyahoga County Medical Society, Cleveland, December 1; Logan County Medical Society, Bellefontaine, December 5.

Pennsylvania.—Harrisburg Academy of Medicine, December 3; Lebanon County Medical Society, Lebanon, December 1; Luzerne County Medical Society, Wilkesbarre, December 6; York County Medical Society, York City, December 2.

CHANGE OF ADDRESS.

Appleby, T. E. W., from 226 Summit Ave to 48 E. 4th St., St. Paul, Minn.

Bullard, W. M., from Wickes, Mont. to Fall Brook, Cal.

Fisk, [illegible] F., from Chicago, Ill. to Waterloo, Ind.; Friedel, A. H., from 27 Waverly Pl. to 828 W. Monroe St., Chicago, Ill.

Hanna C. U., From Palaskala to 46 So. 6th St. Zanesville, Ohio.

Langdon, F. W., from 65 W. 7th to 5 Garfield Pl. Cincinnati, Ohio; Litvin, A., 538 So. Halsted to 568 W. 14th St., Chicago, Ill.; Lagorio, A., from 65 Randolph St. to 228 Dearborn Ave, Chicago, Ill.

Moody, H. A., from Bailey Springs to 988 Government St., Mobile, Ala.; Miner, A. L., from Ponsford, Minn. to Bellows Falls, Vt.

Pomeroy, H. M., from 200 W. 118th St. to 222 W. 23d St., New York, N. Y.

Rugg, D. F., from Hartland, Vt. to Adirondack Cottage Sanitarium, Saranac Lake, N. Y.

Straley, S. B., from Andover, N. J. to Pasadena, Cal.; Shastid, T. H., from Galesburg, Ill. to 202 N. Washington St., Battle Creek, Mich.

Thomas, J. D., from the "Cairo" to 1181 Connecticut Ave, Washington, D. C.

LETTERS RECEIVED.

Alta Pharmacal Co., St. Louis, Mo.; Alkaloidal Clinic, Chicago, Ill.; Ayer, N. W. & Son, Philadelphia, Pa.

Braden, J. N., Well Spring, Tenn.; Banton, J. F., Rockford, Ill.; Bailey, W. C., Las Vegas Hot Springs, N. M.; Battle & Co., St. Louis, Mo.; Beaumont, R. L., Chicago, Ill.; Bronson, A. F., (2) Girardville, Pa.; Bryant, Miss Grace W., Chicago, Ill.; Brady, Jos. B., Grand Rapids, Mich.; Bosher, L. C., Richmond, Va.; Butterworth, Alice, Chicago, Ill.; Baltimore & Ohio Southwestern Railway Co., Cincinnati, Ohio; Bates, U. C., Ransom, Mich.; Blakiston P., Son & Co., Philadelphia, Pa.

Concanon, James J., New York, N. Y.; Cusick, Wm., Cynthiana, Tenn.; Cross, J. W. S., Plainville, Kan.; Caldwell, J. L., Lafayette, Ind.; Craig, G. G., Rock Island, Ill.

Edmonson, G. S., Maroa, Ill.; Eclipse Bicycle Co., Elmira, N. Y.; Egan, J. A., Springfield, Ill.; Ester, G. L., Rock Island, Ill.

Fehr, Louis J., Hoboken, N. J.; Flavell, G. W. & Bro., Philadelphia, Pa.; Fairball, Joseph, Danville, Ill.; Fougera, E. & Co., New York, N. Y.

Gould, George M., Philadelphia, Pa.; Godin, H. J., Augusta, Ga.; Glueck, F., Davenport, Iowa; Goelet, A. H., New York, N. Y.; Garrison, Harriet, Dixon, Ill.; Gihon, A. L., New York, N. Y.; Gilpin, Langdon & Co., Baltimore, Md.; Grigsby, W. E., Blandinsville, Ill.

Howle, W. P., Oran, Mo.; Hawkins, Armand, New Orleans, La.; Howard, A. B., Cuyahoga Falls, Ohio; Harris, J. L., Webster, S. D.; Hull, W. H. H. & Co., New York, N. Y.; Hart, B. F., Marietta, Ohio; Horning, Frank, Hellam, Pa.; Henderson, D. W., Marysville, Ohio; Houghton, Mifflin & Co., Boston, Mass.

Klebs, A. C., Citronelle, Ala.; Kruger & Co., Leipzig, Germany.

Lentz, Charles & Sons, Philadelphia, Pa.; Lieberman, G. N., Adamston, W. Va.; Luckey, John E., Vinton, Iowa.

Mariani & Co., New York, N. Y.; Monette, Geo. N., New Orleans, La.; Medical Examiner, The, New York, N. Y.; Mills, H. R., Port Huron, Mich.; Munn & Co., New York, N. Y.; Moore, Dwight S., Jamestown, N. D.; Montgomery Ward & Co., Chicago, Ill.; Mowery, H. W., Marietta, Pa.; McLean, C. H., Durango, Colo.

Osgood Palace Car Co., Boston, Mass.; Osborn, B. D., Waldo, Ohio.

Peacock Chemical Co., St. Louis, Mo.; Patton, E. E., New Kensigton, Pa.; Parker, F. D., Akron, N. Y.; Pepper, Wm., Philadelphia, Pa.

Rothrock, J. T., Harrisburg, Pa.

Scott, W. Stone, Cleveland, Ohio; Stevenson, Sarah Hackett, Chicago, Ill.; Sincere, Emil, Chicago, Ill.; Stearns, Frederick & Co., Detroit, Mich.; Savage, G. C., Nashville, Tenn.; St. Charles Condensing Co., St. Char[illegible] z, (2) New York, N. Y.; Shelden, N. K., Battle C[illegible] G. G., Thomas, W. Va.

Ty[illegible]

Van Male, John, Bangor, Cal.

Wood, T. J., Huron, S. D.; Walker Pharmacal Co., St. Louis, Mo.; Walker, Hiram & Sons, Walkerville, Canada.

Zeit, F. Rob, Chicago, Ill.

THE PUBLIC SERVICES.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from December 4 to 10, 1897.

Capt. Madison M. Brewer, Asst. Surgeon, is granted leave of absence for four months from the date of his departure from Ft. Keogh, Mont.

Capt. William O. Owen, Asst. Surgeon (Ft. Bayard, N. M.), is granted leave of absence for one month.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending December 4, 1897.

P. A. Surgeon S. S. White, detached from the "Concord" and ordered to the "Wheeling."

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ORIGINAL ARTICLES.

EXTRA-UTERINE PREGNANCY, WITH REPORT OF CASES.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY M. PRICE, M.D.
PHILADELPHIA, PA.

In considering the condition of extra-uterine pregnancy there are very many questions of great professional interest, some not yet finally settled, all relating to the condition; giving light upon its treatment is of vast importance to the practitioner. It is important that he should be familiar with all the more prominent symptoms of an accidental misplacement or deviation from lines of normal pregnancy.

All cases of suspected pregnancy in women who have had a longer or shorter period of sterility, should be carefully watched in the early months for symptoms of tubal gestation. I do not know of a single case of rupture, or the history of rupture with well marked symptoms of loss of blood, that the rupture did not take place before the twelfth week.

All these cases must of necessity first pass through the hands of the general practitioner, and are lost or saved through their appreciation of the symptoms and their ability to make a diagnosis.

If the real character of the accident goes unrecognized, the great majority of these cases of extra-uterine pregnancy perish; death is almost certain and in very many instances sudden.

They perish in the majority of instances because of the failure of the physician to make a diagnosis; they perish of hemorrhage, septic peritonitis, obstruction of the bowel, etc.

That there are instances of recovery in ectopic pregnancy, without surgical interference, we are not prepared or disposed to dispute, for there being instances of recovery we have the testimony of men who by their wide experience are entitled to speak with some weight of authority. Numbered among these are the eminent English surgeons, Tait, Greg Smith, Taylor and others. Recoveries are reported by a number of American surgeons.

Our earlier gynecologic literature, that antedating our advances in abdominal surgery, abounds in the reports of cases where symptoms and conditions, the entire clinical history, could only be interpreted in our present light as ectopic pregnancy.

These cases augmented the statistics of every practitioner's mortality. They were classed under the head of hematocele. There has been very considerable useless groping around by surgeons in settling the nomenclature of this trouble. We are gradually settling into a common sense simplicity of terms. The symptoms, the actual perils of the condition bother us more than those confusing, misleading or obscure names under which too many things medical and surgical pass or, to speak more accurately, stay. With names as with operations, the more simple and intelligible the better. Because exceptional cases recover, we can not afford the risks involved in delay, the long suffering, if not death, to which the patient is exposed. We can not determine in any given case the probability of recovery. We know this condition kills, that the only certain relief is good clean surgery and that in the hands of men with a prolonged surgical experience few die.

The word "variety" used in connection with ectopic gestation has very little practical interest to those of us whose sole object is to save life. Speaking for myself, from my own experience and observation, whatever may have been that of others, I have never seen in my own work, nor in that of Dr. Joseph Price (numbering together more than 175 cases), but one variety, that of tubal pregnancy. And I have seen them in all stages from the first to the tenth month, and have yet to see the first case developed in the broad ligament. I have seen the ovary stretched over and part of the capsule enveloping the child, which by some would probably have been called an ovarian pregnancy.

The symptoms of extra-uterine pregnancy are almost infallible. It is rare indeed for the symptoms of this condition to be taken as evidence of some other trouble, but it is not an infrequent occurrence for other conditions to be taken as extra-uterine pregnancy.

Lawrence Tait has made this subject one of such thorough investigation, and has taught us the lessons of his wide and successful experience, that it would seem that little aside from what he has said is worth saying. We can not do better than to follow his teaching and record as successful experiences. We can offer very little excuse for making mistakes in diagnosing this condition. There can be but two, ignorance or carelessness. It may occur repeatedly; it does occur that the practitioner recognizes the condition, but is without that surgical experience which would enable him to surgically deal with the condition. In this situation the duty is plain, that of promptly calling in the assistance of one as expert in the surgery of such cases as is at command. The duty is equally imperative upon the surgeon to promptly respond. Where the issue is one of life, no mere personal prejudices or questions of loss or gain should restrain or influence professional action.

As to those cases which go to term I will give my own opinion, deductions of my own experience. The possibility of these cases going to term is not disputed. Conclusions from my own observations may not accord with those of others of the profession. I have seen three cases at or near term. In each case the child was encapsuled in an amniotic sac and not in the broad ligament. My reasoning is that the fetus is forced through the rent in the tube encapsuled in its amniotic sac. And if the placenta has sufficient attachment to continue the life of fetus until the placenta has made new attachments, the child continues to develop in its sac surrounded by the abdominal viscera, coming in contact with it, forming adhesions and in this way materially aiding and strengthening the walls of the sac. I am of opinion that the reason why we so often find the fetus absent in undoubted cases of tubal pregnancy is not only that the tube has been ruptured, but also the amniotic sac, and the fetus is forced into the general peritoneal cavity where a few days will suffice for its digestion.

As to just how soon the fetus can possibly be protected by the amniotic sac I am unable to say. I have found the fetus not longer than a Lima bean, but it was in those cases where the primary rupture and the operation for the relief followed immediately. It is rare indeed to find a child where there has been several attacks or several severe hemorrhages, but you find everything else, the ruptured tube, placenta and all that pertains to a ruptured tubal pregnancy save the fetus. I have seen a number of cases, from the second month on, where it could be clearly demonstrated that the child was within the amniotic sac. In this connection Tait uses the following language: "I have at the present moment lying in these very rooms a fetus of the full term which I removed from among the intestines, and round which nearly complete amniotic membranes were to be seen." I do not deem it possible that a child could live long at any period of gestation free in the peritoneal cavity. My conviction is that it would be encapsuled by the omentum or protected by an inflammatory barrier in some way. There are a number of cases on record, but there is very little to explain or show how long y had been so placed or how protected. Very ny of the recorded cases give a very unsatisfactory nical history and few of those interesting phases racteristic of these cases.

My case at term, reported some five years ago ere both mother and child lived, was in the tenth nth of gestation and in the amniotic sac. When nurse attempted to wash the child she found that the slightest rub of the wash rag she would take skin off. The child would bleed from every point touched, showing that the child was already being ested alive. The mother and child are today both ng and well, the child a beautiful little girl. I will pardoned here for a moment's digression. This e is reported in Gregg Smith's system of abdom- l surgery as operated on by one Dr. Eastman, no of the name known to belong to the profession of iladelphia. This goes to illustrate the worthless racter of the statistics of even eminent authority. is case is stated by Smith to be the only one in rica where mother and child both lived. As he manner of dealing with the placenta, where it ssible the placenta should be removed. Where s not contracted adhesions outside of the pelvis, involving bowel and mesentery in its attachments, re is probably less danger in its immediate removal n to treat it in any other way. It is only rarely t you can obtain a pedicle and control hemorrhage ligature. The gauze pack is probably the only thod in many cases by which hemorrhage can be ntrolled. *Up to the beginning of the fourth month* there is no trouble in controlling hemorrahge by ligature. From the fourth month on, hemorrhage is the most serious complication. The second method of dealing with the placenta is what is called the open method of treatment, the one used in my case of term with the result of saving both mother and child. In this case, for thirty-five consecutive days, this woman with an abdominal wound six inches in length, with the amniotic sac stitched to the wound, endured daily the packing of the wound with from four to five yards of bichlorid gauze, this over the face of the placenta, covering a space as large as the rim of a man's hat. It was attached to everything from the left cornu of the uterus, descending colon and part of the transverse colon and over the entire face of the left kidney. The placenta was black and gangrenous in appearance and owing to the desperate condition of the patient, three determined efforts were made to remove the placenta. These efforts had to be abandoned on account of the frightful hemorrhage. Gauze packing in each instance stopped the hemorrhage at once.

On the tenth day, when the first attempt at removal was made, her temperature dropped to 96 degrees. The temperature chart indicated variations of temperature from 96 to 105 degrees; this for thirty-five days. At this time the whole left side of the body seemed to contract just as the uterus does in labor, with free discharge of blood. I at once removed almost the entire placenta, cutting it loose with the fingers just as we do from the uterus in a partially detached placenta, meeting with about the same amount of difficulty. There was free hemorrhage which was controlled by gauze pack. This immense opening had almost entirely closed in a week's time. I am positive that after my experience with hemorrhage, sepsis and other accidents incident to this manner of treating the placenta, I would not again resort to the practice of the open method and leave the placenta to slough away. It is out of the question to talk of removing the placenta in these cases at time of the operation, for the patient would beyond doubt perish from hemorrhage. I believe it to be better to cut short the cord, thoroughly clean the face of the placenta, remove all loose membranes and clot and close the abdomen, trusting to absorption, or later, when the condition of the patient indicates the necessity for a second operation. This impresses me as the safer procedure because it can not possibly offer any poorer chance for the patient than the open treatment. When the placenta is placed in the pelvis and is attached to either ovary, tube, uterus or pelvic wall, and it may only be slightly to abdominal viscera, the entire uterine mass can and should be removed at the time of operation at any cost, but when the placenta has formed attachments to vital organs and over a large surface, the patient would perish if removal of the placenta was attempted. These questions can only be decided by those who have many times dealt with such cases; it is nonsense to say that any surgeon can deal with the complications always possibly involved in this condition. He must be an abdominal surgeon trained by many experiences, with a knowledge of all the varying conditions met with in these cases and the surgical confidence to grapple with any possible emergency. The reference of these cases to those trained by special study, long clinical experience and observation brings no opprobrium upon the general practitioner, whose care is of the general public, the treatment of the more general ailments. His time and study are too much taken up for him to become expert in major operative procedures. The common diseases of women and children, and obstetrics, one of the most important branches of medical practice, open a wide field for usefulness and honor. The wounded patient, whether by disease or accident, is entitled to the best skill.

In the report of nine cases in the London hospitals, in the later months of extra-uterine pregnancy, five perished, certainly a large mortality. These cases were probably in the hands of some of the best general surgeons in the world, but we should infer from the mortality that they were men not specially trained in abdominal surgery. In extra-uterine pregnancy there is no time for the discussion of symptoms, easy chair deliberations, for consulting the books or literature of the subject. collecting an armament of instruments—there is always urgency and there should always be readiness. Ninety-nine times in a hundred the operation is to save life from hemorrhage. Usually sufficient time has already elapsed to leave the patient pulseless and in collapse. This collapsed condition results from two causes: 1, from direct loss of blood; 2, from intraperitoneal pressure on the abdominal sympathetic nervous system. The urgent indications are the immediate stoppage of the hemorrhage. The only way to do this is to open the abdomen and tie the vessel; *no matter what condition of collapse the patient is in, so she is not actually dead.*

More than half the cases I have operated on have been pulseless at the wrist, and to all intents and purposes almost at their end. In many of these cases, as soon as the abdomen was opened and the ligature applied, the hemorrhage stopped, and after the great quantities of free blood in the peritoneal cavity, in many cases amounting to two or three quarts, was removed, there would be a moderately good pulse at the wrist. A statement made by Dr. Hobart A. Hare of Philadelphia may have some bearing in this connection. In a discussion, he called my attention to experiments he had made by forcible injections of water into the peritoneal cavity of a dog. and that it would kill him much quicker and with a very much smaller quantity of water than if injected into the bowel. I believe this goes to explain the quick recovery from the grave symptoms of ruptured extra-uterine pregnancy after operation. The hemorrhage is stopped and the pressure removed from the sympathetic nervous system. If the practitioner has not or can not diagnose a case in hand correctly, it is criminal for him to permit his patient to go an suffering while he refuses or neglects to call in advice. It is to be presumed that when a man operates for extra-uterine pregnancy, that he has made a diagnosis. There can be but little shock in an operation that involves only two inches of the abdominal wall, the delivery of the specimen and the application of the ligature. How is it possible for any one to justify delay when we compare this procedure with the actual condition of the patient, hemorrhage and intraperitoneal pressure, with everything pointing to speedy dissolution. Later, in the surgical treatment of this condition, say from the fourth month to term, before operation, there are questions to be considered more important than that of hemorrhage. We have then to consider the dangers during and after operation and how to deal with them. It is these very dangers and how to deal with them that have interested the profession. The later months with the attendant risks are anxious months for the patient and attending physician if real conditions are realized. The profession is not of one opinion as to the plan of surgical procedure and after-treatment in cases of extra-uterine pregnancy when they have passed the fourth month.

I am of the opinion that no matter at what period of gestation a woman may be in, an effort should be at once made to end the pregnancy by surgical means, for there is not an hour that the patient is not in danger, and every day that the fetus is allowed to remain the risk to the patient is increased, and for that reason there should be prompt, unhesitating interference to terminate it.

The united surgery of the world has only been able to save from eight to ten children where these cases have reached term, with a mortality to the mother and an anount of suffering that by no possible argument, with the simple claims of humanity in the balance, could justify.

If the peritoneum can be left with everything removed, with a well-placed glass drainage at the lower point of the wound, the result will be perfect. If the hemorrhage can not be controlled without a gauze pack we should then depend on gauze drainage, which, while it will save life, greatly prolongs the after-treatment. The toilet of the general peritoneal cavity should be perfect. It should be faultlessly clean and kept so. If there has been contamination from any source there should be thorough cleansing with clean boiled water.

Case 1.—Mrs. Y., operated on Jan. 20, 1896, for extra-uterine pregnancy, supposed to be in the tenth week of pregnancy. About two quarts of liquid and clotted blood were removed at the time of operation. The child was partially digested. The patient made a good recovery.

Case 2.—Mrs. L., patient of Dr. Burroughs, Trenton, N. J. Operation April 19, 1896. Tube ruptured near its end. The placenta and about a quart and one half of blood obtained. Glass drainage for three days. Patient made a good recovery.

Case 3.—Mrs. S. S., patient of Dr. Edwards of Williamstown, N. J. There was not a very large quantity of blood, probably about a quart. Rupture had taken place several weeks before I saw her. Liquid portions of the blood had been absorbed. Fetus was not found. Placenta and tube were removed. Irrigation and glass drainage. Tube removed on the third day. Satisfactory recovery.

Case 4.—Mrs. T., patient of Dr. Hubler, Pittston, Pa., Dec. 5, 1896. Operation. A moderate quantity of blood, irrigation and drainage. Placenta, tube and ovary all removed. Recovery.

Case 5.—Mrs. W., patient of Dr. Shea. Extra uterine pregnancy; about the twelfth week. The contents of sac suppurating. Patient septic. The sac, placenta and tube were removed. Irrigation. Glass drainage for four days. Recovery.

Case 6.—Mrs. L. G., patient of Dr. Nock, Philadelphia. Mrs. G. is a thick-set woman, twice married, and during her first marriage had a number of provoked miscarriages, some of which must have left the tube in condition favoring extra-uterine pregnancy. After her second marriage both she and her husband desired children, so were much pleased when the wife developed symptoms of pregnancy. They had been married three years when, as they supposed, this much to be desired accident happened. She missed her period on Jan. 11, 1897, followed by sick stomach and severe pain in the abdomen on or about February 15. She suffered with very severe pain in the abdomen followed by a weak faint feeling which sent her to bed. This condition was followed by a slight bloody discharge which continued to increase until March 16. During this time she had a number of these attacks of pain followed by a weak faint feeling, with constant tenesmus and desire to go to stool, but could not accomplish anything. On March 16 I was called to see the patient by the following note from her attendant, Dr. Nock: "I have in my opinion a case of tubal pregnancy with rupture. Can you come at once and operate?" I operated at once and found the conditions as stated by her attendant correct. The woman made a beautiful recovery. In this case no fetus was found; the rupture probably had forced the child into the peritoneal cavity and it was there digested. The placenta was living and adherent to the end of the tube.

Case 7.—*Extra-uterine pregnancy.*—Mrs. M. C., age 31 years; one child 5 years old, a boy; always a strong, healthy, robust woman; had one miscarriage; last menstrual period on

Nov. 28, 1896; December period missed. On Jan. 28, 1897, while washing her feet, she felt some little pain in the abdomen. After going to her room the pain increased, accompanied by symptoms of fulness in the bowels with severe tenesmus. She went to the water-closet feeling that the bowels must be relieved at once. Nothing passed from the bowel.' The fulness and tenesmus increased. She made ineffectual efforts to relieve the bowel; this is the last she remembers. Her husband found her in a dead faint on the floor, very pale and pulseless. A physician was called who said she was suffering from peritonitis. The severe pain and distension of the abdomen he said all indicated peritonitis. From this time on until March 14, when I first saw her, she had a number of paroxysmal attacks of great pain accompanied with great weakness. There was a slight bloody discharge almost continuous after the first rupture in January. She had all the classic symptoms of extra-uterine pregnancy: Sterile for a number of years; a missed period; sick at the stomach; pains in the breast; intense pain with collapse and symptoms of hemorrhage, in the constant slight discharge of blood as in miscarriage, and at the end of the twelfth week a shedding of an entire cast of the uterus. At the end of the fourth month I was asked to take charge of her. Her condition was desperate. A weak thready pulse, a peculiar nervous condition so often found in these cases, bordering on insanity. She could not sleep and could not be persuaded but that death was impending. The physical examination revealed a tumor extending to the umbilicus, hard and tender and almost as a fibroid. The uterus was pushed back and fixed in the pelvis. The cervix was soft, open and bleeding as in miscarriage. The entire pelvis was filled up with the pregnancy and blood clot. She was at once sent to Dr. Joseph Price's hospital and, as soon as she could be prepared, with Dr. Price's assistance I removed the entire mass, capsule, baby, placenta and all.

I do not know whether the baby was alive when delivered. I rather think not from the appearance of the child, and it was the opinion of those present that it was dead. I do not know that the placenta was very much alive. Some bowel stitching had to be done and hemorrhage controlled by the gauze pack. The placenta was in front of the uterus and over the left tube and filled up the left side of the pelvis. No ligatures were used. The appearance of the gestation sac was that of muscular tissue adherent to everything it came in contact with; it had no connection with the broad ligament except at those points where it came in contact with it, as it did with other pelvic contents. I have seen three pregnancies at term and many others at different stages of pregnancy, and I have the first one to see that was located in the broad ligament, but I have seen a number that had the appearance of being so located.

The capsule had much the appearance of the thickened broad ligament. In many cases of operation for the removal of extra-uterine pregnancy, it has to be removed from under the broad ligament and not from within its folds. I have now had half a hundred of these cases in all stages of their development and have never found one in the folds of the broad ligament. This has been the experience of my brother in now nearly 150 of these cases, with many of which I assisted him; nor have either of us ever seen a case of hematocele in all our work.

This patient has made a most satisfactory recovery. As she recovered from her accident and the operation, her mental condition constantly improved so that at the end of ten days her mental condition was restored. I have seen the symptom of anxiety and fear amount to terror of approaching death so that some one had to be at the bedside to constantly assure them that all was going well with them. I had one case that this condition lasted for ten days, with every other symptom the most favorable. This patient cleared up as if a veil had been removed, and was as bright and happy as she was before miserable and unmanageable.

The child in the case just reported was in its own amniotic sac. I have seen three extra-uterine pregnancies at term, or so nearly that no one could say they were not. The children were all delivered alive, but two of them only lived for a short time and the other is living and now over 4 years old. They were all in the amniotic sac and the head of one was well up under the ribs. I do not believe that an extra-uterine baby can live any great length of time in the free peritoneal cavity. Those that do and go on developing have been forced through the rent in the tube and encapsuled in the amniotic sac with sufficient attachments. If the rupture in the tube ceases to bleed, the pregnancy goes on to term or operation or the death of the child or the mother, or both, more frequently both.

THE VAGINAL ROUTE IN OPERATION FOR RUPTURED TUBAL PREGNANCY.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY J. WESLEY BOVÉE, M.D.

GYNECOLOGIST TO COLUMBIA AND PROVIDENCE HOSPITALS, AND CLINICAL PROFESSOR OF GYNECOLOGY IN COLUMBIAN UNIVERSITY.
WASHINGTON, D. C.

Ruptured tubal pregnancy has been so forciby kept to the front during the past fifteen years, that many of the profession have been led to think it is a condition in which, without exception, the life of the individual suffering from it is in great danger. We are obliged to believe it is not so dangerous in many cases, and that quite often it escapes attention either from the little discomfort caused by it, or from the physician failing to realize the condition and procrastination allowing the absorption of the escaped blood. This latter variety can not include a very large percentage of cases however, or it would more often be found as a complication of other forms of pelvic disease. We have reason to think also, that occasionally Fallopian tubes are ruptured by over-distension from blood, not due to pregnancy, but mistaken for that condition. We have recently had such a case in our own practice.

It is not the purpose of this paper to deal extensively with the general subject of ruptured tubal pregnancy, but to mention particularly the variety best operated on through the vagina. It is that special variety in which the hemorrhage has not been the most severe, has been stopped by the outer pressure of the lost blood and in which the omentum, either alone or with other structures, has formed a barrier to its progress upward into the abdominal cavity, that we think can be best operated for through the vagina.

It manifestly would not be available to select the vaginal route to control hemorrhage from an ovarian artery, or to remove from the abdominal cavity a large amount of free blood. *But for those cases in which* hemorrhage has stopped and the free blood has remained in the pelvis and is retained there by a petition from nature, no other route is as safe, quick and efficient as the incision through the roof of the vagina behind the cervix. While this is not the only variety of ectopic pregnancy in which this route is satisfactory, we wish to limit our remarks to this one kind.

The clever work of Howard Kelly, Miller of Utica, Reynolds and others in this operation, is well known and leaves very little to be said concerning the technique of the operation. The paper that Kelly read before the American Gynecological Society last year, mentions thirteen cases operated on in this manner with but one death, and that one not due to the operation *per se*. He has given in his paper the precise details and steps of the operation as well as the dangers of it, and we can only endorse his description. We have not found it necessary to continue the gauze packing as long as he recommends, and our patients have been allowed to sit out of bed about two weeks after operation, and to walk about a week later.

The difficulty concerning this method of operation is in differentiating the cases to which the vaginal route is applicable from others that demand abdominal section. We must be quite certain the loose blood is in the pelvis only. Of this we can never be absolutely certain, and for that reason we should be prepared for abdominal section in all cases of diagnosed ruptured tubal pregnancy that are to be attacked through the vagina. Lest valuable time be lost by attempting the vaginal operation first, in cases requiring laparotomy, considerable care is necessary in the physical examination of the cases. A careful examination through the abdominal walls is not sufficient. Vaginal and rectal explorations are also necessary. By all these methods we can be very certain as to whether a complete operation through the vagina can be made. And yet, in our last case of ruptured tubal pregnancy we made the mistake, and had the chagrin of being unable to remove the larger part of blood through the bulging cul-de-sac of Douglas, and had to do a section above. Kelly has called attention to the absence of hemorrhage during and after the vaginal operation. He has also invited us to notice that removal of pelvic viscera is not so common in the vaginal as in the abdominal operation for ruptured tubal pregnancy. This may or may not be advantageous. It is quite possible that Fallopian tubes that have produced tubal pregnancy and have ruptured, may be of future benefit to the patient. *Per contra*, may not their retention be a source of danger to the life of the individual, either of repeated tubal pregnancy or of sufficient diseased condition to cause future prolonged misery of that life. or even worse. This matter is still *sub judice*. On the whole, the writer feels that it is better to favor the course of leaving as much of the pelvic organs as possible, and to allow these organs an opportunity to be restored to a functionating condition.

Nature sometimes does wonderful things in this direction and we should allow her the necessary opportunities. We can feel sure the tube has recently been permeable else it could not have been pregnant. The writer has done six cases by the vaginal route, all of which have promptly recovered, and in none of them has any severe pelvic trouble followed. We should also bear in mind that many of these patients are in a condition so bad that they stand mutilation very badly, and therefore should not be made to bear any traumatism that can possibly be avoided.

The histories of the writer's cases are as follows:

Case 1.—Mary, colored, 23 years old, was referred to me and sent to Columbia Hospital Sept. 17, 1894. Her history was as follows: She had been married two years and was said to have had two abortions, the last of which had occurred Aug. 15, last, and was of a fetus of six weeks' development. As her menses were regular she was sure she had been pregnant in August, but the doctor told me, after careful questioning, that he had been called after the fetus was supposed to have been passed, and she was yet having considerable flow and pelvic soreness. She had not been well since the so-called mis-carriage, and had been flowing at intervals during the interim.

An examination revealed a slightly enlarged uterus, high and fixed anteriorly; abdomen prominent, a firm swelling in the right inguinal region that extends down behind the uterus to half way down the posterior vaginal wall; here it is boggy to touch and has the feel of an abscess pointing to open; the lowest point of the accumulation is thought to be most fluid. From the history, ruptured tubal pregnancy was diagnosed, but the physical examination led us to also suspicion the presence of pus; this was added to by the patient telling us she had been having chills and sweats.

Three days after admission the abdomen was opened and dense adhesions to the abdominal wall found; the pelvis was filled and the color of the tumor indicated blood rather than pus; closed incision and placed patient in lithotomy position. The soft lowest point of the mass was opened through the vagina with scissors, and through the opening escaped a quite large quantity of dark, fluid blood. The opening was enlarged and about two quarts of blood clot, fetal membranes and fluid blood removed. The cavity thus made extended behind and to both sides of the uterus and up to above the sacral promontory. It was irrigated freely and drained. Both appendages were found enlarged and in the adhesions, but were not interfered with in any respect. Menstruation occurred normally two weeks later while in the hospital, and on October 25, a small mass was yet present on either side of the uterus. However, as she was feeling very well and had no pelvic pain whatever, she was sent home to return if trouble occurred. The husband of this patient during the past winter told us she has had no pelvic trouble since.

Case 2.—Mrs. B., white, mother of two children, the youngest being 5 years old, was seen in October, 1895. She had not missed a period, but from various symptoms she suspicioned pregnancy and abortion, as she passed some membrane from the uterus, accompanied with great pain and some hemorrhage ten days before. An examination found the uterus slightly enlarged and softened and the cervical canal patulous. An examination demonstrated the presence of a slightly movable and nodular mass behind the uterus and ectopic pregnancy was diagnosed. The same day she was etherized and the uterus explored. It was found empty, but three inches in depth. The pelvic mass was now opened by a small transverse cut through the vaginal wall behind the uterus and its contents evacuated. It was principally coagulated blood and a small amount of membranes; a tubal cast of blood was removed; no fetus was found. As both appendages were high and adhered, I did not attempt to loosen or remove them. The sac was irrigated with boiled water and packed firmly with iodoform gauze.

The packing was removed next day and the cavity irrigated; no evidence of hemorrhage was present and no packing was inserted; vaginal douches of 1 to 5,000 corrosive sublimate solution were daily employed for nearly three weeks, when she was considered well.

Case 3.—Mary C., white, single, 23 years old, was seen at her home June 8, 1896. She had missed one period but seemed to attach no significance to that fact, pretending to have gotten her feet wet during her last period. She was very pale and suffering from severe pain in the pelvis and rectal tenesmus. It was only after considerable difficulty that her consent to a vaginal examination was secured. Upon introducing the finger into the vagina it was found to be quite capacious and the cervix slighty lacerated on the right side. Behind the slightly enlarged uterus was a boggy tumor that did not seem to extend much above the symphysis and was most marked on the left side. Upon withdrawal of my finger it was found to be covered with blood. She then acknowledged she had been treated instrumentally by an abortionist, fearing she was pregnant. This had occurred a few days before, after which, on reaching home she had gone to bed on account of severe cutting pains through the pelvis; this was soon followed by a gush of blood from the vagina, and bleeding had continued at intervals nearly all the time since.

Next morning she was chloroformed and a small opening made into the mass behind the uterus through the vaginal vault. A few ounces of thin blood and some clots poured out through this opening and a finger removed more of the same material, together with some shreds that resembled fetal membranes, and felt a roof to the cavity. The left tube was found to be low, about an inch in diameter, and in its wall was found a small opening, through which was felt protruding thin membranes. These were pulled out, and as no bleeding seemed to be going on the sac was washed out and packed gently with iodoform gauze. She made a perfect recovery and was out of bed on the fourteenth day. No fetus was found, but to the naked eye the character of the membrane was unmistakable.

Case 4.—L. L., colored, 22 years old, married, admitted to Columbia Hospital Sept. 20, 1896; had had two children, the last two years before and no abortion: menses began at 18 years of age, were regular, of fair quantity and slightly painful. The last two periods had differed however, the first being very *scant and of short duration, while the last had been continuous* during the four weeks previous to admission. She complained of severe pain in the lower part of the abdomen and of great weakness. An examination revealed blanched mucous membranes, great emaciation, a very frequent and small pulse and rapid respiration. A mass was found extending from the pelvis behind the uterus, upward about 7 cm. above the pubes, very sensitive to the touch and slightly fluctuating. The uterus was found to be slightly enlarged, fixed anteriorly and above its usual plane. The lower part of the mass was quite soft and encroached on the vagina.

September 24 vaginal puncture was made and two liters of solid and fluid blood with fetal membranes evacuated. Free irrigation of the cavity was done and as no bleeding was present, nothing further was deemed necessary. The left appendage was found very much enlarged and ragged, but was not disturbed but packed for a few days with iodoform gauze. Two weeks later she sat out of bed and was allowed to go home one week later, though the left tube was still enlarged.

Case 5.—Mrs.— had had four children and one abortion, but during the four years previous to this illness had not been pregnant. She had missed one period but did not consider herself pregnant, as no symptoms of her former pregnancies had been present and menstruation had not been regular. She had been working very hard one day arranging furniture, and was uncomfortable on going to bed. During the night she awakened with great pain in the pelvic region and felt very *faint. Thinking she had worked too hard and that it was nec*essary to rest, she did not arise in the morning. Later in the day she felt cold and chilly and sent for the writer. I was absent from the city for the day and she did not call another physician, and did not send again for me until two days later. On Sept. 28, 1896, an examination revealed the uterus to be high in the pelvis and to the front; behind this in the cul de sac was a mass, that resembled a pus tube ready to rupture into the vagina. This sac was mistaken for a pus collection, and later in the day, with the assistance of her husband, she was chloroformed and the sac opened through the vagina. To my surprise no pus came away, but instead about eight ounces of fluid and coagulated blood. As the top of the sac seemed to be firm and the appendages could not be easily palpated, they were left undisturbed and the cavity emptied of clots and a material resembling early fetal membranes. The cavity was quite firmly packed, as there was a slight tendency to hemorrh- The cavity was again emptied on the third day and lightly ked. She made a good recovery.

se 6. Mrs. H–, white, 27 years old, seen in consultation hevy Chase, Md., January 7, 1897, with Dr. E. A. Sell- sen. History: Married one year, menstruated regularly l November 15, when flow not appearing at time took a box hichester's pennyroyal pills, twenty in number, during e days, and on the 24th of that month began flowing pro- ly and with extreme pain. This was *the first painful* men- ation she had ever experienced. The pain was so severe she collapsed, and it lasted all night and well into the next . She remained in bed several days, suffering with vomiting great exhaustion. At the time I saw her the pulse rate but 9[illegible], and feeble, and the temperature 102. The uterus slightly *enlarged and pushed high to the left* and front by a mass to the right that was slightly movable and fluctuating; it was rounded and, according to Dr. Sellhausen, gradually increasing in size. Its contents were thought to be blood from a ruptured tubal pregnancy, or pus. Advised operation, and as conveniences were not at hand it was thought best to move her to a hospital, which was done the next day, after her temperature was found to be 103 degrees. January 9 opened through vaginal wall into tumor and evacuated the cavity that extended across pelvic cavity. Still higher to the right was found a cyst about three inches in diameter that was thought to be an ovarian cyst and was evacuated as well. Irrigated with [illegible] solution; after removing considerable débris [illegible] thought *to be* fetal structures, packed with gauze. [illegible] fell from 11[illegible] on the morning of the operation gradually [illegible] on the fourth day, and the temperature took a [illegible] from 103.5 degrees. She made an uneventful [illegible] and left the hospital within three weeks.

Conclusions.—In concluding we would urge:

1. That the vaginal route is preferable for operation for ruptured tubal pregnancy when the hemorrhage has ceased or is slow, the escaped blood limited to the pelvic excavation, and especially if a limiting diaphragm has formed above it.

2. That the vaginal route is freer from shock, is less liable to permit infection and furnishes better drainage.

3. That there is less liability to the removal of the adnexa than when the abdomen is opened.

4. That the period of convalescence is shorter and devoid of many of the usual complications of abdominal section.

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VAGINAL SECTION.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY LEWIS SCHOOLER, M.D.
DES MOINES, IOWA.

By the term section is meant an ample opening for the extraction of the fetal membrane, as well as the fetus itself, if present. To Recamier is awarded the piority, although *unintentional on his part.* He, *no* doubt being impressed with the teaching of the day with reference to a hematocele, which was, but a short time ago, the same as the teaching in regard to peritoneal and intraperitoneal affections. To see why this should have been so one has but to recall the unfavorable statistics with reference to many surgical affections. Lister had not then promulgated the advantages of asepsis and antisepsis. Bacteriology had not then become a science. In fact, the profession was far more ignorant regarding the causes of disaster than they are now.

The science of diagnosis of pelvic troubles was crude in the extreme. Crude for lack of accurate pathology; and while the strides toward accuracy in this respect have been great and rapid, the student of twenty years ago must often feel chagrin when he recalls how much of what he then called knowledge but now knows that it was not in reality useful knowledge, for the advancement of the age has forced him to discard it for the reason that all of our pathology was obtained from the dead subject. Today clinical observation with operations during all stages of inflammatory processes, from the earliest to the latest, has furnished the pathologist with an abundance of material and has also familiarized the operator with the microscopic aspect, which of itself is of untold value.

Two thousand years of empiricism and conservatism had accomplished little or nothing. Human suffering and surgical advancement demanded something more radical and more definite as well as more successful.

Working along these lines, in a variety of cases, principles were evolved that have completely revolutionized the practice of the older gynecologists. The gain to mankind in general and to womankind in particular *can not be computed. That errors have been* committed by *ambitious and unqualified persons* is apparent, and may have retarded scientific work in some quarters; in others it had but helped to emphasize the need of well-defined principles.

Most of us were taught that diagnosis of extrauterine pregnancy was an impossibility and as there was no treatment the diagnosis was no great loss. Today we diagnose with remarkable accuracy, operate without fear and save the lives of many women. We have learned how to prevent sepsis and to control hemorrhage; we have learned that the evacuation of clotted blood does not retard, but with proper precautions hastens recovery.

Having arrived at this point it would seem that the remainder of the distance to be traveled by the gynecologist was not beset with many difficulties. The route, however, divides right here, and what may be the proper course in one case may be decidedly dangerous in another. The infected and the uninfected, the complicated and the uncomplicated, each requires investigation. Two avenues are open, neither is safe, absolutely, as a routine. The advantages of the vaginal route are to be found in the cases where pus abounds, and where contamination of the abdominal viscera would most certainly occur were the collection attacked by that route. The pus is easily evacuated without the risk of shock, hemorrhage or contamination, and with the minimum of mutilation. Danger of infection from irrigation or mopping is not even a possibility. Breaking up of adhesions, causing bleeding, necessitating clamps or ligatures, is greatly lessened, as in the great majority of cases no foreign body is left in the wound except temporarily. In well-marked uninfected collections, with the membranes adhering to the ruptured tube, it is also possible to remove them with little or no trouble by this method, and when so done the operation, even here, possesses advantages, although it is in these cases that the abdominal method is frequently to be preferred for the reason that when the abdomen is opened the placenta may be safely removed and the hemorrhage controlled. The ligation of all bleeding vessels is done under the guidance of the eye. The operation is short and should not be followed by shock or secondary hemorrhage. The latter is an accident which sometimes occurs after the vaginal operation, requiring a laparotomy at a later date, as happened in one of my own cases. Circumstances of this kind have induced operators to recommend and to practice being prepared to make a laparotomy in the same case where the vaginal method fails or is unsatisfactory. It may be said, however, that where the vaginal wall is incised and irrigation and drainage used nothing is sacrificed by the operator. That the generative function is unimpaired, save in so far as it is interfered with by the cause which requires surgical interference; whereas by the abdominal method laceration and ligation may necessarily cause the sacrifice of an ovary or a tube.

Adhesions of intestines to uterus, tube or ovary may be greatly enhanced, while by the vaginal method it would not be at all influenced, this being, in some cases, of inestimable value afterward. It is urged by some that hernias are equally as frequent in the vagina as in the abdomen. This I do not believe: though it would not be strange should it occur oftener than it does. Healing by first intention and accurate approximation of incised tissue are not to be thought of in the vagina. Healing by second intention is alone expected and is often delayed and hindered in order to be sure that all the cavity is drained and obliterated, while in the abdomen in all properly selected cases the edges of the wound are carefully approximated and closed without drainage. The peritoneum and the different layers of tissue may be sutured separately, if deemed of advantage, though to my mind it is far from being essential. It is in these cases that we expect the greatest strength in the wall after a section. Where infection already exists or accidentally occurs at time of operation or where drainage is a necessity, a portion of the wound usually heals by second intention, just as does the wound in the vagina; and here my observation teaches me that the abdominal hernias exceed the vaginal. Ligatures themselves, when of silk, sometimes fail either of absorption or encystation and become a source of infection, locally causing abscesses and sinuses, necessitating an operation for their removal, an operation, too, no less formidable than the first and sometimes with greater danger of infection.

It is within the experience of every operator that the virulence of pus differs within the widest limits governed by age and the character of the germ. Few are there who have not opened the abdomen and found pus in abundance, which after its removal seemed to leave no deleterious effect behind, while *vice versa*, a small or recent collection was possessed of such virulence that no amount of asepsis, by irrigation or otherwise, seemed to lessen its force in the least. Could we determine this in advance it would in many instances be the governing factor in not only the cases we are now considering but with many others with which we have to deal.

The strongest objections urged against the vaginal operation are that it is not a definite operation, that damaged tissue is necessarily left behind and that bleeding vessels are unseen and may produce disastrous results, that the conception does not take place in the tube and that the product is not always found between the folds of the broad ligament, and when found free in the abdominal cavity may even glide beyond the reach of the operator, or if within reach is found to have reached too great development to permit extraction through so limited an opening.

Again, it is claimed in pus cases (and it is certainly admissible to consider them here, as pus sometimes present is a complication and again through mistakes in diagnosis, is found to be the identical condition with which we have to deal), that a cure is not effected and that abdominal section is at last the only source of relief. This is claimed to be the observation of many able operators of large experience.

In other cases it is claimed that a small amount of relief is obtained and the woman suffers on in silence rather than undergo another operation, while the operator classes the cases among the cured. How much of this is true is difficult to estimate. That in some cases palliation is the only result is doubtless true. The same may, however, be said of abdominal operation, not only when performed for this but for many other afflictions. While the more radical operation has the advantage, so far as definiteness is concerned, it is too radical sometimes. Important organs are too frequently sacrificed. The swing of the pendulum is already more conservative and the assertion that it is cowardice instead of advancement will have to be supported by argument and by facts capable of demonstration before the position taken by able and experienced gynecologists will be yielded. Since human happiness is the end sought by all it behooves us all to lay aside all prejudice and carefully record our observations only after a sufficent length of time has elapsed to insure their reliability. Preconceived theories are of no value unless supported by facts, and beliefs are of no value unless they are capable of demonstration.

If after the lapse of time the vaginal operation for extra-uterine pregnancy is found to relieve a large percentage of cases, with safety and dispatch, it will take its place as a legitimate life-saving operation. If not it deserves no better fate than to be forgotten by gynecologists, and the sooner the better.

Byford has recently reported 162 cases of vaginal section with only five deaths, and three of these cases should not have been operated upon by this method.

DISCUSSION ON THE PAPERS OF DRS. PRICE, BOVEE AND SCHOOLER.

Dr. J. HENRY CARSTENS of Detroit—These papers cover the ground of extra-uterine pregnancy pretty thoroughly, although Dr. Bovée and Dr. Price do not seem to agree. I think they are really both right. I would not like to say that we should do one operation always. Dr. Schooler and Dr. Bovée admit that when we have acute cases with active hemorrhage, the best thing to do is to open the abdomen, ligate the artery and then we have no trouble. When we have a case like Dr. Bovée speaks of, where the active symptoms have ceased, where the tube has dropped down, has become firmly adherent everywhere, it is reasonable that we should puncture the cul-de-sac, let out the blood and allow the placenta to gradually dissolve and come away with the discharges without much shock or danger to the woman. That is my method of practice. I wish to most emphatically dissent from the doctrine advanced by Dr. Price, that in case of extra-uterine pregnancy which has advanced to the fourth or fifth month, we should not take away the placenta at once. I hold that this is very dangerous and serious and very bad practice. If we have a case of pregnancy only three months advanced, we can shell out the whole thing without trouble, ligate the pedicle and close up the abdomen. When we have a six months' pregnancy with a large sac adherent to the left side of the diaphragm, the hemorrhage we get in such cases is frightful, and the woman is in great danger, in the hands of an ordinary man at least. She would not perhaps be in such danger in a hospital in the hands of Dr. Price, where he has all the facilities, but in the hands of a less experienced man and in a private house, it is dangerous practice, and it has been so proven over and over again. If the records of cases of this kind where men attempted to do too much could be collected, we should find that the mortality is frightful. I know of a number of cases that have not been placed on record. We hear only of the cases that recover. It is better practice in my judgment in cases of extra-uterine pregnancy at the sixth or seventh month to simply open up the sac, take out the fetus, stitch the sac to the external abdominal wall and let the placenta dissolve. If it is done aseptically you will have no trouble. This is the best practice for the average general practitioner who has to do this operation in emergency cases. In exceptional cases the experienced surgeon may safely take out the sac.

Dr. L. H. DUNNING of Indianapolis—In reference to ectopic gestation, I am very much of the opinion expressed by Dr. Carstens, that there is a great deal of truth in the statements of these gentlemen who oppose each other in their methods. Yesterday I stated that it was my privilege to see two old cases which ruptured early, and I saw them four or five weeks after rupture. The history was clear, yet months had elapsed since rupture had taken place. A large hematocele had opened through the vagina, and the patient made an excellent recovery.

I want to say a word here relative to the experience of Dr. Price regarding broad ligament pregnancy. I believe he has made the statement that he has never encountered a case of broad ligament pregnancy, and that he disbelieves in the existence of this form of pregnancy. I do not believe that he wishes to convey such an idea, and yet we should have this thought in our minds in dealing with every case at full term. Here are two cases which demonstrate beyond peradventure, that broad ligament pregnancies do occur. In the first case, because the picture of dissections made from the frozen subject shows the placenta was attached beneath the abdominal walls between the muscular coat and peritoneal coat. I have myself encountered one case which I operated on two and a half months after labor and enucleated the fetus and sac without rupture, the same as we would enucleate an intraligamentous cyst retroperitoneally. The placental attachment was in the tube. It was three quarters of an inch thick, distinctly separated from the broad ligament covering and might have been removed without trouble. As it was we enucleated the fetus and sac without hemorrhage two and a half months after labor. The only point I contend for is that we must recognize the fact that there is such a thing as broad ligament pregnancy.

STUDIES IN GYNECOLOGY FROM THE SERVICE OF THE WOMAN'S HOSPITAL OF PHILADELPHIA.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY ANNA M. FULLERTON, M.D.

PHILADELPHIA, PA.

My paper does not pretend to be a contribution to the most interesting and valuable subject of surgical gynecology but rather a plea for what may be termed preventive gynecology, to which perhaps we have given too little heed in the past.

Not that I would in any way decry the brilliant and skilful results attained by surgical gynecology in this day, for it is too true that diseased conditions affecting the pelvic viscera very frequently result in the production of organic lesions which induce chronic invalidism and render the functional activity of the generative organs a menace to the health and even the life of the patient. Too often, however, the operator himself realizes that in the removal of diseased pelvic organs he is but cutting away, as it were, dead twigs and branches from a plant which has a worm at the root. It is not a matter of surprise, therefore, that when the same social conditions must continue which have originally caused disease, a speedy recurrence is found of the manifestations of ill health. It has not been uncommon in my experience, after having removed pus tubes for a patient, to have her return suffering from an acute attack of gonorrheal cystitis, endometritis or vaginitis. To insure against the recurrence of an endometritis, at least, it is always best I believe in such cases to amputate the uterus at the same time that the appendages are removed.

Practically, the performance of these very radical operations upon the pelvic organs unfit a patient for the marital life, and since two-thirds of all patients operated on for pelvic diseases are women who are or have been married, the decision as to the absolute necessity for any operative procedure is one requiring a very careful judgment.

So largely is the health of a woman affected by her emotions that any cause for unhappiness induced by the changed conditions of her life may seem to make her last state worse than the first. For these reasons it is my ardent hope that we may look in the future to the fuller development of the constructive processes of our art, the making of healthy women.

How rarely do we find in the special hospitals for the treatment of the diseases of women, any tolerance of the so-called palliative measures for the relief of the pelvic disease! Yet there is a time in the development of many of these when they are not beyond the pale of hope. There is no better vantage ground for a study of woman's needs than that afforded by such a hospital as that with which I have been connected for many years, the Woman's Hospital of Philadelphia, with its large obstetric and gynecologic service. Here opportunities for careful study may be obtained, the constitutions and habits of life of patients observed and such investigations made as to cause and effect in the production of disease as can not fail to bring much enlightenment.

In reviewing the records of the Woman's Hospital of Philadelphia, during the time of my incumbency as its physician in charge, from September, 1886 to September, 1896, I found that among nearly forty thousand cases treated in its wards and dispensary over 41 per cent. were inflammatory disorders of the pelvic organs, mainly septic in origin, puerperal or gonorrheal; 27 per cent. were displacements with their attendant complications; 14 per cent. were functional disturbances, mainly due to constitutional causes and arrest of development; 7 per cent. were neoplasms and over 10 per cent. lacerations resulting from childbirth.

In making a study of the conditions which might be regarded as causative factors in the production of the graver forms of pelvic disease I analyzed 236 cases of major operations occurring in my own service. Forty-two being hysterectomies, twenty-one ovariotomies, twelve cases of extra-uterine gestation and the remainder chiefly cases of diseased appendages, including thirty-three cases of pyosalpinx.

In 40 per cent. of these the morbid condition seemed to be directly traceable to a puerperal origin; in 15 per cent. there was a hereditary predisposition to tuberculosis; in 12 per cent. a specific taint; in about 14 per cent. simple inflammatory conditions appeared to be the result of exposure or trauma; in 5 per cent. there was imperfect development of the pelvic organs; in 5 per cent. also, persistent uterine displacements; in another 5 per cent. anemia appears to have been the most prominent factor, and in 4 per cent. malignant disease. The facts connected with these figures are in themselves suggestive of the measures to be taken which might obviate much of the suffering. Hospital experience constantly goes to prove that the woman of modern times is inferior in physical resistance to the women of primitive times.

This physical deterioration, although in part the result of the process of evolution by which nature decrees that like shall produce like and that the sins of the fathers shall be visited upon the children, is also the result of an unnatural environment and habits of life which threaten, if persisted in, to result in the extermination of the human race.

The especial manifestation of this inferiority in the growing girl consists in a condition of nerve and muscle atony which greatly weakens her powers of resistance. The pelvic maladies resulting from this condition are arrest of development, displacement and inflammatory involvement to which all weakened tissues are liable on slight cause. Necessarily these conditions tend to disorganize the menstrual life of the young girl and sow the seeds of future calamity. A condition of post-menstrual subinvolution is commonly found which is aggravated after each period of menstrual congestion and results in changes of structure in the tissues of the pelvic organs. The indications, therefore, are for a radical and rational treatment of these abnormal tendencies. I do not agree with the teaching that there should be little local treatment given such cases, nor have I found treatment properly carried out to be demoralizing. The relaxation of the vulvar and vaginal tissues induced by a catarrhal condition of the mucous membranes, as a rule, renders local treatment easy and painless. The use of cocain in any case renders it quite manageable.

Local treatment is only a temporary aid to the restoration of normal conditions. The most vigilant and pains-taking effort requires to be directed to improving the tonicity of the uterine supports as well as of the muscular system generally, improving the quality of the blood and combating any especial dyscrasia. The usual tendency to inactivity of the bowels, bladder and skin must be overcome. Before beginning any treatment I insist on such arrangement of the clothing as shall entirely remove all pressure from the chest and waist. This can be done perfectly well without rendering the clothing unsightly or unattractive and is absolutely necessary to the attainment of satisfactory results. In an article written some time ago by Dr. Kellogg on "The Relation of Modern Dress to the Pelvic Diseases of Women," he has admirably shown, by a series of experiments, the effect produced by constriction of the waist upon the mobility of the pelvic organs and on the tonicity of the abdominal muscles and uterine supports. The round ligaments he has demonstrated to be the chief agents concerned in the maintenance of the uterus in its proper position, their power being dependent on the muscular fibers which they contain. Any fixation of the pelvic organs tends in time to produce loss of contractile power in these uterine supports, and as a result we have displacement of the organ or the beginning of a series of ills. The clothing should always be worn sufficiently loose to enable the patient to exercise the abdominal muscles. The removing of all waist bands and the adjustment of the skirts in such a way that their weight is borne by the shoulders facilitates this purpose.

After the matter of clothing has received proper attention I teach the patient how to practice abdominal breathing and give her a series of exercises for strengthening and developing the abdominal muscles. The judicious use of the bicycle is a great aid to overcoming loss of nerve and muscle tone. Even when marked uterine displacement exists I do not prohibit this exercise, but only permit it while the uterus is maintained in proper position by means of tampons or a soft rubber pessary, the presence of which even in the case of falls would have little or no ill effect.

Should a marked catarrhal endometritis exist, it is sometimes well to precede all other treatment by a curettement of the uterus under proper precautions. Such treatment as the above, carried on for weeks and even months with the growing girl has, in my hands, proved fruitful of most excellent results, and has been of great advantage when persisted in even after this period.

The weight of the patient's trunk being borne by the saddle of the bicycle, she can take much more exercise with less exertion than she could if she attempted to walk. In older women, with relaxed vaginal outlet, I have found that I have gained much by teaching them how to introduce a sponge daily into the vagina in such a way as to lift the uterus into proper position. A soft silk sponge of proper size is selected and made into a tampon having a string fastened to it, by which it may be withdrawn. The patient is instructed to keep this over night in carbolized water, after having thoroughly washed it out after its withdrawal, with castile soap. Before its introduction, it is annointed with boroglycerid, and as it needs to be carried up in the pelvis to a point farther than the finger can reach, she is instructed how to use a thick glass rod, such as may be obtained at any drug store, to carry it well into the hollow of the sacrum and behind the cervix uteri. The knee-chest position facilitates its adjustment.

The same sponge is only permitted to be used two weeks, when a new one must be obtained. Patients unable to wear pessaries because of peri-uterine inflammation or tender ovaries have found this treatment very acceptable. It is only permitted to be carried out under strict medical supervision.

Unhealthy conditions of the pelvic organs brought about previous to marriage illy fit a woman for child-bearing, and as a consequence, we find the following perversions of the normal phenomena associated with child-birth:

1. During pregnancy, a tendency to the early loss of the product of conception, owing to a diseased condition of the endometrium.

2. When this does not exist, a tendency to the prolongation of the period of gestation, the result of the atonic condition of the uterine tissues and of the abdominal walls, which thus more readily submit to overdistension.

During labor we find dystocia caused: 1. By physical exhaustion, the result of neuromuscular atony, which renders uterine contractions inefficient.

2. By the mechanical hindrances to the progress of labor produced by undue size and ossification of the fetal head, this being undoubtedly attributable in large part to the physical inactivity of women in civilized life during pregnancy.

During the lying-in period we have: 1. The lengthening of the time required for the process of involution, also frequent subinvolution. This condition of puerperal subinvolution, as does that of menstrual subinvolution, predisposes the uterus, upon the action of all causes of pelvic congestion, to take on structural change. A second perverted phenomenon of the lying-in is the imperfect performance of the function of lactation. A third is what may be termed a subinvolution of the abdominal muscles. The effect of this relaxation of the abdominal walls upon intra-abdominal pressure and its relation to prolapses and displacements of the pelvic organs is a matter of great importance.

All these conditions may be averted or modified by judicious treatment. Without dwelling unduly on the methods to be followed, I should like to mention the effect of bicycle riding as persisted in by two patients during their pregnancy. The one who had always suffered considerably from delay during labor, had the shortest and easiest delivery she had ever experienced and a more satisfactory convalescence. The other is still riding her wheel during the last month of gestation. Fearing she might injure herself by a fall I tried to dissuade her from doing so, but after a few weeks she begged me to allow her to resume the exercise, saying that it tired her so much less than walking and prevented her from getting melancholy. Both patients live in a suburban place and hence are not subjected to the accidents so common in crowded streets.

When a contraction of the pelvis complicates the condition of things in a patient of weakened muscular power I give especial attention to aiding the first stage of labor. In the maternity wards of the Woman's Hospital I found about 14 per cent. of the patients to have contracted pelves. Including among abnormal cases those of faulty inclination, the number reached fully 20 per cent. This is perhaps owing to the large proportion of foreigners delivered in our obstetric wards. The generally contracted pelves were found to at least double the number of simple flat pelves. The average contraction was not of a high grade. In the simple flat pelves the conjugata vera varied between 8 and 10 cm; in the generally contracted between 9 and 10 cm.

The management, *par excellence*, of moderately contracted pelves is, to my mind, the induction of premature labor. The advantages of premature delivery to the mother are owing to the diminished head pressure; hence the rare occurrence of lesions of the genital canal. I have rarely found it necessary to induce labor before the thirty-sixth week. The aid of the *couveuse*, or hatching-cradle, is very appreciable in the management of premature infants in our maternity. The fetal mortality from all causes during the period covered by my investigations was 4.3 per cent. On the occurrence of uterine inertia during labor, when it could not be overcome by suitable tonics, artificial delivery was resorted to, the presenting part not being permitted to remain stationary at any one point long enough to endanger the maternal tissues by pressure.

During the lying-in, when the lochia rubra persisted for a longer period than was normal, I made an examination to discover the cause. Was there a tendency to uterine malposition, this was kept corrected. A possible hypertrophied condition of the endometrium treated by gauze packing or gentle curettage, which served also to stimulate uterine contractibility. Hot douches were employed and the patient kept in a reclining position longer than was usual. Difficulties with regard to lactation can largely be met by a judicious management of the patient, especially with reference to diet during pregnancy.

The methods just described have proved most satisfactory in our hands in the management of the obstetric work of the hospital. The maternal mortality was less than 1 per cent. About 19 per cent. of the cases required operative interference at full term. The operations included Cæsarean section, the Porro operation, symphysiotomy, forceps deliveries, versions, the management of breech deliveries, craniotomy, embryotomy and the induction of premature labor. I have found in my work that whenever I was able to reach a woman's understanding, getting her to co-operate with me in the measures intended for her relief, I have had little difficuly in carrying such measures into effect. I therefore believe that it is in the education of women to a proper appreciation of physiologic laws and of the virtue and dignity of true wifehood and motherhood as controlled by these laws, that we will find the most powerful factors in the work of reform which we hope may result in her physical restoration and in the production of a healthier generation of human beings as her offspring. At the close of a lecture given by myself recently on the subject of personal hygiene, to a large class of young ladies in one of our fashionable schools, I had a striking illustration of this. One young lady among several grouped around me said most earnestly: "Doctor, if you have been doing everything all wrong before the age of 20 is there any chance for you to be set right afterward?" I would close with a query addressed to the members of this Section of the American Medical Association: Do we as conservers of the health of women so influence the education of the young men and the young women of our day as to teach them how to live for healthy parentage.

DISCUSSION.

Dr. Howard A. Kelly of Baltimore said in regard to the contagious diseases, such as typhoid fever, diphtheria, etc., that we have learned a great deal in the way of prevention, and could readily prevent these diseases if matters were entrusted to physicians entirely, but politics entered here and our municipal authorities made scientific discoveries more or less futile in this country. In the matter that Dr. Fullerton had brought before the Section today, it was in the hands of physicians to mold very largely the future generation, to carry out those plans which we know will result in the prevention of disease, and in producing better women and a better race in the next decade. This subject had for a long time been prominently before his mind in connection with gynecologic work. It was a question which confronted him almost every day of his life. Prevention might be classed under two heads. In the first place, prevention which anticipated disease. In the second place, prevention which attacked disease in its earlier stages and prevented graver consequences, such as death, or the necessity of graver operations later. Under the head of anticipation he classed the treatment of the young girl, saying her education began with her mother or in the cradle. The education of our girls was in his opinion largely wrong. They were confined too much; they did not get sufficient exercise, and at the developmental period the abdominal corset came in. He has difficulty with his patients on account of wearing corsets. The corset prevents proper expansion of the chest, and in doing this it likewise prevents the proper development of the abdominal walls. Then, too, in the line of prevention he would urge on the profession at large painstaking attention to all symptoms. Physicians in general were too apt to pass over what seemed to be slight symptoms in women. Anything which did not cause a great deal of discomfort they readily overlooked, and sooner or later the woman came back, when the physician was forced to examine her. Discharges should be carefully investigated, notably excessive hemorrhage or lochial discharges, and if serious, treated. Pain, if persistent, should be investigated and a minute painstaking examination made under an anesthetic, if necessary. Another important means of prevention was cleanliness in caring for obstetric patients. The physician could not do better than to go to every case of obstetrics with a white suit on, not that the suit itself did anything in particular, but it impressed on the physician that the attitude toward the patient was different from that which he holds to any of his other work. Furthermore, it was of the utmost importance to observe greater caution in personal cleanliness, in scrubbing and cleaning the hands, etc., and in this connection the kind of scrubbing brush used in most clinics in Philadelphia and other cities was little better than a wash rag. Soft scrubbing brushes were worse than useless, and surgeons were deluded into the idea that they were doing something with nothing. With reference to gonorrhea, which is a frightful source of many ills, we needed better morals among men; we wanted the same rules for men as for women. Both should be treated on the same principle. When we give our sisters the same rights of license and indulgence that were given men we would have less ills to complain of and fewer diseases to treat in married women. An important preventive, then, of disease was morality.

Dr. William A. Fisher of Philadelphia said that Dr. Fullerton's paper indicated that the gynecologist should be a good all-around practitioner. Disordered conditions of the pelvic organs did not always depend on diseased conditions of those organs, but in some cases on disordered conditions of the liver, of the blood, of the heart and so on, so that it was necessary to bear in mind as regards the future dependence of organs the fact that in woman the pelvic organs dominate her whole being. We should consider in the study of symptoms connected with the pelvic organs the temperament of the patient, whether or not she is of the lymphatic, nervous or plethoric type. All these had an important bearing on symptoms in pelvic troubles. One woman with a slight retrodisplacement of the uterus might suffer excruciating pain, while another with a decided retrodisplacement would suffer but little, simply because of the difference in the nervous organization of the two women. Exercise is very important in the treatment of disordered pelvic conditions. By judicious exercise we cause an increased amount of blood to the surface and body and relieve congestion of internal organs. The circulation in the pelvis is largely carried on by respiration and inspiration, and during the act of each respiration and inspiration we have a rise and fall of the pelvic diaphragm and with it maintenance of the pelvic structure. In order to keep up proper pelvic circulation it is necessary for women to have their clothes loose about their waists. Furthermore, in so far as the uterus is concerned, we know that women are unwell about one-fifth of the time and they do not take extreme care of themselves at this particular time. I refer to the time of menstruation. They expose themselves to cold and damp. This brings about chilling of the surface and internal congestion, and at the time of menstruation may give rise to dysmenorrhea, and this frequently repeated may result in the production of pelvic disease. The skin, as a very important excretory organ, is often forgotten by practitioners in general. The skin in its active condition throws off excrementitious products, and when it is in an inactive condition we have the accumulation of toxic materials that should be thrown off by it. If there is pelvic disease existing or a tendency to it we may have a localized expression of this want of activity of the skin in certain conditions of the pelvic organs, etc.

Dr. Milo B. Ward of Kansas City, Mo.—I would like to ask Dr. Fullerton the effect of bicycling on girls.

Dr. Fullerton—Unless there is considerable pelvic disease I consider bicycling a great aid to the development of the muscular structures of girls.

Dr. Ward—How do you account for the fact that women who ride bicycles can not walk; that is, they are too weak to walk?

Dr. Fullerton—I do not think this would obtain after they have used the bicycle for some time. There is really less fatigue from using the bicycle than in active walking. After the muscular system has been developed, I believe a woman who learns to ride a bicycle can walk farther than her sister who does not ride a wheel.

Dr. A. H. Tuttle—I would like to ask Dr. Fullerton if she prescribes any regulation dress for young ladies who use a bicycle?

Dr. Fullerton—Always. I do not permit them to ride a bicycle with a corset.

Dr. A. E. Miller of Boston—I would ask Dr. Fullerton if she has ever met any bladder difficulties arising from bicycle riding, as for instance, irritable bladder?

Dr. Fullerton—Only in those cases where the women have not selected and adopted a proper saddle. If they use an improper saddle it will cause discomfort in more than one way. If proper attention is given to the performance of the functions, to evacuation of the bladder and bowels, to dress, etc., I do not believe any injury can result from bicycle riding.

THE INJURIES OF PARTURITION, THE TIME, METHOD AND REASONS FOR THEIR REPAIR.

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In May, 1893, I was called to Milford by Dr. Wm. J. Clarke, to repair a complete rupture of the perineum, which occurred in the practice of a neighboring physician one week before. I found the levator ani and both sphincters torn, with liquid feces coming from the rectum, while pus flowed from the wound. The condition was such as seemed to render primary union impossible, but by means of washing, scraping refreshing and defining the ragged edges of the skin and mucous membrane and bringing the denuded surfaces into close apposition with buried sutures, the result was perfect with first intention throughout. The long delay after the accident, combined with the condition of the wound and the subsequent perfect result of the treatment, brought up a line of thought which I have since pursued with advantage in the primary repair of the injuries of parturition.

The immediate repair of the perineum has been laid down imperatively as the best procedure, and at present is the practice of competent physicians; in fact its neglect is considered almost criminal. But no one knows better than the operating surgeon and gynecologist the incompetency of the average obstetrician to make a satisfactory repair of the injuries peculiar to parturition, except where they are of minor degree. Their imperfect results are perhaps due to the indifference for careful technical work, often arising from a tendency to make light of an injury that they assume may cast a reflection on their ability as an obstetrician. The patient is rarely moved from her bed; the parts often only seen by bad light or not at all: disinfection is imperfectly carried out, and the work is faulty: that is. the edges of the skin may be brought carefully into apposition, but no attention whatever is paid to the mucous membrane, the various muscular structures, or the more deeply situated and perhaps most important injuries of the case.

In my opinion a primary repair of the parts requires greater skill and better surgical technique than a secondary operation. If the injuries are extensive, it is worse to do an imperfect operation than to leave the case alone, as it opens up the road for severe infection.

It is not common practice to make an inspection of the cervix until ready to discharge the patient, and primary repair of its injury, although it has been advocated and executed for several years by J. Price of Philadelphia, is not the usual custom.

If a deep cervical tear is not repaired it is a cause of infection, and a common means of subinvolution of the uterus with subsequent displacement and catarrhal inflammation.

With neglect of the cervix comes also an indifference for the treatment of deep vaginal tears, and in the majority of cases they are entirely overlooked.

Unless one is in the habit of examining the tears of parturition carefully, they can little realize their extent and the possible dangers they afford. The pelvic cellular tissue and the region of the broad ligaments are exposed to external infection in two direct ways, both of which are common. One is by a deep tear of the cervix passing beyond the cervicovaginal junction: the other is by a tear of the vagina which extends from a point in the roof or side and runs parallel with the urethra close to the neck of the bladder, to terminate internally near the cervix. These tears are often bilateral, with one side a little greater than the other. I have seen this particular vaginal tear so extensive that it reached the outside of the vagina, where it ended in the prepuce of the clitoris, thus running the full length of the vagina. If an inspection is not made in a proper manner this injury is entirely overlooked, and unless a careful repair is made the wound heals by secondary intention. This injury I believe is one of the most frequent causes of a form of pelvic inflammation represented clinically or by comparatively simple phenomena, but which becomes a source of great after-trouble owing to the adhesions about the ovaries and a tendency to anchor the uterus in an immovable manner and in an unnatural position. In a number of ovariotomies I have found the adhesions so great as to make the removal of the ovaries extremely difficult, yet there was absolutely no sign of tubal disease, and I have been at a loss to account for their development. In most of these cases there was a history of difficult labor and generally the use of forceps. After careful examination of many of these deep tears. through which I have passed my finger into the pelvic cellular tissue as far as the peritoneal covering. I feel that these tears offer the most rational explanation for the adhesion so common about the pelvic organs. The adhesions of the uterus in the vagina so frequently found during the repair of the cervix where the organ is placed high, can not be drawn down to the outlet but is firmly fixed to one side with a mass of hard scar tissue, are formed from the improper or neglected treatment of these tears. The form of puerperal septicemia which arises from these tears should be carefully distinguished and the fact recognized that the infection in the peritoneal space is direct and not by the way of or involving the uterus.

The perineal tears usually extend upward through the vaginal membrane that lines the lateral sulci, are rarely medial, owing to the thickness of the membrane in this region (the posterior vaginal column), and if the tear is bilateral, the corrugated membrane or raphe is raised in the form of a thick flap with the base *upward*. The tear along the lateral sulcus often reaches to a great depth. Emmet has described a tear where this posterior column is torn across in a deeper situation near the cervix and the lateral tears arising from within and extending outward, make a flap of the floor tissues with the base *downward* near the outlet. This flap curls up and heals in the form of a crumpled mass, which from its situation gives the appearance of a rectocele. I have seen but one example of this tear and believe it must be a rare accident.

Besides the tears in the vault already mentioned, are those which involve the bladder and urethra. They are very infrequent. The accidents of this sort, which in times past came from pressure necrosis, are now very rarely seen owing to the timely use of forceps. I believe that most of the cases of vesicovaginal and vesico-urethral fistulæ occurring at the present time are the results of forceps extraction of an occipito-posterior presenting head or breach, although my experience in these cases has been very limited. The perineum is usually well torn, and there is a median tear of the vagina above involving the deeper organs, which has a clean appearance as if cut by a blade of the forceps. The involuntary and constant flow of urine with every change in position very soon attracts the attention of the patient to the accident, and the physician is informed of it without any great delay.

The skin tear of the perineum is more or less straight, sharply defined and regular, extending in severe cases from the fourchette or hymenial ring to the mucous membrane of the rectum.

The rectal tears are rarely deep. Both sphincters are at times torn, and in all important lacerations the levator ani is injured. Frequently the sphincters are partly torn from their sheath and appear as a nipple-like projection half an inch in diameter and about an inch in length. There is a temptation to cut off this protrusion of muscle at the time of repair, but I think it unwise: it should be restored intact.

Beside the above tears, which I believe constitutes all that are of any magnitude, there are often innumerable smaller ones like a crack in the tissue, short and superficial, and rarely severe enough to require special attention.

From a practical experience with all the injuries of parturition above briefly described, I believe that I am justified in making the statement, that it is absolutely wrong for the obstetrician to attempt to repair the injuries of a severe labor, where the lacerations are extensive, without competent assistance and the proper means at hand as regards instruments, disinfection, etc.; or to do the work in an incomplete manner by simply sewing the muscles and outside skin together so as to give a fair temporary appearance exteriorly, which is foul within.

As I know from experience, that the parts can be satisfactorily treated within several days from the time of the accident, then the question of time is no excuse for indifferent treatment, nor the fact that the attending physician is worn out by an exhausting labor and perhaps very nervous about the issue. The fact that a primary repair will prevent a great many conditions which later require operative treatment, often of a capital magnitude, is sufficient reason why one should treat the case carefully from the beginning. The mere fact of a difficult labor condemns the patient to a period of lying-in, which is equivalent at least to the period of repair, and is a period which, in the lifetime of many women, is the most opportune for the treatment of her trouble. It is a positive fact that in many cases the period of convalescence would be greatly shortened by complete primary repair. In consideration of the above facts, I will propose the following deviations from the established custom, as giving a most satisfactory result immediately and as a preventive measure for many of the pelvic troubles of women.

When the injuries of a labor consists of more than a simple tear that does not involve the sphincters, the placenta and blood clots should be expressed from the uterus; a full dose of ergot administered; a pad rung out of bichlorid solution applied to the perineum; and then the patient should be given time for rest, unless it so happens that every measure for a repair of the parts has been previously arranged, competent assistance is at hand, and the patient is already under the influence of an anesthetic that was administered during her delivery. If it is a simple tear, a few stitches taken immediately is all that is necessary.

The duration of time that the surgical repair should be delayed will depend upon the different circumstances peculiar to each case. At least one hour should be given for the rest of the patient, and for the reason that by this time the full effect of the ergot will be realized, which may be of some use in counteracting any tendency of the anesthetic to relax the uterus. If the injuries have occurred at night, it will be better to wait until the next day, when there will be good light to work in, and if the obstetrician is incompetent to cope with the case, or his patient is far removed from help as in the country, it may be necessary to wait longer until the proper assistance is procured. I have been unable to discover any special advantage in the time of operating within the first ten hours after the injury. The retraction of the uterus is greater at the tenth hour than at the end of the first, but a little more care is requisite in refreshening the parts. The repair of the cervix is easier at the end of ten hours.

The preliminaries for the operation should be made in a careful manner; antiseptic solutions should be prepared for sterilizing the wound, the hands of the operator and his assistants, and an irrigator should be filled with the same; the instruments should be sterilized; a table covered with clean linen should be arranged where there is a good light for operating; a smaller table for instruments should be placed near it; a Kelly pad, or similar contrivance, with a pail for catching the irrigation, should be set in their proper places, and means for supporting the legs with the patient in a dorsal position should be at hand. For the repair of the multiple injuries of parturition I am in the habit of using animal sutures entirely, kangaroo tendon and fine catgut. This should be perfectly aseptic.

The etherized patient is placed upon the table so that the parts are exposed to good light and the legs are well supported. The hair about the parts is shaved off and the skin and vagina are carefully cleansed with soap and water, and finally with a solution of bichlorid. The rectum is dilated and also cleansed in a like manner. Clots of blood, which are usually present in the uterus, should be removed. The parts can now be satisfactorily examined and the exact nature of the injuries determined. The fingers are usually efficient retractors, but metallic ones can sometimes be substituted to advantage. With pressure of the hand of an assistant on the fundus of the uterus the cervix can be readily exposed and the tears, which are usually bilateral, extending toward the region of the broad ligament are easily recognized. They are repaired by closure with an over and over, or an interrupted suture, after scraping the raw surface with a sharp curette to insure union. The suture is exposed on the outside of the cervix but not in the canal, as it is passed just below the mucous membrane. With the closure of each stitch the blood should be carefully washed away with the irrigator and the corresponding parts adjusted with the help of dissecting forceps. In holding the cervix during repair I have found Pratt's rectal forceps of much help.

In closing the vaginal tears there is a simple rule to be carried out: viz., carefully bring together the torn edges of the mucous membrane and muscles that correspond to each other and unite them with sutures firmly and in close apposition, so that the raw surfaces are in contiguity and their exposure along the line of tear reduced to a minimum. This is the principle of the treatment in the case of a simple incised skin wound. The deep tears through the vault can be closed with an over and over stitch taken with a fine ligature, but all the remaining repairs can be easily manipulated and are best treated with buried sutures. If the repair is not immediate the raw surfaces should be scraped clean with the edge of a scalpel or sharp curette. A suture is taken in the tears of the mucous membrane that extend up the lateral sulci, beginning at the deepest point. There is no muscle to be united in this region as many suppose. If the tear is double then use one suture for each tear, which closes the vagina in the shape of a letter W. These sutures are not drawn tight until the other parts are united, because there would be less room for manipulation. The rectal tear is now closed in a similar manner, using very fine tendon and needle, the suture passing only through the muscular coat of the gut. The first suture is taken at the internal angle of the wound and should be placed sufficiently deep that no opening will be left which would admit a leakage of the contents of the bowel into the perineal wound. This line
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seized and carefully drawn tight. Thus the wound is closed from infection by way of the vagina. If the ends of these sutures are brought out at the upper and outer angles of the tear, in the region of the caruncles then by tying the two ends together the closure of the wound, at the most dangerous point for gaping, is completed in a most thorough manner and at the same time the sutures are fastened. This applies of course to a bilateral tear. There is nothing now left to be done but an apposition of the remaining outer torn portion of the levator ani and transverse perinei and the union of the skin wound, which is easily performed with two or more layers of buried sutures.

If there has been a tear in the neck of the bladder or urethra, the opening in the mucous membrane of these organs should be closed with a fine buried suture of kangaroo tendon passed by the help of a sound in the urethra and bladder, and with great care that no part of the suture extends out upon the mucous surface. The loose submembranous connective tissue can be gathered up with a line of sutures over the first layer to reinforce the wound from leakage. The vaginal tear is now closed in the manner already described. The repair of the bladder and urethra should be done immediately after that of the cervix while there is yet plenty of room to work in.

After the injuries are all repaired the urine is drawn, parts irrigated and a protective suture is passed just above the lower angle of the vaginal introitus through the labia of either side. The two ends of the suture are tied together, bringing the surfaces of both labia into close juxtaposition above the seat of injury. By thus pinching the two lips together the top of the perineal wound is greatly protected from the secretions in the vagina, which can not flow over the line of repair, but must rise higher to pass over the protective suture; and in case the nurse is obliged to catheterize, should she depress the inserted instrument, it would be prevented by the double strand of the ligature from bearing down upon and prying open the top of the perineal wound, one of the weakest oints in the repair. This suture can be removed in wo or three days and has nothing to do directly with the closure of the perineal injury. In bladder and urethral injuries a catheter should be passed and fastened *in situ*. It is kept here for three or four days.

Results.—If the case is done in a skilful manner, healing will occur by first intention throughout and there will be no constitutional disturbance of the patient except a slight fever of reaction, which is rarely greater than 100 degrees F. It may be criticised that a technical error would lead to a severe infection with great sloughing and danger where so much buried material is used. I must say that the worse sloughing of the perineum that I have ever seen was in the practice of a physician who closed the wound with external sutures, the infection coming by way of the vagina. In my own experience I have had but one complete failure and, recognizing it was inevitable by the fourth day, I again etherized the patient, opened up the wound, cleansed it thoroughly and reunited the parts as before. The case healed after the second operation with primary union. In a number of cases where the work was performed under trying conditions, a small abscess formed in the center of the perineum. This forced an opening and discharged spontaneously, sometimes into the vagina, and at other times through the skin. These cases have all healed kindly leaving a satisfactory perineum without complications, but the convalescence was slower. The technique must have been faulty in these cases. My worst cases, including vesical and urethral fistulæ, have all healed by primary union, probably because the greatest care was taken to obtain an aseptic operation. I have never had a failure in the union of the sphincters.

In my earlier operations on the cervix I practiced the introduction of some foreign body into the uterus for the purpose of draining that organ and in cases of secondary repair where there was extensive removal of tissue to help establish a patent canal. I found the custom an evil one in cases where there was simultaneous repair of a complete perineal location. The cervix in its natural position rests against and is supporting the rectal wall of the vagina, usually an inch and a half to two inches above the introitus. The pressure is received upon the posterior column or raphe, which from peculiar construction is well fitted for the purpose. When the parts are repaired the cavity of the vagina is closely occupied, and any foreign body tends to disturb the natural relation, which in a case of uterine drain produces pressure upon the lateral sulci, where the mucous membrane is very weak and the partition between the lumens of the vagina and rectum thin. In deep tears, a foreign body in the vagina will tend to open the internal ends of the wounds of the rectum and vagina behind the sphincters, making a vaginorectal fistula. This has twice occurred in my practice. In these cases I removed the drain early, as soon as I discovered the accident, kept the vagina clear by douches, and the fistula closed spontaneously. Since giving up this mode of draining I have had no further trouble.

Conclusions. In my opinion, the obstetrician who today boasts that in his practice he has no lacerations of the cervix or perineum, proclaims to the world his ignorance of this branch of his profession. It is as much the duty of the obstetrician to his patient to see that she is properly repaired, as to see her safely delivered. The public should be educated to the fact that injuries to the soft parts of the parturient canal are often inevitable, and that such injuries only cast a reflection on her professional attendant when their after-treatment is neglected. The physician in whose practice a severe laceration of the parturient canal has occurred, can protect himself in no better way from a legal attack on alleged malpractice, than by calling in assistants, who serve as witnesses, within twenty-four hours of the time of the accident, and repairing properly, or offering to, the injuries which his patient has sustained. There is no better time to repair the injuries of parturition than within twenty-four hours of the time of their occurrence; such immediate repair of the injuries will often hasten convalescence and prevent in many cases, severe pelvic complications. The obstetrician should be educated to do this part of his work in a more careful and thorough manner. The injuries already sustained by a multipara in previous labors should be an incentive, rather than an objection, for the careful treatment of the lacerations of her present delivery, because a repair of her total injuries can be accomplished at the same time.

An early symptom of carcinoma of the esophagus is afforded by decreased flexibility of one of the vocal cords. An instructive instance is related in the *Deutsche Med. Wochenschrift* of November 4.

REMARKS ON THE RELATION OF THE UTERUS TO DESCENT OF THE PELVIC FLOOR, AND TO GENITAL PROLAPSE.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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As the title implies, it is not intended here to formally cover the field of genital prolapse but to remark upon one phase of it, and to emphasize the fact that the uterus is not the sole offender, but that, in greater or less degree, all the other pelvic organs and tissues are involved to such an extent in some cases that even after the uterus is completely restored to its position, the prolapse of vagina, rectum, bladder and tissues of the pelvic floor continues.

There seems to be, in the minds of some, an idea that the uterus descends alone through a normal tube, the vagina, because of some relaxation of suspending supports above. This idea leads to attempts to cure prolapse by shortening round ligaments alone, by fixation (literal) of the uterus alone to the abdominal wall, or even to the performance of hysterectomy followed by fastening the cervical stump to higher pelvic tissues, while the relaxation, sliding and stretching which have occurred in the pelvic diaphragm are left untreated. Ultimate failure to cure must be the result of this policy. The truth is that in varying degree in different cases, the uterine prolapse is only a part of a vast hernia through the inferior pelvic strait of the pelvis; that in this hernia are involved bladder, rectum, peritoneal pouches in front and behind the uterus, with or without bowel contents; also the muscles and fasciæ of the pelvic floor. All of these structures do not descend to equal degree, but there is a gradual sliding in different planes. The uterus is often forced furthest down by intra-abdominal pressure and gravity, the posterior bladder wall less so, the anterior bladder wall still less so, and so on with each succeeding plane of connective tissue until the bony pelvis is reached. By thrusting up the uterus, this whole prolapsed mass may be made to telescope back, partly into position, but not wholly. No operation can be permanently successful which aims to deal with the uterus alone and does not take into account the sliding planes of stretched tissue and the telescoping movements when the cervix is thrust up or down.

This is best illustrated by the following case, which shows that the uterus may be even higher than its normal place in the pelvis and yet the bladder and much of the vagina be outside the vulva.

Mrs. X., a young and healthy multipara, was referred to me for operation by her physician because her "womb came out," giving rise to chafing and various discomforts. He had made no careful examination, but saw simply a large pinkish mass, the size of the fist, protruding from the vulva, and sent her to me without further investigation. Upon examination I found, indeed, a large genital prolapse outside the vulva, larger than the fist, but it was made up of anterior vaginal wall and bladder in front, and rectocele behind. The uterus so far from being an element in the case was, to the surprise of patient and physician, found to be pregnant six months. It was within the abdominal cavity, having risen normally above the superior strait. The cervix was normal in size and high up. Here was a case in which Nature by pregnancy had restored the uterus temporarily to its normal position in the body without dragging up enough of the other elements of the genital hernia to attract the patient's attention. In fact, the prolapse continued. A hundred diagrams or theories could not better demonstrate the position that any effort to cure this woman by any operation for suspending or removing the uterus would be futile unless something were also done to the pelvic floor. The case aborted shortly afterward and is now awaiting operation. What shall this be? First a serious attempt from below to restore. not the perineum but the integrity of the pelvic floor, of the whole pelvic diaphragm. By operating within the vagina, to endeavor to reach with stitches and take up the higher and deeper planes of pelvic fascia and muscle. When the uterus is large and the cervix long or hypertrophied, amputation of the cervix from below is a great help as it is preceded by dissecting off the vagina from the cervix, while the method of sewing shortens materially the vagina and implants it higher upon the uterus, virtually at the same time taking a reef in utero-sacral attachments. In addition I believe that uterine suspesion should usually be done, or in very rare cases of enlarged uterus, hysterectomy, but the main effort must be concentrated upon the vagina.

It is of interest, in passing, to note the curious tolerance of this patient to septic influences, no doubt owing to long protrusion of the uterus from the body. She aborted, as has been said, at six months. Her physician found, a few days later, to his horror, that finding herself unable to pass her urine owing to protrusion of the bladder she would take her hands and push everything within the vulva, when the husband with unwashed hands would catheterize her with an instrument which he had bought for that purpose. No harm resulted!

THE INFLUENCE OF OUR SCHOOL SYSTEM ON THE HEALTH AND DEVELOPMENT OF THE CHILD.

Presented to the Section on Diseases of Children, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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(*Concluded from page 1252.*)

Answers to No. 6.—To most persons it may seem that such a question as this is entirely superfluous; that the dictates of humanity and common sense would make such a practice an impossibility. From my personal experience as a member of a school board and as a practicing physician however, I am sorry to say that the practice is more prevalent than I would have believed it to be without a thorough investigation of the subject. Indeed, I am satisfied that even superintendents and principals of schools do not fully appreciate how frequently teachers err in this matter. This can probably be explained, in part at least, by the fact that it is a delicate subject, about which parents do not like to make complaint, and which does not receive the attention and discussion in teachers' meetings that its importance demands. Whatever may be the cause of the practice it certainly exists to a

serves to implant in him doubts as to the teacher's ability to instruct him aright. *b.* Constipation, headache, eye strain, and in girls anemia, neurasthenia, chlorosis, cystitis and, in some cases, perversions of the sexual system as in amenorrhea, dysmenorrhea and their sequelæ.

Prof. Leonard Freeman, B.S., M.D., of Denver: I do not know. It should not exist at all unless real deception be exposed. *a.* May lead to masturbation through irritation of the neck of the bladder by accumulated urine. *b.* Irritation of the prostatic urethra with coincident nervous phenomena.

Pres. Alfred Holbrook of Lebanon, Ohio: I do not know that any teacher is so unreasonable anywhere. Hourly recesses make restraints unnecessary. *a.* Being entirely unreasonable, it makes all restrictions seem unreasonable and unjust.

Elizabeth K. Matthews of Des Moines, Iowa: Am sorry to say it, but it exists to a very great extent.

Prof. J. A. Larrabee, M.D., of Louisville, Ky.: Does not exist to any extent in our schools. Personal and private hygiene concerns the home training and teachers so instruct our pupils. *a.* Neglect of personal hygiene, either in the schoolroom or at home, is equally deleterious to the moral status of the child. When necessity demands, a modest signal should be given. *b.* The physical effect of delayed defecation or urination concerns all the functions of the body and results in imperfect cerebration, hemorrhoids and, in females, in retroversion of the uterus and chronic indigestion in both sexes.

Answers to No. 7.—This is a very important question and one about which there is a great diversity of opinion. There can be no doubt but that if children could have plenty of outdoor exercise in pure air, surrounded by moral safeguards, and the time now devoted to entertainments, parties and other social dissipations were largely spent in sleep or devoted to healthful recreation or a judiciously selected course of general reading, children would enjoy better health and be better off in every way.

Whether home study will be beneficial or hurtful to a child depends much on the surrounding conditions and the motives or incentives which prompt it. If done through enthusiasm or a love of truth for truth's sake, the results will likely be beneficial; if, on the other hand, the child is impelled to study by the slave-driver's lash or threats of failure and disgrace, the effects will in all probability be injurious. Unfortunately, under [illegible] high pressure methods of education, [illegible] examinations and grand stand plays for public show and approval, truth is lost sight of and children are spurred on and incited to cram, memorize and fill themselves up for examinations and public exhibitions regardless of the permanent effects of such a course. This sort of work keeps the child in a constant state of excitement, worry and anxiety; the brain is irritated, the vitality lowered, the mind weakened and the importance of truth and honesty lost sight of. Under such a system even the brightest and best pupils will lie awake nights and worry over their grades, their examinations and their promotions, when never a thought or care on such matters should disturb them. Nor is this confined to the higher grades of the schools but also applies to many pupils in the primary grades.

The period of puberty is one of rapid development and growth and makes great demands on the strength and vitality of the child, who as a consequence should be very carefully protected against undue excitement or anything that will divert the vital forces from the great work which they have to perform.

Dr. Miller (*vide Cincinnati Lancet-Clinic*, Feb. 6, 1897, p. 159), very clearly depicts the condition of the child as follows: "The child fatigues much more readily, that is, his organism is much more quickly depleted and poisoned during the periods of most rapid growth. The average boy has the most rapid growth between the ages of 14 and 16. In these two years he increases in weight by as much as he did during the entire six years preceding the age of 14. At this period of most rapid growth, the period of pubescence, the brain loses considerable weight because of the fact that the usual blood supply is lessened by a portion being withdrawn to nourish the viscera and other organs undergoing revolutional changes during this period. While the weight of the brain is only one forty-fifth of that of the whole body, it requires one-eighth of all the blood to nourish it. At no time in his whole school career is the boy so deserving of sympathy as at the time of most rapid growth. In all learning, two great features are involved; proper presentation of material by the teacher and proper attitude of mind on the part of the pupil. Seldom, if ever, can the latter condition be supplied by the boy or girl in the midst of the physical and mental revolutions and evolutions of pubescence. The great curse of the age is the demand for rapid education. Parents and teachers crowd the children through a long year's work. Health is sacrificed for promotion. What is learned while the child is fatigued is soon lost, the mind's force being equally dissipated. Vital force is required faster than it is generated. The work of today is done on tomorrow's credit and the system of a child is wholly at a loss to protect itself against disease and accident."

Reuben Peterson, M.D., of Grand Rapids, Mich. (*vide* JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Dec. 19, 1896, p. 1269) writes as follows: "The growing girl who should spend most of the time in the open air with never a care in the world, is closely confined in a schoolroom the air of which is so vitiated as to be scarcely capable of supporting life. Here she may be found, ambitious to excel in her studies, poring over her books with back bowed and chest contracted. If the remainder of her time were spent in recreation the evil effects of overcrowded schoolrooms might be counteracted, but such is not the case. The parents are, ambitious that their daughter shall take high rank in her studies, and that accomplishments such as music and painting be acquired at an early age. Hence the girl is urged to still greater mental efforts. Thus the nervous force so needful at puberty for the establishment of the menstrual function is wasted in the acquisition of what may be considered trifles compared with perfect health. He (the family physician) should demand that the hours of recreation in the open air should be lengthened and the school duties be lightened."

Fifty-three educators and thirty-four physicians answered this question more or less fully. While there is a wide divergence of opinion from absolute condemnation to warm approval of the practice, still all insist that the work should be carefully guarded and not carried to extremes and that the health should be properly cared for at the same time. When these conditions are fulfilled and the pernicious habit of attending parties, keeping late hours and indulging in

much in his efforts at bread winning, for, in my opinion, the father should be a mother just as far as conditions will allow. I feel that the doctor should impress the father with that fact, for the doctor is placed in a position to be of more service to the parents than anyone else. The clergyman is not in it for one minute compared with the doctor. We as physicians should explain to the parents that they should talk with their child as to its duties to the teacher. The child comes home with its little tale of woe, and too often the mother listens to it sympathetically and does not realize the duty they bear to the teacher. I have been in the habit of instructing the children that they owe a debt to the teachers and I tell them that I must hear from the teacher that they are good children, and they must learn to love their teacher. If the child comes home with a criticism of the teacher he should be corrected at once. He should be taught to respect as well as love his teacher, and that it is his duty to make a friend of his teacher and that if he can not make a friend of his teacher he is to blame. If the child is taught in this way he will have a good time in his school, he will love his school and love his teacher. The parent having done his duty in the question of co-operating with the teacher, then if there is anything wrong he may investigate the teacher.

Dr. S. E. Woody of Louisville—I have only one criticism on the subject. Everybody is jumping on the school boards and school teachers, but it seems to me we should be thankful for what we have. When I think of the wonderful advance made since I sat in the schoolhouse, with vitiated air except when it was relieved by numerous drafts, sat there from early morning until dewy eve, sat there bound down by a stupidity that was inimical to all advance—contrast that to the great variety of study and the beautiful surroundings children now have. I think instead of jumping on these men we should thank those who are making teaching an art instead of what it was a few years ago, a trial of main strength and awkwardness.

Dr. Jeffries of Chester—The Doctor is looking back and calling our attention to the deplorable condition of the schoolhouse when he was a schoolboy. I am sorry he did not compare the average young man then. I would call the attention of the audience to the average young man today as, after the receipt of his diploma, he goes seeking for health and after seeking from the East to the West he comes back on the check forwarded from the East to bring him home.

Prof. J. Henry Bartlett of Philadelphia—No more serious indictment could be brought against our school system than that it interferes with the health and development of the child. Fortunately, we live in an age when an intelligent co-operation of forces makes the reverse of this charge true, and our schools may be, in fact as well as in theory, what Dr. Stanley Hall calls them, palaces of health. Even a false regimen of hours and diet in the homes is measurably overcome by the regularity of the school life; if combined with this regularity there is a measure of preventive and corrective physical environment. Educators owe much to the medical profession for pointing out lines for the hygienic treatment of the child in schools. I am here today to submit some evidence of practical experience in these lines in one of the schools of the city. It were impossible, however briefly, to touch all the lines that aid, directly or indirectly, in efforts for the health and development of the children. The medical profession has indicated many lines of work and most of these today are bearing fruit. My remarks are confined to two subjects, but the progress in them is measurably typical of all. City conditions at home and school reflect the tension of business life and the tendency of the age to extreme specialization, so that very great effort is needed to prevent a one-sided development. Business arrangements for instance control the habits of our people (in too many instances including the children) in the important matter of the midday meal. Many of our larger financial and even mercantile institutions recognize the effect of this circumstance. and as a measure of economy in securing working ability provide their employes with a dinner. Ideal conditions for children would include a substantial luncheon with the family circle near the noon hour, but in a large percentage of cases this is quite impracticable, and it remains for the school as a matter of self-protection, if for no better reason, to invade the domain of domestic economy and add a kitchen and dining-room to its equipment. In varying degrees this necessity is recognized. In Boston all the high schools have arrangements for luncheon; in Brookline there are ample accommodations in the magnificent high school building, and in Philadelphia a considerable variety of arrangements, from the basket of pretzels at the school gateway to the attractive dining-room of a modern restaurant, may be seen. Speaking for the latter, I may be permitted to remind you that even in matters of this kind the law of development is operative. Parents and children, as physicians well know, need to be educated as to when to eat and what to eat. The stage of sweet buns and fancy cakes precedes the stage of cocoa, milk and nutritious soups. At no distant future our more progressive schools will have *all* children sit down at midday to an inviting repast. Let us be encouraged that the matter is growing and let our medical men believe that their labors in this direction are bearing fruit. On the direct efforts for physical development in our schools, volumes have been written and the gymnasium is amply justified as a necessary adjunct of a good school. It would be out of place for me to deal with this question in its larger bearings. I can but submit to you in a form of a report a very brief chapter of results from a school gymnasium for the last year.

The particular record to which I call your attention deals with 108 girls of 12 years and upward. Seventeen of these at the year were distinctly abnormal in their development, and these have all been "materially helped in *all* parts"; 68 of the 108 have gained in chest expansion, 58 in flexibility of the waist and abdominal muscles, 41 in depth of chest, 50 in increased breadth of shoulders, 74 gained in lung capacity, 56 in strength of back. Of the 108, 67 had shoulders and hips uneven in the autumn; 33 of these were made even and 34 were improved. Eleven of the 108 had spines distinctly curved; 5 of these were made straight and 6 much improved. These figures have reference to school gymnastics taken in two half-hour periods each week, but they reflect also the effect of a pretty faithful effort to overcome defects by free movements prescribed for home work. This is more apparent from the fact that 10 of the total 108 have losses of development recorded and these 10 are those who have not been interested in carrying out the prescriptions or fulfilling the conditions of the class work as regards dress and other circumstances.

I have said enough and reported enough to indicate how our school system can meet the exactions of hard conditions and make an environment in which development shall not be retarded nor health sacrificed. It is not a simple problem, it involves many elements and study and labor along many lines.

I adopt the words of a recent résumé of the results of child-study in one of our educational journals, as a further acknowledgement of the service of the medical profession to education as well as to indicate how far-reaching the efforts are to correct the *defects* of our school system: "The physician is becoming interested in the schools, as at one time was the clergyman. As the physical basis, or at any rate the physiologic concomitants, of intellectual deficiencies and moral defectiveness are coming to be more clearly understood, the physician's function as an instructor of teachers and as an examiner of children as to sight, hearing, touch and symptoms of fatigue or illness, as to temperamental characteristics and 'nervous' peculiarities, as to differentialites in age and sex, are being in turn more fully apprehended. School hygiene, not only as related to problems of heating, lighting, ventilating and sewage, but also to the manner of seating, length of sessions, frequency of recess, size of playgrounds, modes of recreation, as well as to individual 'health,' nourishment, cleanliness and raiment, and finally a more rational instruction of the children themselves in the structure and functions of their bodies, their use and abuse, not to mention the application of gymnastics, all these matters have come to be of vital concern jointly to mothers, teachers and doctors."

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

BY CARL H. VON KLEIN, A.M., M.D.

(*Continued from page 1266.*)

XIX.—DISEASES OF THE URINARY AND GENITAL ORGANS AND OF THE RECTUM.

Lithotomy; Catheterism; Ischuria (strictures, swelling of the prostate); Cystotomy; Hematuria; Nephro-lithotomy, extirpation of the kidney; Hydrocele; Sarcocele; Castration; Varicocele, testicles in the groin; Phimosis; Amputation of the penis; Symphyseotomy; Vesico-vaginal fistula; Atresia of the vagina; Dropsy of the ovaries; Fistula ani; Hemorrhoids; Atresia and strictures of the rectum.

"There are few operations to which surgeons have turned so much attention and which they have performed in so many ways and with so many kinds of instruments as *lithotomy*. . . . The operation deserves the preference over internal remedies; it relieves certainly and quickly. In recent times it has been so perfected that one can be almost certain of a fortunate result if it is performed in time by a practiced hand and with a certain precaution." Thus wrote Richter. Lithotomy united the surgeons of all nations in the effort to wrest this operation from the hands of the itinerant lithotomists, with their unsavory secret traffic, and to restore it to science. They distinguished four methods, the major and minor apparatus, the suprapubic and the lateral lithotomy. In order to better locate the various modifications of the operation let us group them according to the direction of the internal incision, as urethra incision, prostate incision and bladder incision.

The urethra incision, or the method of the major apparatus, was originated by Giovanni de Romanis (1525) and made known by his pupil, Mariano Santo (Mariano lithotomy). By this method only the urethra was opened and further enlarged. A grooved bent probe was inserted in the bladder, and in the middle of the perineum between the scrotum and the anus everything up to the bulbus was separated, then by means of a dilator the urethra was enlarged and the stone extracted with tweezers. If the stone was of any considerable size the urethra and prostate were so bruised and lacerated by these manipulations that urethral infiltration was unavoidable. Almost half of the patients operated on died. This method, the traditional secret of the Colot family since 1556, was made public (1727) by the last of the family, Franz Colot, and was brought into prominent use be the lithotomists of Norcia. Maréchal and le Dran perfected it, the latter especially improved the bandage after the operation. Schmucker also operated according to his directions, but with a somewhat larger incision, from fear of laceration, and out of twelve lithotomies which he performed during his lifetime, he lost only one. He never needed more than two or three minutes and "could almost maintain that not a single patient need die in this operation if the operator performed it with sufficient skill." The method of the major apparatus, however, was soon displaced from lithotomy and at the end of the century was almost entirely discarded. Morand had reckoned that out of 812 lithotomies performed in Paris within eight years with the major apparatus, 255 proved fatal.

The prostate incision, by which only that gland was cut through and the bladder not injured at all, or only at the neck, is classed with the lateral incision. Franco had originated it in the middle of the sixteenth century. He introduced a grooved probe into the bladder and had it pressed obliquely backward by an assistant in order to force the urethra somewhat to the left. Then he made an oblique incision which began two centimeters in front of the anus and ended in the middle of a line from the anus to the tuber ischii. The urethra was slit up the probe, along whose groove the knife was pushed obliquely through the prostate to the neck of the bladder. The lithotomist, Frère Jacques, first brought the lateral incision into practice. Rau received the operation from his hand and Heister learned it from Rau (see chapter ii). Heister recommended Rau's modification, while Camper rejected it, because not only the body of the bladder but also the neck and the prostate and urethra were affected; it was also dangerous an account of a possible injury to the rectum and to the seminal vesicles. The operation received a further improvement from Cheselden, who really first led the educated surgeons to accept the lateral incision. The number of unfortunate results which he had at first and acknowledged (three times he performed a lithotomy and found no stone) drove him unceasingly to improve his method. In the first, where the incision fell behind the prostate into the body of the bladder, frequent urine infiltration ensued; in the second the urethra was cut behind the bulbus and the prostate was cut straight through to the bladder; in the third, which he retained as the best, a grooved lithotomy probe was introduced into the bladder and adjusted with the groove toward the left side of the perineum. Then, left of the raphe an incision was made which began behind the scrotum, ran obliquely downward and ended in the middle of the anus opposite, a half an inch from its edge. The left forefinger inserted in the wound pressed the rectum back and guided the small, slightly convex and pointed knife attached to the groove of the probe. Directed upward and forward, it cut the urethra together with the prostate, whereupon the tweezers were introduced on a broad gorget. The fortunate results of which Cheselden boasted from that time on (six fatalities among eighty operations) were the reasons for Morand being sent to London (1729) to learn this method and introduce it into France. He himself, in the following year, had seven successes out of eight lithotomies, and later six fatalities out of eighteen operations. In the Paris Charité in five years (1731–1735) seventy-one cases were operated upon according to Cheselden's method with thirty-one deaths: in the Hôtel Dieu within eight years, 604 cases with 164 deaths. Sharp and Bromfield, who devised some four-bladed tweezers, la Faye and Bertrandi, all recommended Cheselden's incision; in Germany Senff and Henckel especially advocated it, so that in the middle of the eighteenth century this method displaced all others.

They endeavored to lessen the difficulty of it by the invention of a host of new instruments. Richter's criticism in this connection says: "The least which one can say of most of them is that they are useless and superfluous, since one can, at all events, make this little incision with any long narrow scalpel." The lithotome caché of Frère Cosmo raised the greatest renown. This knife, four inches long, narrow and somewhat curved, was covered by a sheath attached in front, and could be released by means of a spring. Attached to a grooved probe and inserted, they touched the spring and in this way cut through the neck of the bladder. For very large stones Frère Cosme used tweezers provided with iron teeth, with which he thought he could break the stone. Among the advocates of Cosmo's method were Acrel (five deaths in twenty-two lithotomies), Steidele and Richter, who described it as the model of lateral incisions.

After it was made known through dissections that by this method, received so favorably in France, the rectum might be injured and the bladder pierced entirely through, it found many opponents. Frère Cosme defended it and declared that of seventy-eight patients upon whom he had operated with his instruments only six had died. In general, Le Cat, and with him the whole academy, opposed the lithotome caché. As a pupil of Morand, Le Cat had at first employed Cheselden's method, but discarded it after 1742. While the Englishman advocated slitting the prostate to a considerable length, Le Cat announced the principle of cutting through the gland to a less extent, rather risking its laceration in case of large stones and of making the external incision much larger than the internal. Le Cat went to Paris and operated publicly before the Académie de Chirurgie with great success; while once for a period of six years, and among thirty-eight operations, he did not lose one patient. Later he had six fatalities out of nine cases in a single year. At the time of his death (1768) he had performed 310 lithotomies. Günz, Pajola and C. C. von Siebold in particular, brought Le Cat's method into use in Germany. C. C. von Siebold once performed a lithotomy twice upon the same patient in one year, and with success. On the contrary, Richter, whom one of his critics reproached with a lack of observations, since he, with the rarity of cases of stone in Göttingen, had never operated or at most very seldom performed the operation, advocated the principle of Frère Cosme, namely, to always fit the incision as far as possible to the size of the stone so that it could be extracted without force instead of making a small incision, according to Le Cat, and giving it the proper size by extension. To him the danger of a long hemorrhage did not seem so great as that of a forcible extension of the wound. On the other hand, Pouteau adhered rather to the principle of Le Cat. Pouteau ascribed his fortunate results to the fact of gradually extending the wound, in which of 120 patients only 3 died in consequence of the operation. For the incision in the perineum Richter recommended the urethrotome of Le Cat; for the incision in the prostate and the neck of the bladder,.the lithotome caché. Besides the latter, as really a perfection of Cheselden's method, a new instrument was devised, which was said to guard against the danger of a possible slipping of the point of the knife; it was the cutting gorget of Hawkins, a surgeon in George's Hospital in London (1753). It protected the rectum and served to introduce the lithotomy tweezers. The gorget raised great applause and displaced, especially in England, the lithotome; Bell and Cline modified it. Desault, who first employed it in France, gave the cavity a stronger surface and shortened the blade; however, he preferred to operate with the lithotome. His results were very varied; once in the Charité fourteen of his patients who had been operated upon died one after another, while twelve others who were operated upon at the same time by one of the monks all recovered; on the contrary, he had in the Hôtel Dieu only two deaths from twenty-two lithotomies. To remove the stone only after a few days after the operation, had already been advocated by P. Franco, and it now found defenders in Maret and Louis. The latter attributed the unfortunate result of the operation chiefly to the fact that it had been completed immediately and he asserted that he had not lost a single patient. Camper, Richter and Loder also favored this method.

We have hitherto had in mind only the usual method of the prostate incision (sectio lateralis); there was besides an incision on the median line and one on both sides. For the former, Vacca Berlinghieri devised the method of making the incision on the median line, behind the bulbus urethræ, to the pars membran.; then a knife was forced into the neck of the bladder and the prostate slit exactly in the middle. But in this way the rectum and seminal vesicles were exposed to injury. In regard to the sectio bilateralis, le Dran recommended the division of the prostate on both sides, but Dupuytren first developed the method further and introduced it into practice.

By the third main course, the bladder incision, the body of the bladder was opened directly by various methods. Celsus had already briefly described an operation from the perineum outward, which later received the name "minor apparatus," or Guy de Chauliac's method, because this surgeon recommended it anew and apparently was the only one in his time who practiced lithotomy. According to Celsus the operation should only be performed in the spring and and in case of boys between 9 and 14 years of age, because only with them could the stone be felt through the rectum. For the extraction nothing further was necessary than a scalpel and perhaps a pair of dressing forceps. An assistant took the child upon the lap so that he sat almost vertical; another held the strongly flexed legs as far apart as possible, and at the same time fastened the open hands at the knuckles. The operator inserted two fingers of the left hand high up in the rectum while an assistant pressed the stone against the perineum with the hand laid above the pubis. The operator endeavored to seize it with his fingers, pressed it to the left and forward, and cut it out. If the stone did not come out of the wound of itself it was extracted with the fingers or with a spoon. In the treatment according to Celsus, Heister first showed how disadvantageous it was to be willing to operate only in the spring, a rule which was pretty generally followed; although the method was confined almost exclusively to the charlatans, yet he advocated it in case of children and for small stones. In adults it was only permitted if the stone was wedged solidly into the neck of the bladder or the pars membr. and it was contra-indicated in case of angular stones and for large strong persons. As an injury to the rectum or the seminal vesicles was easily possible, this method was almost entirely discarded by the end of the century. A second operation from the perineum was that of Frère Jacques previously mentioned; a third, that by Foubert of Paris (1727). He would thrust a grooved trocar between the urinary passage and the neck of the bladder into the previously filled bladder, allow a part of the urine to run out through the groove and then insert a long knife into the bladder. This method produced no good results. It was too difficult to find the right place for the trocar puncture and the bladder with certainty, and a swollen prostate might be injured.

In spite of all the improvements of the lateral lithotomy, it was impossible to remove very large stones without causing various injuries (P. Camper), insomuch that attention was attracted anew to the suprapubic method. P. Franco, the originator of it (1561), operated upon a 2-year-old boy in Lausanne, according to the method of Celsus, although he would not remove the stone. But from the rectum he would lift the stone (as large as a hen's egg) so high with his fingers that he could distinctly feel it near the linea alba, above the pubes; he thereupon made an incision and extracted it. Although the child recovered, yet Franco cautioned against a repetition of this operation on account of the possibility of an effusion of urine into the abdominal cavity. Although Rousset set forth the advantages of this method, defined it in a rational manner and laid the greatest stress upon previous filling of the bladder (1590), yet the suprapubic lithotomy only came into favor in the eighteenth century. Indeed the contest with the lateral incision continued, but the supapubic was generally recommended for large stones, while for callous bladder and in case of children and fleshy persons it was disapproved of. Douglas and Cheselden in England, Morand, Winslow, le Blanc and Frère Cosme in France, Boretius and Heister in Germany, interested themselves in the matter. Douglas, of the Westminster Hospital in London first performed the operation anew; he syringed the bladder with barley water, made an incision along the linea alba, opened the bladder with a curved scalpel and removed the stone with the fingers. Cheselden and Morand, who first performed the sectio alta (1727) in France, operated in a similar manner. There came to the knowledge of the two Englishmen and two other surgeons, within a few years, thirty-one suprapubic incisions with only five fatalities. In Germany, Pröbisch, regimental surgeon at Königsberg, first accomplished the operation (1726); Senff of the Berlin Charité followed him in 1728. Frère Cosme devised a special modification of the operation (1779) in that he, in the suprapubic lithotomy, bandaged the urethral incision from the perineum in order to conduct the urine and pus off freely, to which he ascribed the entire success of the operation. Without previously expanding the bladder by injections, he severed the pars membr. as in the sectio lateralis, as far as to the prostate. He then cut through the soft parts over the pubis to the linea alba, and perforated this with a so-called trocar-bistoury. Through the opening of the urethra into the perineum a somewhat curved silver tube, in which a pointed needle lay, was introduced into the bladder, which was raised by the mouth of the tube and the needle thrust through. The peritoneum and intestines were held back by the hand. bistoury fixed in the groove of the needle enlarged e bladder, whereupon the stone was removed with he fingers, which Morand had already extolled as a great advantage over extraction by means of tweezers. Frère Cosme reported eighty-two operations, for the most part successful, and he found many supporters until Ev. Home and Loder entirely discarded the simultaneous incision of the perineum. In the suprapubic lithotomy the surgeons especially feared the entrance of urine into the abdominal cavity. To avoid this Frère Cosme applied an elastic catheter from the perineum outward; Deschamps made the puncture of the bladder through the rectum and Richter adjusted a small bandage to the wound in the bladder. They were also apprehensive of injuries to the peritoneum. To guard against this the bladder was previously distended by means of injections, although Morand protested against such a procedure. Richter at first thought that in opening the empty bladder a particular difficulty of the suprapubic lithotomy was removed, but in later years he laid great stress upon filling the bladder and advised an injection of about a pound or a pound and a half of lukewarm water. B. Bell, on the contrary, preferred that the patient should retain the urine, since the sudden distension of the bladder by injections is painful and dangerous. Heister pressed the peritoneum, with the finger, backward and downward from the symphysis. After the operation he applied adhesive plaster, while B. Bell joined the upper part of the abdominal wound by means of a twisted suture.

The opening of the bladder through the vagina was indeed successfully accomplished a few times (Gooch), but it was not general because of the persistence of the fistulæ, etc. C. L. Hoffmann of Münster suggested the rectovesical incision (1779) after he had twice seen a bladder stone removed through an abscess induced in the rectum; this first gained credit through Sanson (1815). Lithotrity as a method of operation did not yet exist.

Condensed in a few words, the judgment of the surgeons in the second half of the century agreed that the lateral lithotomy should always have the preference, with the single exception of cases in which the stone was very large; then the suprapubic incision was necessary. If in a lateral incision the stone was found to be large, contrary to the supposition, one should rather try to break it up, than to draw it out whole.

Knowledge as to the nature of the stone was first brought from darkness by Scheele. He found (1776) that it consisted of a special acid, lithic acid ("Steinsäure"), and contained no lime. Later, phosphate of lime was discovered in it. Then Fourcroy, who distinguished twelve kinds of stones according to their composition, and Vauquelin (1799), found lithate of ammonia, oxalate of lime, silica, phosphate of ammonia and magnesia, and an animal matter which was regarded as a "glutinating mucus," which held together the constituents of the concrement. Pearson changed the name lithic acid to uric acid. Water rich in calcareous earth and selenite in connection with humid air among other things, was announced as the genesis of bladder stone (Saucerotte) and the basis of every bladder stone was sought in small renal stones (Schmucker).

Surgeons were not inexperienced in *catheterism.* Heister considered the silver catheter as the best and thought that a thick one slipped into the bladder more readily than a thin one. His variously formed instruments were very similar to those of the present day, only the apertures on both sides were larger and longer. In cases of suppression of the urine and paralysis of the bladder, to make possible a longer retention in the bladder he used a flexible catheter, which consisted of a spiral-formed silver wire, an idea of Solingen, which later came into use through Flurant, but which was not favored by Richter. Petit recommended a catheter which, when open, could be closed by means of a button situated at the end of the wire, and gave it an S-shaped curve corresponding to the course of the urethra. For injections the posterior end was enlarged in a funnel shape, in order to accommodate the mouth of a syringe (Garengeot and Brambilla). Theden has the merit of the introduction of the elastic catheter into surgery. He had a fine gold wire insulated with silk, wound in a spiral around a thick wire and washed with a solution of caoutchouc. He said in favor of these flexible instruments that they were easily inserted by unskilled hands and could be left in position for a considerable time. Richter at first praised them, but later made the discovery that they were too easily worn out, insomuch that one patient with suppressed urine, for example, found ten necessary within eight weeks, therefore at the price of six thaler each, the expense was too great. They were displaced by the catheter of Professor Pickel of Würzburg (1783), which consisted of silk cylinders which were woven over a probe and covered with a varnish. These lasted longer and were cheaper (five for a louis d'or). The rules for the insertion of the catheter, as Richter gave them, are still valued. According to him the most important was, never to apply force. The master turn (tour de maître) arising from the charlatanry of the lithotomists of the Middle Ages, to conceal from the bystanders, under complicated manipulations, the introduction of the catheter, he regarded as injurious, but if the catheter would not come out over the prostate, recommended one whose point was bent farther, to the length of about an inch, hence the model of the Mercier instrument.

(To be continued.)

SOCIETY PROCEEDINGS.

Chicago Academy of Medicine.

Stated meeting, October 15, 1897.

(Concluded from page 1270.)

Dr. G. Frank Lydston in the Chair.

REST CURE IN HYSTERIA.

Dr. H. C. B. Alexander—The value of the rest cure in hysteria will turn entirely on the organism attacked. In a degenerate organism or in one with an acquired neuropathy due to traumatism or secondary to constitutional disorders, infections and otherwise, hysteria under the strict Weir Mitchell type of rest cure (especially as conducted by trained nurses without medical supervision) does not do well as to ultimate mental outcome. With the rest cure modified as far under medical supervision as to introduce a healthier mental tone, even this type may improve very decidedly. Improvement in general nutrition without mental improvement is often mistaken for cure of hysteria. As the disorder is practically accepted by the vast majority of neurologists as a psychosis with nervous expression such "cures" are physiologically illogical and do much to injure medical science in popular estimation since they support the claims of the faith healers and other charlatanic enthusiasts. The hysteric inhibitions need strengthening, and unless this be done nothing is permanently accomplished. The hysteric, in my experience, is peculiarly susceptible to suggestion so far as individual symptoms are concerned. Of this, the case of blistering by suggestion which I reported to the Academy some years ago[1] was an excellent illustration. This element of suggestion constitutes at once one of the dangers and the benefits of the "rest cure." Too frequent concentration of the patient's mind on a symptom or group of symptoms tends, under the most simple principle of association, to produce exaggeration or fixity of these symptoms through suggestion. The opposite course has decidedly beneficial effects. This constitutes one of the dangers of the "trained nurse" in this method of treatment. Her desire for objective symptoms due to methods taught as to so called precision leads to the frequent suggestion of new symptoms to the nosophiliac mind of the hysteric. The same fact should rule diet and medical treatment. In the type of hysteria developing upon a nervous adynamia or brief neurasthenia the rest cure gives undeniably good results but, as in the deep neuropathic or degenerate types, its essential principle of seclusion from improper sympathy, medical or otherwise, must be rigidly carried out. The defects of the rest cure largely arise from the violation of this essential principle. The "cure" should always be under the care and supervision of a physician. "Trained nurse," "rest cure," are no more quackish than other practices of medical principle by [illegible]. To them are due the disrepute the rest cure has obtained with many excellent practitioners. Removal of the patient from the morbidity-manufacturing atmosphere of home is a necessity, but it is no improvement to fling the patient into a lay atmosphere which will manufacture a similar atmosphere by the showy lay use of instruments of precision in the search for symptoms which will undoubtedly be furnished abundantly under such conditions by the hysteric. Diet, medicine, etc., during the rest cure must be suited to each case.

SUGGESTION IN HYSTERIA.

Dr. W. X. Sudduth—I was not here early enough to get Dr. Bannister's definition of hysteria; I shall therefore, take the liberty of giving one of my own. Hysteria is a pathologic mental state in which there is increased suggestibility accompanied by lack of emotional control. This being the case, the hysteric state should be very amenable to suggestion; and that is the trouble with it. It is so amenable to suggestion that we get little or no permanent results in the treatment of the disease by suggestion alone. The Charcot school held that hysteria was one of the manifestations of hypnotic suggestion and that necessarily all good hypnotic subjects were hysteric, but I find in the use of suggestion that hysteric patients are the very worst, so far as permanent results are concerned. I would rather treat any other patients than hysteric ones so far as permanent results are concerned, because these patients are amenable to suggestion from all sides. Anything that stands for an idea in the mind of a patient is a suggestion. Whether it be verbal or physical, external or internal, that is suggestion given by some one else, or auto suggestion.

In the treatment of hysteria I find that I get much better results where I couple physical exercise as a basis for the administration of suggestion, putting the patient through a course of "psycho-physical culture." If he will carry out the breathing and physical exercises to be given, the results obtained by these exercises are more permanent than when suggestions are given in any other way. In fact, where emotional prodigality exists, as it does in hysteria, one of the surest ways of controlling it and redeveloping the will power is through a series of physical exercises, muscular training, rhythmic breathing, systematic habits, and a regular military discipline, such as I put my patients on. Accompanying these exercises suggestion is used from which, to my mind, we may confidently expect benefit in proportion to the thoroughness of the system employed.

The statistics given by Dr. Coolidge justify suggestion, if applied in this way, in the treatment of nearly all forms of hysteria. Hysteric cases are difficult to handle, and it requires a great deal of patience to get good results. The very amenability of patients to suggestion is apt to give rise to a recurrence of hysteria. Unless the patient follows out some such line of psycho physical culture you need not expect permanent benefit to be derived from the use of suggestion in the treatment of hysteria.

GENERAL REMARKS ON HYSTERIA.

Dr. James G. Kiernan—In dealing with the question of hysteria, the diagnosis is of necessity the first factor requiring consideration. My experience leads me to doubt whether clearly defined demarcations can be made between hysteria, neurotic states and neurasthenia, yet upon such demarcations must turn the questions of treatment and prognosis. In my opinion a neuropathic state may be either an expression of hereditary defect or of some systemic shock from traumatism, or secondary to the great systemic disorders. If nerve-tire and resultant neurasthenia be grafted on such a neuropathic state, either inherited or acquired, the resultant will be a condition which in many instances neurologists can not demarcate from hysteria even when this last occurs in a scion of a degenerate stock. Hysteria is not the clear cut symptom-complex of favorable prognosis which many practitioners and neurologists accept as a type. Globus hystericus and unstable emotionalism have not the pathognomonic symptoms that popular medical opinion assigns to them. Either or both may be an expression of an attempt to suppress a deep emotional state and have nothing pathologic about them at all. Usually these two symptoms represent all that there is in the popular conception of hysteria and the gravity of that disorder is thus beclouded into a triviality. From this standpoint it is not difficult to see how hysteria comes to be regarded as due to civilization. Unrestrained shallow emotionalism is characteristic of a lower grade of culture. Civilization tends to restrain emotional expressions, but this implies increased evolution of inhibitions. The absence of these inhibitions would therefore imply a lower grade of culture not due to civilization, but survived in it from savagery with whose sins civilization is so often charged by a certain school of pessimists. Sexual perversion, like hysteria, was said even by Krafft Ebing to be a product of civilization, but an American physician, A. B. Holder, showed that it had existed from time immemorial among the Indians of the Northwest, and that each tribe had its own term for the practice, showing that it had originated within the tribe. If it had been otherwise the practice would been have denominated by a loan word. On the Indian reservation in the interior of New York are both civilized members of the Six Nations whose daughters play pianos as well as those who perform fetichic rites at the feasts of the "White Dog." Hysteria is more common in the women of these last than the first. The dances at the feast of the "White Dog" are marked by hysteric phenomena closely akin to those of the dancing mania of the Middle Ages. In the nineteenth century, speculative changes often lift the lower classes, intellectually speaking, into the plutocratic classes. It is hence not surprising to find hysteria exceedingly common among the "higher" classes so constituted, but civilization does not manufacture this hysteria, free from it.

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[1] Journal of the American Medical Association, Vol. xxiv.

Dr. Butler brought out an excellent point in referring to the case of the eighteenth century servant girl, who had hysterics which might be emulated by some of our fine women of today. She, like hundreds of others were, might be raised to wealth, but civilization and culture would not cause her hysterics. Hysterics I find come from all the nations of Europe, and in the main from the lower stations in life rather than the upper.

A Bohemian general practitioner once insisted that hysteria was rare in Bohemia. I got an explanation at one consultation why, in his opinion, it was rare in Bohemia. He asked me to see a girl of 16 years, whose mother would not let her go to work, but wanted to keep her at school, whereupon the girl had a typical hysteric convulsive attack. She later became paralyzed and anesthetic on one side and had hysteric mutism. On inquiring into the family history I found the mother was similarly affected during her girlhood by the same exciting factors, and that the grandmother had been likewise affected. When the girl was allowed to go to work the convulsions and hysteric hemiplegia disappeared. The practitioner had looked upon these from his ordinary conception of hysteria, which means emotional irritation, globus hystericus, etc. After that he saw a number of cases of hysteria. His opinion in the matter was in marked contrast with that of another general practitioner who had a large clientele among a very hard working class of people, and who observed many cases of hysteria with varied manifestations. He brought me, on one occasion, to see a woman suffering apparently from gallstone colic. She had jaundice and a slightly elevated temperature, but when her husband promised her a new dress the condition disappeared. That woman had worked in the fields in Germany. She had a good many of these attacks To attempt a demarcation on the ground of apparent difference in the sex or social condition as a method of diagnosis is futile. As regards sex I must confess I would like to find out the difference between neurasthenic cases which have been built upon a pathologic basis and hysteria; when it occurs in the man, and when in the woman I can not make the diagnosis I get the anesthesia, the visual field disturbance, and every now and then hysteric ptosis in the man. In attempting to draw this line we are drawing it rather on older ideas than on data that are more obtainable. We are too apt to look at the man who is a neurasthenic as a pure hypochondriac The subjective results are more frequent than the objective, and they do not vary one iota in my experience from typical hysteria I have never been able to do much with the so called hysteric zone, although I have tried repeatedly to do so One man had a notion which started with his testicles A grave hysteric condition could be set up from that source

With reference to the question of traumatism in these cases it is a grave condition, and one that is not easily recovered from There is often a marked change of character in previously healthy people, which does not subside on receipt of payment of certain damages, as we are frequently informed by gentlemen who devote themselves to railroad interests. The condition continues a long time after. I have seen a marked case manifesting true symptoms of hysteria in a man who fell into the hands of an orificial surgeon for these four years after injury. This man could not be accused in the slightest degree of desiring damages He was a builder of bridges on the Mississippi. He had been knocked into one of his own boats by his own derrick, had sustained a fracture of the scapula, and it was also suspected that he had sustained some spinal injury. Among the symptoms that were decidedly marked after the accident were retention of urine and anesthesia on one side. The urine, before I saw the man, had been drawn with a catheter I made a careful examination and my opinion was against spinal injury, but in favor of general traumatic shock. I told the man he would be able to pass his urine that night without a catheter, and he did it But that man's character completely changed. He improved for a while. That man is now an hysteric, and I doubt if he will ever return to the original condition he was in at the time of the injury.

With reference to the mental condition of the hysteric, he exhibits one of the characteristics of degeneracy, namely, anesthesia of moral sense.

I had hoped Dr Moyer would be here to take up the forensic relations of hysteria, because hysterics sometimes commit acts with extreme cold bloodedness, and without apparently sufficient motive. I remember the cases of a girl who poisoned four members of a family. She was a hystero epileptic. She committed this act with the utmost coldness, without any apparent motive except a slight scolding, and she was only detected by accident. Another phase of the mental state with which physicians are familiar is hysteric accusation, and this has more than once landed many an innocent person into a penal institution or State's prison. In our State we had a case where a hysteric came near landing four men in prison. The community was very much excited over the supposed assault, but the story was too much even for a country jury in its final contradiction. It is the safe rule in an accusation of criminal assault to take into account the possibility of the accusation. With regard to the minor forms of hysteric mental disorder, they are characterized by emotional instability, by emotional irritability and by a large number of hallucinations and other conditions that are in no small degree the product of suggestion. in the grave disorders there are mixed religious and erotic symptoms; women who have seen the Virgin and angels and have talked to them are in a number of cases hysteric.

There is one work in pathology that might be read with advantage, namely, the hagiology. St. Theresa, for example, was a most magnificent case of hysteria. She used to have one part of the time a divine ecstacy which made her have a convulsion and kick everything out of bed. Then she used to faint and her soul would mount up to heaven. She had seen her celestial spouse and would give the usual mixed story of the hysterics. This grave hysteric condition does not tend to pass into dementia, but it is nevertheless a destructive condition as far as the mental state is concerned.

The visual field side has been much discussed and needs little further reference. Charcot claimed, in 1888, that all so called hysteric unilateral paralysis of the facial, lingual and oculomotor muscles are in a reality hemispasms. This view of Charcot was later abandoned by him and his followers. A case of mine observed some four years ago tends to justify this abandonment. The patient, since this case was first observed, has repeatedly come under my observation for the like condition, which has remained "cured" for a longer time than usual after the correction of certain errors of refraction by glasses. The case is as follows: The patient, a 33 year old married multipara, comes from a family rife with neurotic taint. Neuroses of various types are frequent in this family for three generations. One sister has periodic attacks of nymphomania, whose morbid nature she recognizes and is therefore able to control. The other children suffer from cerebral phenomena from very slight causes. One brother has had infantile hemiplegia with athetoid phenomena. There have been numerous children for three generations, the greater proportion of whom died in infancy. The present patient has visceral neuroses, simulating at times peritonitis and gallstone colic and attended by pyrexia followed by apyretic states, when the temperature falls from 109 to 90 degrees in a few hours without corresponding constitutional disturbances. Paralyses and local anesthesia are easily produced in this state from suggestion.

On one occasion discolorations of the skin resulted from an accidental suggestion that the skin looked slightly reddened at the seat of a paresthesia. The patient had an attack of "visceralgia" simulating gallstone colic. This left her much exhausted, and in this state the suggestion was made by a neighbor that her eyes looked weak whereupon slight amblyopia resulted, followed by double ptosis. The "visceralgia" disappeared under what was chiefly moral treatment, but the ptosis persisted for some weeks. One day while the patient was relating her symptoms a window fell and she passed into a hypnotic state While in this state the suggestion was made that her ptosis was under full control of her will and that she would hereafter be able to control it. On awakening her from the hypnotic state the ptosis and amblyopia disappeared.

The last attack occurred under the following circumstances: The patient while East had been treated for a headache by the correction of refractive errors through glasses. Soon after her return to Chicago she suffered with a very obstinate suboccipital headache. Through much talk by her friends she was persuaded that this headache was of optic origin and that the glasses had been improperly fitted. She was found to be badly constipated. The persuasion, however, that the eye had been improperly fitted with glasses continued. She finally had a recurrence of the old symptoms of ptosis and amblyopia. This condition, however, disappeared with the disappearance of the headache, which yielded very rapidly to dietetic treatment and cathartics. Since this time (nearly a year ago) there has been no return of the ptosis and the patient has not complained of either eye strain or headache.

If I were to discuss the subject from a therapeutic standpoint I should be exceedingly careful in giving anything but a very guarded prognosis in cases of traumatic hysteria, and some of the graver forms of the affection. I should also use a great deal of care in giving a prognosis from the results of the rest cure treatment in either one of the two forms of the disease. There is no doubt that the rest cure has done good in cases of hysteria, but most physicians who have seen cases find that it has likewise done a great deal of harm, and has given patients a chance to brood and form fixed illusions and ideas when carried out in routine fashion.

As regards the question of epilepsy, there is one point that puzzles me, namely, the differential diagnosis between the epileptic state in which hysteria occurs and hystero-epilepsy. In well defined cases there is no difficulty experienced in this regard. But take the average text-book and the only diagnostic point is drawn between a grave hysteric attack and a grave epileptic attack, and the hundreds of minor epileptic disturbances that simulate hysteria on the one hand and the hundreds of hysteric disturbances on the other are ignored. The difficulty is further enhanced by the large number of epileptics who have entirely hysteric attacks. I had a case under my care, an undoubted epileptic, and yet of the three attacks he had while under my observation, two were genuine hysteric attacks, the third was a true epileptic attack. For a long time I was puzzled about certain beneficial therapeutic effects, until an explanation was found in the hysteric condition.

With regard to the diagnosis, the temperature may be of some avail, but the physician who watches epileptics in an insane hospital will find temperature disturbances that closely simulate those observed in the hysteric.

A point that may be covered by some of the subsequent speakers, one which is now being raised by certain neurologists, is as to whether the presence of certain tests, like the ankle clonus, are purely characteristic or indicative of organic disease. There have been two or three cases that look very suspicious in that direction. This raises another point to which a number of neurologists are opposed, but on which I am inclined to believe with Charcot, namely, that secondary to prolonged localized hysteria we may have local spinal or cerebral pathologic changes set up. Two-thirds of the secondary changes which occur in certain acute psychoses are due to biochemic lesions. I see no reason for doubting the cases Charcot has published. He published his first case in 1867, in which the spinal lesions found were not changed to hysteria, nor did he attribute hysteria to them, but he believed that they were the secondary results of disease consequent on hysteric contractions.

Dr. Kuh made a statement regarding epileptics which I have heard made quite frequently, that the epileptic pathologic findings are primary. Spitzka and myself made quite a series of careful examinations, examining brain after brain of persons not dements, and found teratologic lesions due to a degenerative condition, but no microscopic or macroscopic lesions.

I can not fully agree with Dr. Sudduth as to suggestion. As to its effect on the disease hysteria itself I admit his position, but suggestion has a most potent effect on causing and removing symptoms. The literature of hysteria is full of such instances.

OPHTHALMIC RELATIONS OF HYSTERIA.

Dr. C. P. Pinckard—As we all know, eye symptoms may be very prominent in the clinical history of hysteria. They may be briefly divided into disturbances of motion, disorders of secretion, disorders of sensation, disturbances of sight, and abnormal sensations.

1. Strange to say, paralyses are not at all common, while spasms, on the other hand, are very frequent. An exception may be made, however, in the levator palpebræ, which is frequently paretic and not associated with other pareses. According to Charcot, it is particularly frequent in children. The next most common symptom in the muscular apparatus is a paresis of the abducens, or more probably a spasm of the abducens. Of the internal muscles, pareses of the ciliary occur, but the diagnosis is difficult. Paresis of the iris is rare. Blepharospasm is often observed, and a rhythmic twitching of the lid is said to be very characteristic. Variation in the size of the pupils is frequent.

2. Among the disorders of secretion, epiphora is frequent; edema and sweating also occur. They begin and disappear very suddenly, and may be transferred from one side to another by means of the contact of magnets, acids, etc.

3. Of sensation, anesthesias of the skin of the lids, temples, conjunctiva and cornea are very frequent, with or without retinal anesthesia. Paresthesias are also often observed, such as hyperesthesia of the lids, conjunctiva and cornea, with or without photophobia. Pain is very common, especially those pains beginning in the eye and radiating toward the forehead, temple, teeth, etc. These may occur with or without efforts at accommodation. At times tenderness is present in the ciliary regions.

4. The most important class, however, is the disorders of sight. According to Charcot, a pathognomonic sign of hysteria is the concentric narrowing of the field of vision with more or less impairment of central vision and of color perception. This, as a rule, is associated with anesthesia of the conjunctiva and cornea. This disturbance of the sight is usually unilateral, but if it be bilateral it is more marked on one side. Unilateral amblyopia is much more common than complete blindness, but double amblyopia is still rarer. The boundaries of the field for the different colors may be entirely abnormal, so that the curves of the different colors may cross each other, or the order be reversed. Charcot has said that hemianopsia does not occur in hysteria, but others, as Landolt and Glorieux, have denied this. Diplopia or polyopia, either unilateral or bilateral, is a rare symptom, but occasionally occurs. Complete blindness is much more common in one eye than in two, but bilateral blindness is not so rare as it would seem. Within the past three months I have had two cases of bilateral complete blindness, one in a woman 36 years, the other in a child of 14 years, in both of which cases the attacks came suddenly and disappeared as suddenly upon suggestion.

5. Of the abnormal sensations the most important one is the so-called *audition colorée*, that is, certain tones or words produce a coincident vision of color. Still rarer, where certain colors perceived cause coincident tones.

The case of ptosis, reported by Dr. Kiernan, without other symptoms in the eye, is very characteristic. As was said before, this symptom occurs more often in children than in adults.

A diagnosis of hysteric symptoms from symptoms simulated is at times very difficult, and can only be positively made by association with other symptoms in other parts of the body.

PRACTICAL NOTES.

Incompatibility of Hydrochlorate of Cocain and Nitrate of Silver.—If cocain is to be used with nitrate of silver, the nitrate must be used, instead of the hydrochlorate, as the latter causes an insoluble precipitate of silver to be deposited.—*Nouv. Remèdes*, November 8.

Sterilization of Catgut.—Rajewski recommends that the catgut be sterilized while it is being manufactured with a 1 per cent. solution of formaldehyde. This sterilizes the interior, and superficial sterilization is sufficient after this. He considers chemic methods of sterilization more reliable than physical.—*Cbl. f. Chir.*, November 6.

Painful Dentition in Infants can be relieved by frequently washing out the mouth with a 1 per cent. solution of chloral hydrate, which is antiseptic as well as analgesic. Rub the gums to soothe the pruritus with the following: Cocain hydrochlorate 15 centigrams; chloroform, 1 gram; glycerin, 20 grams; essence of roses, 6 drops.—*Presse Méd.*, October 20.

Prophylaxis of Chapped Hands.—After washing the hands with non-irritating soap, rub in the following lotion and allow it to dry on the hands. It is especially recommended to physicians and surgeons. Alcohol, 80 grams; glycerin, 35 grams, rosewater, 30 grams; salol, 2 grams; tincture of musk, 2 drops.—Morel-Lavallée in *Gaz. Méd. de Liège*, August 22.

Mother Solution of Formol for Surgical Antisepsis.—The disagreeable odor of formol is disguised if prepared as follows: Alcohol solution of formol at 40 per cent., 25 grams; tincture of eucalyptus, 5 grams; ethyl alcohol, q.s. to make 200 c.c. Each teaspoonful contains 25 centigrams of formic alcohol: 1 to 4 teaspoonfuls to the liter of water.—A. Reygasse, in the *Semaine Méd.* of November 24.

Oxygenated Water in Psoriasis, Otorrhea and Plugs of Cerumen.—E. Luton reports a severe case of psoriasis cured with injections of an oxygenated serum as follows: 10 per cent. solution of sodium phosphate, 75 grams; oxygenated water, 20 volumes, 25 grams. Local applications of oxygenated water assisted the cure, which was surprisingly prompt and complete. A small quantity of oxygenated water dropped in the ear will soften the hardest wax plugs so that they can be syringed out without difficulty. The efficacy of oxygenated water in purulent chronic otitis, with or without mastoid complications, has already been proclaimed in America and Belgium. Buys and Lebarre had only three negative results in sixty cases treated with it.—*Semaine Méd.*, October 27, November 10 and 17.

Treatment of Epidemic Cerebrospinal Meningitis with Injections of Sublimate.—Nineteen recovered in twenty-seven cases, all treated with a daily subcutaneous injection of sublimate, varying with the age from 5 decimilligrams to 1 centigram. Improvement was observed after the second or third injection; the pain was relieved so that the patient could sleep; consciousness returned after the fifth or sixth, and the fever gradually subsided. Four to twenty-four injections were required.—B. Angyan of Budapesth in the *Semaine Méd.*, October 20.

Abortive Treatment of Influenza with Calomel.—Freudenthal has been successful in aborting influenza with 10 centigrams of calomel twice a day (men) and 5 centigrams three times a day (women), administered in the first or second day of the attack in epidemics of grip. The temperature falls in six to eight hours, the neuralgic pain subsides and the cure is complete in forty-eight hours, or in a week when the treatment was not commenced until the third day. He combines antipyrin or phenacetin with it if there is much pain, wet packs of the thorax if the fever does not subside, and sodium iodid if there are respiratory complications.—*Presse Méd.*, November 6.

Treatment of Chilblains with Chlorinated Lime.—This substance passes through the epidermis and soothes the inflammation beneath, applied in a salve gently rubbed in for five minutes at bedtime and covered with an impermeable bandage (Rp. Calcar. chlorat., 1.0; Unguenti paraffini, 9.0; M. f. unguent. subtiliss. D. in vitro fusco. For external use). This salve has often cured the obstinate and disfiguring redness of the tip of the nose in women during the cold weather. The chlorinated lime must be fresh and effective and the salve smell strong of lime, otherwise it is worthless. C. Binz, *Therap. Woch.*, October 24.

Compression of the Nerves to Relieve Whooping Cough.—A. de Miranda announces in the *Semaine Méd.* of October 20 that compressing the vagus at the neck checks the vomiting in this disease, and that compression of the superior laryngeal rapidly calms the paroxysms of coughing. The family can be easily instructed how to perform the compression. In the early stages of the affection the bronchi are full of mucus and the cough must be allowed its course, but later the compression will be found practicable and effective. He also reports the cure of one case of uncontrolable vomiting in pregnancy by compression of the cervical portion of the pneumogastric.

Protargol.—Prof. A. Neisser states that he has never obtained such certain and permanent cures in gonorrhea as since he commenced to use protargol. It is a fine yellow powder, a combination of 8 per cent. silver with a protein, dissolves readily and is not precipitated like the other silver salts by albumin, diluted sodium chlorid, hydrochloric acid or sodium. Its general disinfecting power is not yet established, but its efficacy in gonorrhea is beyond question. He uses a 0.25 per cent. solution, increasing to 0.5 and 1 per cent and makes three injections a day, the patient retaining the fluid five minutes after the first two injections and thirty minutes after the last, soon reducing the treatment to the one long retained injection a day. This treatment is so little trouble that it can be kept up three to four weeks and ensures a permanent cure.—*Therap. Woch.*, October 24.

Hernial Tuberculosis is the subject of an extended study by Barozzi reproduced in the *Jour de Méd. et de Chir.*, of October 25. In the twenty-two observations on record the diagnosis was usually uncertain, and the operation alone, which is the only treatment, cleared up the question. The existence of a liquid effusion, the thickening of the sac and the presence of indurated points, are the guide, as the subjective symptoms vary from severe functional disturbances, much pain and edema to merely slight discomfort. Left to itself the termination is always fatal, and the fourteen cases on record have a mortality of 21.4 per cent. Jonnesco advocates herniotomy; the resection of the diseased intestine seems risky to him in such cases. Koenig also asserts that the circumscribed lesions of the intestine have a tendency to spontaneous recovery, but the writer, Terrillon, Routier and others, consider laparotomy indicated, especially when the bacillary lesions have invaded the large peritoneal serosa.

To Disguise the Taste of Cod-liver Oil.—℞: Cod-liver oil, 400 grams; syrup of tolu, 200 grs.; tincture of tolu 12 drops, essence of cloves, 2 drops. Do not emulsify. Shake well before using. Dose: a tablespoon two or three times a day.—Bricemoret, *Rev. Méd.*, November 10.

Dangers of Arsenic in Cutaneous Diseases.—Brocq states in the *Jour. de Méd.* of September 10, that arsenic should only be administered in dry dermatoses, never in the moist kinds, as it makes them worse. He even ascribes some of the keratodermia accompanying Dürhing's disease, to the arsenic treatment exclusively, also pigment patches.—*Therap. Woch.*, November 14.

Eudoxin in the Gastro-Intestinal Troubles of Children.—Recommended by Rosenheim for chronic diarrhea in adults, Ladniewski has been testing this bismuth salt of nosophen in fifty-eight cases of diarrhea, and announces that he found it effective in some cases with mucous or purulent discharges that had resisted the usual remedies, bismuth, nitrate of silver, etc. He gives as many centigrams as the child is months old; limit, 50 centigrams, repeating the dose two to three times a day. In other forms of diarrhea it is counter-indicated, particularly in cholera infantum.—*Semaine Méd.*, November 10.

Pyramidon.—The antipyretic and antineuralgic properties of pyramidon, dimethylamido antipyrin, have lately been proclaimed by several who consider it a valuable acquisition. The temperature is gradually lowered from one-half to two and one-half degrees during the two hours after the dose (0.2 to 0.6 gram), and slowly rises again in four to six hours. It has also a marked soothing effect. Hornoffer tried it in forty-five cases of phthisis, also in pneumonia and typhoid, and states that there are no inconveniences from its use, which can be kept up for months without injury or lessening of the effect. It proved ineffectual in ischias, but cured trigeminus neuralgia and headaches, the latter in one dose. (*Berl. Klin. Woch.*, No. 35). Two cases of trigeminus neuralgia cured with it were reported at the Congress of Naturalists and Physicians. Feuerstein has found it possible to prevent fever altogether in pulmonary tuberculosis, by the administration of 0.6 gram during the hour in fractional doses. He confirms its harmlessness. No benefit seems to have been derived from it in rheumatism. *Therap. Woch.*, Nos. 41 and 44.

Reduced Mortality from Pulmonary Tuberculosis.—Good effects have already begun to show themselves in New York City as a result of the compulsory notification of cases of pulmonary tuberculosis to the Board of Health. In a report to Mayor Strong, this Board declares as a result of three years' special effort to stamp out pulmonary tuberculosis that the disease is a distinctly preventable one; that it is not directly inherited; and that it is acquired by transmission from the sick to the healthy. Deaths due to pulmonary tuberculosis are now 30 per cent. less that they were twelve years ago. The Board recommends that the law should be amended so that all cases of pulmonary tuberculosis shall be reported to it; that rooms of a patient dying from the disease shall be disinfected; that special care be used in transporting tuberculous patients on railroads, steamers, etc. The general dissemination of a knowledge of the foregoing fact, in conjunction with an application of the principles of an enlightened hygienic will do much not only to further diminish the mortality from tuberculosis but also to restrict its general prevalence.

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SATURDAY, DECEMBER 25, 1897.

IS THE APOTHECARY SHOP DOOMED?

Industrial evolution, as well as professional evolution, is constantly changing the relation of individuals to each other. The apothecary shop was originally the medicine-room of the physician. Galen himself is supposed to have used the word, deriving it from the Greek *apotheka* meaning a store or magazine. It was not until the time of Henry VIII. that apothecaries were recognized as distinct from the medical doctors. They were incorporated in 1606 together with the grocers, but later on had a separate organization, and since then have become more and more specialized. Today another change seems to be taking place among them. The manufacturing pharmacist with his large factories and hundreds of workmen, is assuming here and there the duties of the dispensing apothecary.

On the one side the physician has his medicines ready made; his pills, tablets, coal-tar combinations, organic compounds, elixirs, etc., are used as they come from the manufacturer. The apothecary dispenses them as the grocer sells baking powder and soap. No skill is necessary to fill a prescription for "Aunt Martha's Soothing Syrup" or "Roberts' Elixir of New Life." On the other hand, the science of therapeutics is becoming simplified; no twenty-ingredient mixture as in old times; not so much dosing; more expectant treatment; and the pill manufacturer is putting up cough syrups and tonics and fever mixtures to please the taste of the most fastidious.

Where is the apothecary to go? Is he to become a vendor of toilet articles and fancy crockery? Is he to be the commission agent for the pill manufacturer? Or is he to set up a medical advice counter and revert to the old surgeon-apothecary of the Middle Ages?

In the cities, many druggists study medicine and advertise *advice* and drugs for a nominal fee, and, on the other hand, many doctors buy a case of tablets and mixtures and dispense their own drugs. The manufacturing pharmacist in all probability is going to stay and to enlarge his domains. His agents will become more obtrusive, physician's samples will be left in greater numbers, and he will have his retail agents on every corner. Perhaps this is not bad; perhaps it will insure greater uniformity in quality. The large manufacturer can afford to test all the drugs he purchases; he can command the best skill in manufacturing; he can obtain greater accuracy; his pharmacists are not bothered by retail customers, or talkative friends; they need not be overworked and underpaid.

The corner drug store with its boy and one clerk, and its thousand and one things requiring attention, its soda water counter, window cleaning, unpacking of goods, etc., is not in a position to fill prescriptions accurately. The large factory with its labor divisions is surely in a better position.

In the evolution of the trade, the manufacturing pharmacist must supplant the small drug store just as the department store supplants the small dry goods shop.

Even at present very few pharmacists do more than act as agents for the wholesale druggist. They buy their tinctures and extracts, pills and plasters already made. Their infusions are water-diluted extracts; their waters are mixtures of essences. They have not the time nor the means to make their own preparations, and the chances are that the crude drugs they would make them from would be beneath the standard.

And then they must load their shelves with a dozen makes of pills, a hundred and more new remedies that the physician tries once and abandons. Surely the lot of the apothecary is not a happy one. Can the doctor do anything for him? We hardly think so. Economic reasons are at the bottom of it, and the druggist must go the way of the tailor, the shoemaker and the cigar-maker. His education must fit him for the laboratory of manufacturing apothecary and not for the corner drug store.

THE DISINFECTION OF BOOKS.

It has long been recognized by boards of health and others that the disinfection of school books and library books was a peculiarly difficult problem. We therefore note with pleasure that Dr. J. S. Billings of New York City has taken the problem in hand, especially that which relates to the sanitation of libraries.

Attention has been called to this matter so repeatedly that many of the boards of health of the different

States have taken action and caused the State legislatures to make a criminal offense for persons coming in contact with contagious diseases to borrow books from circulating libraries. But the act is often done so unwittingly that some other means seem necessary in order to combat the evil.

Be this as it may, future borrowers from New York's great library can rest assured on this head, for the trustees have already formulated a plan by which means every book that leaves the library shelves will be submitted on its return to a process of sterilization and disinfection that will free it from all its pathogenic properties. Several months ago, when the idea of the consolidation of the free libraries was but yet in its infancy, the officers of the library commissioned Dr. John S. Billings, the future director of the library, to make experiments with a view to determining how such a process could best be carried out, and it is the result of Dr. Billings' investigations that will prevail when the new library is opened.

The agent that Dr. Billings will employ is formaldehyde gas. In actual practice each book as it is returned will be placed in a double-walled box of Russian or Swedish iron, the inner wall of which is perforated, and which has a double-walled door, which will tightly close and inside of which is a false door of glass. In this box are shelves on which the books are laid, the bottom shelf being perforated and opening into a generating box. The books are allowed to remain in this box for a period of two hours, at the end of which time not a trace of live organism can be discovered. Not only does the method not injure the books in the slightest degree, but it actually rids them of the small parasites that infest morocco and calf bindings nd which prove such a source of annoyance to those who treasure up old and musty volumes.

THE TEACHING OF MEDICINE.

Medicine can be readily separated into two distinct portions; the scientific and the practical or art. The science of medicine, or better, one should say the sciences used in medicine, can be taught by the specialist whose knowledge of the practice of medicine may be very limited. Chemistry, physics, biology, physiology, anatomy, microscopy, histology, pathology, bacteriology and materia medica are capable of being taught in the class-room and laboratory without the aid of the living human subject.

These branches of science so virtually necessary to the practice of medicine should be taught by men thoroughly trained and competent; and as this requires time for which no recompense is to be had out of practice, and as the knowledge can not be acquired in practice as other specialists such chairs should pay their occupants sufficiently well to permit them to give most of their time to the study.

There would then be a goodly number of anatomists, physiologists and medical chemists who could devote themselves exclusively to these sciences, and who would be scientists pure and simple.

The study of the application of the above sciences to the cure of disease must necessarily be demonstrated on the human subject, and by persons sufficiently acquainted with the manifestations of disease by actual clinical experience to be able to do so completely.

The hospital, dispensary and private practice is the laboratory of the clinician. Every addition to his knowledge can be put to use among his patients for his own material benefit. The position of teacher is in itself a positive benefit, as it brings to him the consultations with his former pupils, and increases his importance in the eyes of the individual who might require his services.

The man who is called to teach one of the clinical specialties of medicine should, if anything, be compelled to endow his own chair, since the advantages to be derived from such a position are quite considerable from a material standpoint. In former times great men gathered about them young students to teach them the art of medicine, or some particular portion of it. And schools were often known as the school of this man or that. Such teachers may have been filled with a desire to impart knowledge, or a love of authority, or only with the hope of gain, but whatever the end, they fully realized the advantage of teaching.

Medical schools in our country are too much concerned about the practice of medicine and too little about the science. The laboratories and scientific branches instead of being relegated to the young men who regard them merely as stepping-stones to some clinical position, should be in the hands of well-paid specialists who will aim to make the subject interesting and complete, so that the student will not shirk them as disagreeable tasks to be gone through with as superficially as possible.

There will be no difficulty in filling the practical chairs without pay if it is generally understood that a consulting practice comes through the collegiate position, and the money so saved should be used to strengthen the other side of the school.

MORE MEDICAL PSEUDO-SCIENCE.

It is not very long since there was reported in the daily papers that a Washington professor, apparently not connected with any of the scientific Government bureaus, had made some remarkable discoveries in microscopic technique which were likely to revolutionize our method and greatly enlarge our range of microscopic vision. His own account of his achievements is contained in the two latest issues of the *New York Medical Times* and is of a character to perhaps deserve notice if not unqualified belief. He claims, amongst other things that by inserting the objective of one microscope into the place for the eye piece of another he is able to increase the magnification of objects to a most wonderful extent; that he is able to photograph with an infinitesimal amount of light, less than the one-hundred thousandth part of that formerly necessary; that he can make sections the thickness of one-hundredth of the thinnest section heretofore produced and can thus divide a single cell into hundreds of separate slices. To appreciate these claims one has to realize that they apparently mean that he is able to magnify the image in the first of his two connected microscopes to the extent of the magnifying powers of the second; and that his sections, assuming that the thinnest heretofore made were two microns in thickness, would be less than one millionth of an inch in thickness, or less than the wave length of the shortest visible ray of light. We would be justified in some incredulity of these pretensions, were they far less extravagant, and if not prepared to reject them *a priori* from our acquaintance with the physical laws of matter and the laws of optics one could judiciously leave them in his suspense account until such actual and verifiable results were demonstrated as would amount to something more than claims. As it is, however, it is hardly possible to do more than to charitably assume self-deception and nothing more actual than faulty reasoning and imperfect and misdirected observations.

This would be the natural and proper mode of view were these assumed discoveries all that were announced. The author of the papers in the *Medical Times*, however, goes on to lay down at length his theories which one can best describe as a mind-cure system worked up in a pseudo-scientific way. He adopts the theory that mind and vitality are one and that physiologic processes are purely mental phenomena, an old notion that has been revived as a basis for a therapeutic system possibly many times, and notably by STAHL in the beginning of the eighteenth century, but one which requires too many assumptions and too much ignoring of difficulties to meet successfully any truly scientific tests. Plausibly stated, however, and with an abundance of pseudo-scientific verbiage it may easily gain adherents, and its appearance in a respectable medical journal, of homeopathic antecedents it is true, but with a broader and less sectarian tendency than is common amongst such publications, is a matter to be regretted.

In these times when faith cure and Christian science are so much in vogue, it is not surprising that some one should seize the opportunity to bring out a system practically identical with these but without the religious auxiliaries that contribute so largely to the success of these delusions. Such have indeed their disadvantage with a certain class of minds; the liability to medical delusions is by no means confined to church goers, or the religiously inclined. Any system of hysteric therapeutics that starts out like this one with the claim that vitality and physiologic processes are simply mental processes, and that the laws of health and disease and crime are therefore all made manifest "not by faith or through mysticism and symbolism" but professedly by verified facts ascertained by asserted scientific researches, will attract a large class who would reject the same methods offered under the guise of Christian science or a faith cure. Practically it is Christian science for non-Christians, a pseudo-scientific jargon taking the place here of the religious phraseology that characterizes the other; the element of credulity is alike predominant in both.

The whole performance is simply a revival of an antiquated psychologic theory as a basis for a sort of suggestive therapeutics, supported by extravagant statements of alleged discoveries and a few commonplace but misinterpreted experiments and observations.

CORRESPONDENCE.

Department of Health Bill.

CHICAGO, Dec. 18, 1897.

To the Editor:—I was greatly interested in reading Governor Bloxham's communication in the current issue of our JOURNAL (see pages 1284–85) regarding the proposed Department of Public Health having at its head a "Secretary of Health," etc.

Permit me, therefore, to introduce briefly as I can the following additional argument as it occurs to me at this moment, in addition to what has been stated by the Governor of Florida, why such department should be created. Twice within the past five years, namely, during the summer of 1892 and the year following, the commerce of this country was materially disturbed and the lives of the people greatly endangered by a threatened invasion of *supposed* Asiatic cholera, and that more recently, yellow fever has gained entrance to the United States, namely, in 1893 and during the early autumnal months of the present year (as has already been ably stated), wherein many cities throughout the Southern States became infected with the germs of this oftentimes very fatal though *preventable* malady. Such being the case as the *status præsens* conditions exist, it is to my mind not impossible that a repetition of these and kindred diseases of pestilential origin and character may in future invade the United States from foreign shores, and its ravages again result in the loss of many precious lives, a panic among the living (*refugees*), as well as a serious menace and great financial loss to the commercial welfare and industrial interests of our country.

It appears to me, therefore, that every medical society, and perhaps other scientific bodies throughout our land should heartily approve and give their unqualified indorsation to the Department of Public Health bill that has been prepared by the special committee of the AMERICAN MEDICAL ASSOCIATION, and as such was unanimously adopted at the semi-centennial meeting of said ASSOCIATION at Philadelphia in May last, and which was subsequently unanimously *accepted* at the twenty-fifth anniversary (annual) meeting of the American Public Health Association held in the same city in October.

As many associations have already placed themselves on record "by endorsing this bill," the profession as a unit is certainly *uniting* in its manifestation of having the utmost confidence in the ability of this special committee into whose hands this matter was intrusted, and I wi her t ing that any additional amendments to said bill should meet our hearty approval so long as the purport of its original intent and meaning shall remain unchanged and the amendments are germane to the bill, for we may not be able to get the bill enacted exactly in its present form and it may become necessary to make some minor changes, etc.

I am also reminded that the holiday season is approaching, and that many of our Senators and Representatives will "go home" on a visit at this time. This will afford "us" a splendid opportunity to personally respectfully request of our friends, our National legislators, that they carefully consider "our" Department of Public Health bill, with the view that favorable action will be taken by them toward passing this already too long delayed measure. And why should there not be a Medical Secretary or a Commissioner of Public Health, to be on a parity and rank with equal dignity as the various secretaries of the other departments of the Federal Government?

Why should the Secretary of the Treasury be longer expected to (nominally) remain at the head of the hygienic welfare of this nation? The answer is, We are too great and have outgrown such ideas.

In conclusion, I trust that Congress, during the present session, will legislate upon this question for the "welfare of the people" as provided in the Constitution of 1787, adopted in 1788, and that every physician throughout the country who has not already personally interviewed his Representative or United States Senator and discussed this topic with him, will do so, by correspondence or otherwise, within the near future, and appeal to him to vote for said bill.

With best wishes for our Journal also in its efforts in this (the right) direction, and for its future prosperity, and a very merry Christmas and bright New Year to all its readers, I beg to remain, Very sincerely yours,

Liston H. Montgomery, M.D.

Concerning Rates to the Denver Meeting.

Sioux Falls, S. D., Dec. 16, 1897.

To the Editor:—Dr. J. F. Jenkins in the Journal of December 11, thinks that if the Committee on Transportation could obtain the same rates to the meeting of the American Medical Association that other less important bodies get, we could have at least five thousand physicians present at the Denver meeting next year. Now, we have been informed that the doctors formerly had all they could ask for in the way of rates, until they abused their privileges. The railroad companies finally kept tab, and discovered that in one year, free transportation to the amount of about $60,000 had been called for and used to go to places other than the Association, over and above that actually used in good faith. The railroads thereupon cut off free transportation over each other's lines to their surgeons, thereby punishing the innocent with the guilty.

Hence, the doctors have some of their own numbers alone to blame in that direction. If the committee could induce the railroad companies to grant transportation to their surgeons, under such restrictions that the companies could not be imposed upon, hundreds of railroad surgeons would attend who could not otherwise afford to do so.

The incidental expenses outside of transportation amount to quite an item to the average country doctor.

Our experience with railroad companies is that they appreciate good, honest service, and are liberal with those who do not abuse their privileges. It is certainly to their advantage to have their surgeons use every available means to improve themselves professionally.

It is true, the American Medical Association includes all regular physicians in good standing who wish to join, and is in no way intended more for one branch or class of the profession than another; yet the existence of two national associations of railway surgeons, besides numerous smaller ones, demonstrates that that class of physicians are active and progressive; men who would not only be glad to avail themselves of the benefits of the American Medical Association, but would make valuable members as well.

Yours respectfully, A. H. Tufts, M.D.

PUBLIC HEALTH.

Prophylaxis of Yellow Fever.—Lacerda states that the epidemics of yellow fever in Rio de Janeiro are due to the periodic revivification of the germs of yellow fever in certain permanent foci in the interior of houses and the holds of ships, where they propagate, favored by dampness, darkness and filth. They can not live any length of time in sewers nor in open water, nor anywhere exposed to the sun. His conclusions were adopted by the Academia de Medicina, which proclaimed that the extinction of these foci in Rio de Janerio is practicable and necessary.—*O Brazil Médico*, October 22.

Sanitation of Railways and Steam Vessels.—The *New Orleans Medical and Surgical Journal* states that the State Board of Health of Louisiana has adopted resolutions calling attention to the present lack of sanitary measures in vogue on public carriers, notably steam vessels and railroad sleeping cars. The necessity for reform in this particular is too glaring to need defense. No one who travels fails to observe the offence to health and ethics which exists on the steamship or sleeping car. The wash basin is used by the porter for his own toilet, and it is not an infrequent thing to see the cuspidors washed out at the same font. From the standpoint of health, it is familiar to all that no provision is made for those suffering with tubercular affections or with other ailments. We have seen the syphilitic, in acute eruptive stage, use the common drinking-glass, the toilet articles and eating from the buffet crockery. Not long since a lamentable instance was related to us of a woman dying of tuberculosis, on her way to New Orleans, making the car uncomfartable by her spells of coughing and rendering the atmosphere unbearable by the emanations from the decomposing lungs. The Pullman conductor relating the incident, deplored the fact that no provision was made for the separation of such cases. Resolutions can only direct intelligent thought at the remedy, but peristent effort in directing attention to the necessity for some remedial measure must result in its application. State legislatures have it in their power to compel sanitary measures through their State Board of Health, and there is no reason why the legislative action should not go farther in compelling provision for the hospital accommodation in transit for such cases as the above.

Fumigation of the Domicile by Corrosive Sublimate, followed by Sulphur.—The October number of *Public Health* contains the following annotation regarding the disinfection of rooms after contagious disease. Professor Koenig of Goettingen, in a recent article, says that at one time, while he was practicing medicine in Hanau, he suddenly discovered that his bed room was thickly inhabited by obnoxious insects. A friend assured him that he could easily get rid of the pests and proceeded to fumigate the apartment with corrosive sublimate. The success of this measure was most gratifying, and when the room was opened the dead bodies of various kinds of insects were seen strewn about the floor. This incident led the professor to hope that the same means would be effectual in destroying the infectious elements of contagious diseases, and a trial in private houses after scarlet fever or measles, and in hospitals after erysipelas or pyemia, gave most satisfactory results. Since adopting this method he has never seen a second case of contagious disease which could be attributed to infection remaining in the room in which the patient had been confined. The mode of procedure is very simple. From one and one-half to two ounces of corrosive sublimate are put on a plate over a chafing-dish, and then the windows and door of the room are closed. At the expiration of three or four hours the windows and doors are opened and the apartment is thoroughly aired. The person entering the room should take the precaution to hold a sponge or cloth over the mouth or nose in order not to inhale the vapor. The following day the windows are again closed and some sulphur is burned in order to neutralize any of the mercurial fumes which may linger about the furniture and other articles. The room should then again be aired and cleaned, when it will be ready for occupancy.

Slaughter-House Ordinances in Early England.—In Richard II.'s time we find an act for "the punishment of them which cause corruption near a city or great town to corrupt the air" (12 Rich. II., C. 13, A. D. 1388), the preamble of which notes that so much filth "be cast and put in ditches and other waters and also within many other places . . . that the air is greatly corrupt and infect and many maladies and diseases do daily happen." A century later we find an act under the heading "Butchers shall kill no beasts within any walled town or Cambridge" (4 Henry VII., C. 3, A. D. 1487). The preamble of this speaks of the "Corruptions engendered by reason of the slaughter of beasts and the scalding of swine," the "unclean and corrupt and putrified waters," and adds "that in few noble cities and towns, or none within Christendom, the common slaughter-house of beasts should be kept within the walls of the same, lest it might engender sickness unto the destruction of the people." It was nearly four hundred years later when the 317 slaughter-houses scattered promiscuously in New York City below Eightieth street, were driven out and the work concentrated in clean abattoirs outside. When London was to be rebuilt after the great fire, a law was passed for "the cleansing and scouring of vaults, sinks and common sewers" (19 Ch. II., C. 3, A. D. 1667), and in 1670 another was passed for the better paving and cleansing of the sewers and streets in and about the city of London.

Hospital for Consumptives at Paris.—A part of the large estate of the late Madame Boucicault will be directed to the establishment of a hospital for the treatment of tuberculosis. The hospital is only one of the many objects of charity for which Mme. Boucicault left money, but it is the most important. The buildings have cost with furniture, about $650,000 and a sum of $1,500,000 was left for its maintenace, the interest of which will amount to about $45,000 a year. Any expense not covered by the gift will be liquidated by the Assistance Publique, which, besides receiving money from the city, receives yearly large bequests from private charity. This institution which bears her name, is upon the point of opening, in the charge of Professor Maurice Letulle, who has had marked success in his treatment of tuberculosis at St. Antoine. The new hospital has an ideal situation in the comparatively open quarter of Paris known as Javel, which is on the south side of the Seine opposite Auteuil. The building is isolated, even the four streets inclosing it being wide and little traveled. Although the building is large there will be but 160 beds, as the great object is plenty of space and ventilation. Of these beds only thirty-two will be devoted to consumptives at the beginning, but it is believed that the hospital will eventually become one for such cases only, and the buildings have been planned with that end in view. Sixteen beds are reserved for employes of the Bon Marché; otherwise the hospital will be absolutely free. The main improvements to be noted are in the condition relative to the housing of the consumptive patients. The two wards to be devoted to them exclusively from the start occupy separate pavilions. The wards themselves are glass-roofed galleries, the sides of which may be made entirely open. This is for the air treatment, which is a method constantly growing in favor. The patients will, practically, eat, sleep and live out of-doors, without draughts and protected by the glass roof. Only in stormy and very cold weather will the galleries be closed. The flooring is of polished hard wood, the furniture of enameled iron, and there is no curtain or drapery of any kind. The object is to be able to disinfect the entire apartment by means of steam and hot water. The mattresses are made of wood fiber, sterilized and uninflammable, and the system of spittoons is entirely new. The matter of instant sterilization of all discharges from the patients' mouths and throats is to be carefully looked after. Finally, the clothing of patients, nurses and servants is to be specially fashioned, and is to be kept constantly disinfected. The patients, also, are to be graded as to the stage of the disease in which they may be. Incurable patients are to be isolated in smaller rooms away from the wards.

ASSOCIATION NEWS.

Section on Laryngology and Otology.—A bound reprint or volume of the Transactions of the Section on Laryngology and Otology at Philadelphia will be prepared; after publication in the JOURNAL and furnished to subscribers at $1 per volume, provided seventy-five subscribers can be at once received. Those wishing the volume and who have not already entered, therefore, will please send their names without delay to Dr. W. E. CASSELBERRY, Chairman, 34 Washington Street, Chicago. It is urged that as many subscribe as possible as the valuable papers contributed at this meeting will thus be preserved in book form, and the custom of issuing an annual volume established.

BOOK NOTICES.

The Physician's Visiting List for 1898. Leather. Philadelphia: P. Blakiston, Son & Co. Seventy-five cents to $1.25.

This visiting list contains calendars for 1898 and 1899. The metric system of weights and measures, a dose table giving both the English and metric systems to correspond with the U. S. P., a table for converting apothecaries weights and measures into grams, and other data. The list is published in three styles, all containing special memoranda pages.

Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Paper, 90 pages. Baltimore. 1897.

This volume of transactions covers the ninety ninth annual session held at Baltimore, April, 1897, and the semi-annual session held at Hagerstown, Md., November, 1896. The contents comprise reports of various boards, committees, etc., lists of presidents, vice-presidents and members, the presidential address on "The Functions of a State Faculty," by Wm. Osler, M.D., and the annual address, "Does Medicine Advance?" by David W. Cheever, M.D.

Transactions of the South Carolina Medical Association. Paper 129 pages. Walker Evans and Cogswell Co. Charleston, S.C.; 1897.

This volume contains the transactions of the forty-seventh annual meeting, held in Union, S. C., April 28 and 29, 1897. The following papers appear: Ectopic Gestation; Observations on Continued Fever; Carbolic Acid in the Treatment of Hemorrhoids; Graves' Disease; Oxygen Gas as a Local Therapeutic Agent; Remarks on Otitis Media and Otitic Syphilis; Up-to Date Treatment of Cataract; Kangaroo Tendon as a Ligature and Suture in Ovariotomy; Dr. Paquin's Antitubercle Serum; Removal of Pus Tubes and Appendix; Acute Opium Poisoning; Trephining for Traumatic Epilepsy; Leucocytosis on Element in Diagnosis and Prognosis.

Transactions of the American Surgical Association. Vol. xv. Edited by DEFOREST WILLARD, A.M., M.D., PH.D. Printed for the Association. Philadelphia: William J. Dornan. 1897.

This volume contains the usual number of interesting papers by members of the Association, and necrology reports on Sir Thomas Spencer Wells, Sir John Eric Erichsen, Sir George Humphry, William Hunt, William H. Pancoast, Perry H. Millard and J. Edwin Michael. The addresses and ceremonies on the occasion of the presentation and unveiling of the Gross statue are given, an excellent half-tone showing the statue itself with the Army Medical Library in the background. Altogether one of the most notable volumes of this series yet published, especially from a historic point of view.

The Journal has heretofore published an account of the meeting (see Journal, May 15, 1897, p. 947), and commented at length upon the character of this session.

An abstract of the papers can be found in the Journal, May 29, 1897, page 1025.

MISCELLANY.

Errata.—In "Some Practical Points on Infant Feeding and Infant Feces," *vide* Journal, December 11, page 1197, at the end of Formulas 2, 3 and 4, the amount of milk sugar should read 6¾ drams instead of 6¾ ounces.

The Pasteur Prize offered by the "Circulo Med. Argentino." was awarded to Dr. José Sanarelli, for a communication describing his experimental work in the line of immunization against yellow fever. As his article was the only one received, Dr. Sanarelli refused to accept the prize.

The Necessity of Aseptic Cushions for the operating table is urged by P. Klemm of Riga, who recommends for the purpose bags made of stout linen, of the required shape, filled as needed with excelsior (Holzwolle), and sterilized with steam, or the bag and excelsior can be sterilized separately. He has found these cushions convenient, cheap, absolutely aseptic and superior to rubber cushions for several reasons.—*Cbl. f. Chir.*, November 16.

Hay-fever at Carlsbad.—M. Müller reports in the *Wien. Klin. Rundschau* of October 31, his opportunity to observe several cases of hay-fever among Americans at Carlsbad. After describing in detail the familiar symptoms, he mentions that he succeeded in abating them to such an entent that the patients were enabled to return home and not wait for frost as usual. His treatment was a full course of the waters and local applications of a 20 to 30 per cent. solution of argentum nitric., with which he touched the nasal mucosa, following it with a spray of Carlsbad water.

Dystrophia Muscularis Progressiva.—A case was recently observed by E. Bonardi, described in the *Gaz. d. O. e d. C.* of August 15, that combined the more common picture of facio-scapulo-humeral dystrophia of Dejerine Landouzy with the rarer Brossard femoral dystrophia with pes equinus, etc. Both affections were typical manifestations, non-symmetric, with a functional lesion of the left eye, like a mist constantly before it, which the specialist was unable the remove. The first symptoms appeared at 19, with weakness of the limbs and inability to step on the heel.

The Conductibility of the Nerves in Both Directions is not demonstrated by physiology, but pathology and therapeutics confirm it in many ways, especially by the phenomena of electricity, catalepsy and suggestion. . . . The production and cure of morbid conditions by psychic stimulation appear in an entirely new aspect when viewed by the light of double nerve conductibility. . . . The fact is too often forgotten that the excitations originating in diseased conditions of the nervous system are usually propagated according to entirely different laws and in different directions from the physiologic stimuli. To correct the false deductions we have made in this respect, will be the task of the next generation. . . . Orschanski states that the nervous system is constantly in a condition of activity, which he calls nerve tonus, in its efforts to maintain the temperature and the general economy of the organism. It is probable that this tonus requires centripetal stimulation of the motor nerves and centrifugal of the sensory.—From Prof. M. Benedikt's address in the Phys. Section at Moscow. *Deutsche Med. Woch.*, October. 7.

Spontaneous Sediment; Formation in the Blood a Method of Scientific and Clinical Investigation.—E. Biernacki has established the fact that the sedimentation of the blood is by no means a purely mechanical process, but depends upon certain factors which render it a valuable aid in scientific and clinical investigation along different lines from the hematokrit and centrifuge. The rapidity of the sedimentation is an indication of certain alterations in the blood which no other method is able to detect. It depends upon the amount of fibrinogen in the blood and varies with it. Another fact established by it is that the fibrinogen is in direct proportion to the capacity of the blood for oxygen, and the amount of oxygen contained in it, forcing the conclusion that fibrinogen is an albuminoid involved in oxidation, and hence that the variations in the amount of fibrinogen indicated by the rapidity of sedimentation point to abnormal processes of oxidation. His numerous experiments and the standards he has adopted for comparison are given in full in the *Deutsche Med. Woch.*, of November 23.

Faure's Method of Total Abdominal Hysterectomy is described and illustrated in the *Presse Méd.* of October 19. The abdomen is opened, the surgeon at the left, and the fundus is seized with forceps each side of the median line. With a scissors it is then cut down straight on the median line into the vagina, applying forceps half way down and again to the two stumps of the cervix. Each half then shells out from below upward, like a ripe nut, held only by the utero-ovarian vessels, which are then severed after seizing with forceps. The operation is surprisingly simple and easy. The only disadvantage is the opening up of a possibly infected uterus, but the danger from this is slight and can be prevented by touching the lips of the incision with the thermocautery. It is also an easy matter to disinfect the small pelvis afterward if necessary. The method is especially adapted to suppurated adnexa, as they are removed intact and all danger of infection from this source is avoided. It also avoids approaching the lesion from the periphery, which is frequently laborious and dangerous. He considers it applicable to all uteri of normal or slightly more than normal size. Cut in two from above down, the two halves, freed from their lower attachments, roll out from the vagina upward and can be enucleated with remarkable facility.

A Medical Man Honored.—Dr. Alexander Hill has been elected to the honorable position of Vice Chancellor of Cambridge University. This is the first time in history, says the *Lancet*, that the highest executive office of one of the two leading English Universities has befallen a medical man. John Caius, who, like Dr. Hill, was a student of St. Bartholomew's Hospital, ruled over the College, which he refounded and endowed, from 1559 to 1573, but he did not fill the office of Vice Chancellor. John Harvey was appointed Warden of Merton College, Oxford, in 1644, but lost his office six months later on the fall of Charles I. Of other medical men, if any, who have filled headships of colleges there is, we believe, no record, Dr. Alexander Hill's mastership of Downing alone excepted. Of late years medicine has made great advances at the universities, and we must look upon the election of Dr. Hill not only to the mastership of Downing but to the Vice-Chancellorship of the University as a proof of the increasing influence of our profession at Cambridge, and also as one of many recent indications that medicine is rapidly stepping into a position of equality with the sister professions of theology and law. Dr. Hill holds the office of Lecturer in Advanced Anatomy to the University. He was for some time Hunterian Professor of the Royal College of Surgeons of England. He is the author of many papers on the anatomy and physiology of the nervous system, the translator of Obersteiner's "Central Nervous Organs," and the author of the "Physiologist's Note Book" and other works. Last year he succeeded Sir William Broadbent as President of the Neurological Society and it is as a neurologist that he is chiefly known to the profession.

Treatment of Putrid Abortus, Hemorrhagic Endometritis, etc.—Pincus considers steam almost a specific for these conditions. He uses a wooden speculum and injects a stream of steam at 100 degrees C. for two minutes (*Wien. klin. Rundschau*, October 10). This treatment is enthusiastically endorsed at Prague, where it is extensively applied. The technique there is described in an article in the *Presse Méd.*, of October 2. Schick prefers a boiling water, which he injects into the uterus for one minute, never more than a minute and a half. To prevent burning the vagina, he injects a constant stream of ice-water into the vagina at the same time. The uterus is first dilated and the patient put to sleep; she is also kept in bed until the eschar falls, which requires about three weeks. The wick of gauze in the vagina is changed every four or five days, and the vagina irrigated occasionally. No accidents nor inconveniences were observed at any time. In rebellious hemorrhagic endometritis, hemorrhage after curettement of uterine cancers or after abortion, and the metrorrhagia of the menopause, this treatment has proved a perfect hemostatic. In the first named, two cauterizations at an interval of a month or six weeks, have sometimes been required before the cure was complete.

Holothyrus Coccinella; a New Parasite.—M. Mégnin recently showed before the Paris Academy of Medicine a parasite of a fairly large size which had been sent to him from the Mauritius by Dr. Charmoy for the determination of its zoologic position. It is the holothyrus coccinella of Gervais. Its popular name is "trouille canard," and poultry farmers know its noxious properties so well that they have given up breeding birds in those elevated and damp regions of the island where this parasite abounds, lying hidden during the day under the moss and stones. Even children have often fallen victims when, having found a "trouille canard," they have put their fingers in their mouths after having touched it, for the tongue and pharynx become affected with an exceedingly painful swelling so that they are in danger of asphyxia. With his last consignment of these parasites M. Mégnin tried some experiments to verify the existence of these unheard-of properties. If one is applied to the skin and kept there by a bandage, a burning sensation is felt, which after a time becomes very disagreeable, although the skin is only slightly edematous and exhibits no change of color. Upon mucous membranes the effect is very much more pronounced.—London *Lancet*.

A Simple Regimen for Obese Persons.—Dr. Cathell reports that he has had more than ordinary success during several years with a plan of treatment outlined below. In his view, obesity is due to one or more of the following causes: Congenitally small lungs with a defective oxygenating capacity; eating excessively of all kinds of food; want of lung-expanding exercise; using alcoholic drinks to excess. Many of the drugs which have a known fat-reducing power exert an injurious action on the other tissues of the body, and if used persistently for any length of time, or in efficient doses become dangerous to health. While the various obesity cures are so rigorous that few carry them out conscientiously, the treatment of the author is very simple. The patient has only to drink after each meal a glass of the artificial Kissingen water to be found at drug stores and soda water fountains, and on the succeeding day, a glass of artificial Vichy water also half an hour after each meal. This is to be continued week after week until the patient comes down to a normal degree of stoutness, and the waters are then discontinued. While taking the waters the person should keep a weekly record of his weight, always using the same scales, and wearing the same clothing, and should also, for his own satisfaction, record his chest, waist and hip measurements. If the loss in weight exceeds two pounds a week, the amount of each water should be made smaller; and if the loss has not equaled two pounds a week, a few teaspoonfuls of lemon juice should be added to each glass of the Kissingen water to increase its acidity, and a teaspoonful of aromatic spirits of ammonia to the Vichy to increase its alkalinity. The diet should be light and contain only small amounts of fat, starch, sugar, and alcohol. Moderate outdoor exercise should be included in the day's program. The mode of action of these waters taken in the manner described, is not clear, but their efficiency is too well established to admit of doubt.—*Maryland Med. Jour.*

Denver.

THE DENVER AND ARAPAHOE MEDICAL SOCIETY.—At the regular meeting, December 14, Dr. S. G. Bonney reported "An Unusually Successful Result of Thyroid Treatment in a Case of Myxedema." The patient was a woman aged 54 years, whose father died of cerebral embolism, mother and one sister of cancer. Previous history was good. On July 31, 1897, the patient presented the characteristic symptoms of myxedema; features enormously swollen; nose flattened; lips bluish, the lower somewhat everted; eyelids full and distended; constant watering of the eyes; pronounced lemon discoloration of hands and neck; tongue much swollen; speech slow and hesitating; very apparent mental hebetude. Subjective symptoms: Pricking of skin, coldness of feet, frequent sharp burning sensation in extremities; skin dry, hard and fissured; hair dry and coarse; nails brittle; vision and hearing impaired. Temperature by mouth at 2 P.M. 96.4. Pulse 60, weak, compressible. Treatment was instituted, August 3, which consisted of complete rest, and a 2 grain tablet of dessicated thyroid extract, prepared by Armour & Co., two hours after breakfast. After the second dose the temperature had risen to 97.2. On the third day temperature was 97.4, with diminished lachrymation, improvement in quality of voice and for the first time in many months she began to feel the return of strength.

The improvement continued steadily, and on September 3, after one month's treatment, all the above enumerated symptoms have disappeared. She has diminished about one third in size; lost nearly thirty pounds in weight: feeling of vigor, almost buoyancy; pulse 86; temperature normal, and an apparent complete return to a normal condition has been secured. Only once during the treatment did the patient feel badly, which was attributed to the administration of an additional tablet of the thyroidin. The administration of the drug was suspended for two days and again resumed, without any further trouble. Dr. Bonney in summing up the case, made the following practical deductions: 1. The remarkably short period of treatment. 2. The brilliant results obtained from unusually small doses of the thyroid. 3. The danger attending the indiscriminate and injudicious administration of larger doses especially with the patient not under competent observation.

Dr. J. T. Eskridge, in opening the discussion, gave a short historic résumé of the treatment of the thyroid gland. He highly complimented the work of H. Gideon Wells, Ph.G., of Chicago, for his elaborate and excellent paper on the "Physiology and Therapeutics of the Thyroid Gland" which was published in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, October 30, November 6 and 13, 1897. The treatment of cases of myxedema, he said, is divided in two stages. The first is for the relief of symptoms, and the second to maintain the degree of health secured. He usually begins with the administration of two to five grains daily. Rapid action and palpitation of the heart, slight dyspnea, pains in the legs, headache, etc., indicate that the dose should be diminished or that the agent should be discontinued for a few days. He had employed the animal extract in ten cases of obesity with failure to reduce the weight in one. In three of the nine cases thirty pounds each were lost, while the strength and general well-being of the patient seemed decidedly increased. In a number of cases he found it necessary to give strychnin and spartein to sustain the heart during the most active period of the thyroid treatment. The loss of fat is permanent. Dr. Eskridge also made a résumé of the literature on the thyroid treatment in ununited fractures (*British Medical Journal*, Sept. 12, 1897); pelvic congestion (Twelfth International Med. Congress "Gynecologie"); skin diseases (*N. Y. Med. Jour.*, Nov. 20, 1897); mental diseases (*Journal Mental Science*, January, 1895; *Dublin Jour. Med. Science*, August, 1895; "Practical Therapeutics," vol. ii, p. 292). He thinks it probable that it might be used with advantage in some of the depressive states of the nervous system, and in cases of retarded development both mental and physical. He is at present trying the treatment in a few cases of infantile cerebral palsies. Drs. Edson, Freeman and Rothwell each reported a case of myxedema in which the thyroid treatment was successful.

Dr. CHAS. DENISON read a paper entitled "Passing Consideration of the Antitoxin Treatment of Tuberculosis, Wayside Remarks on the Direct (tuberculin preparation) Versus the Indirect (animal serum) Method of Immunization Against Tuberculosis." He prefaced the paper by the following remarks: "From the absurd advertisement of a Swiss barber, 'Tuberculin injections given here,' and the [illegible]ually prep[illegible] terous belief which at first prev[illegible] at [illegible] s to d[illegible] tuberculosis has been discover[illegible] hou[illegible] remedy, we have come to [illegible] t m[illegible] by a concentration of skilled effort, and by a technique involving as much discrimination in diagnosis and care as does the differentiation of a complicated eye refraction, the microscopic determination of blood changes due to disease, the endoscopic study of internal organs or any other delicate field of professional work." He divided the tuberculin products into two classes: A. Those which are supposed to work by their toxin, creating or stimulating the production of an antitoxin in the blood of an affected person. B. When the antitoxin has already been produced in an animal's blood, preferably one already immune, and then through its serum made available in the treatment of tuberculosis.

To the first class belong: 1, the crude original tuberculin of Koch; 2, tuberculocidin, Klebs' first modification of the former; 3, antiphthisin, practically the same product as Klebs manufactured in this country; 4, tuberculinum purificatum of Dr. Karl von Ruck of Asheville; 5, purified tuberculin of Dr. Whitman of Los Angeles; 6, oxytuberculin of Dr. Hirschfelder of California; 7, Koch's new tuberculin (T. R.); and 8, Dr. Karl von Ruck's watery extract of the bodies of the dead bacilli.

To the second class belong: 1, antitubercle bacilli of Paul Paquin; 2, Professor Crandal's (St. Louis) serum; 3, the serum prepared by the H. K. Mulford Co. of Philadelphia, and the antiphthisic serum (T. R.) made by the John T. Milliken Co. of St. Louis according to the formula of Dr. Carl Fisch. This serum is peculiar in that the selected horses from which it is taken have been strongly immunized, charged with Koch's new tuberculin (T. R.), the process usually taking four months and the serum being drawn fourteen to twenty eight days after the last injection. When it is considered that for a last dose 150 c.c. are given the horse, we can get some idea of the enormous load of tuberculin these animals are carrying in their blood, by remembering that according to Koch the initial dose of tuberculin (T. R.) should be one five hundredth of a milligram. Dr. Denison gave in brief the result of the various experiments of Dr. Fisch, and the histories of seven cases which he himself treated with the last named serum. Dr. Denison has obtained good results in all his cases, and has not met with any untoward effects so frequently encountered in the use of the other tuberculin preparations.

Dr. Bane reported a case of an "Animate Body in an Ear." The patient, a woman, was exposed in a storm in Arizona and for several days the cold wind blew against the right side of her face. A day after she experienced a peculiar sensation in her right ear. The ear became very painful, swollen, tinnitus constant, with severe pain in the salivary glands upon taking liquids or doing anything that would excite the flow of saliva. On looking into the right canal he noticed a greenish substance that almost filled the membranous portion, which he easily removed. It was found to be a lively insect 4 by 6 mm. in diameter, and 2 mm. thick. It lived for two days and was identified as a wood-tick, *Ixodes*.

Louisville.

Health Office.—It has been announced that the new Board of Public Safety appointed by Mayor Weaver will remove Dr. W. P. White from the office of Health Officer and appoint as his successor Dr. M. K. Allen. Dr. White has had the endorsement of the Louisville Medico Chirugical, the Clinical, the Surgical, the Falls City Medical Society and the Practitioners' Club, besides the private endorsement of the majority of the practitioners of the city; yet in spite of this the removal of Dr. White has been decided upon. From present indications it was decided upon before the election. Dr. White has made a most excellent record as a health officer and it is a great disappointment to all that this office has been made a political gift.

Falls City Medical Society.—At the last meeting of this Society Dr. Albert Muench read a paper entitled "The Treatment of Acute Urethritis."

Report.—The seventy-third annual report of the Eastern Kentucky Asylum for the Insane has just been issued by its superintendent, Dr. Edw. M. Wiley, for the fiscal year ending Sept. 30, 1897. The Board of Commissioners in their report, embodied in it, ask for an appropriation of $10,000 for the purpose of constructing an adequate artificial sewer. This will be referred to later in speaking of the superintendent's report. An adequate hospital and a gas plant is also asked by the commissioners. Several thousand dollars will be needed for the necessary repairs to the buildings, which is not to be wondered at when it is remembered that this asylum is the oldest one west of the Allegheny mountains. It is urged by the commissioners that the appointment of the superintendent be taken from the Governor's hands and placed in the commissioners', thus removing it from politics entirely. The census at the close of the year showed 817 inmates, 1,027 being treated during the year. The place is in a most deplorable sanitary condition, with a sewerage system which overflows, damming the refuse back until it has contaminated five cisterns, the typhoid bacillus being found in two of these and sewer gas in the rest. As a result of this there have been forty-two cases between August 12 and October 31 of typhoid fever. The report goes on to say that there is no provision for examining patients or their care beyond the public wards and the rooms in which patients are confined, and as a result of this ten attendants requiring treatment during the typhoid fever epidemic had to be sent outside the building. The provision for the erection of a suitable hospital is earnestly urged. There were a total of 103 deaths during the year. As to the age of those admitted during the year it is interesting to note that thirty-four of the 236 admitted were between 20 and 25 years and thirty-five between 25 and 30 years. Fifty-eight of the females admitted were domestics. Thirty-three of the males were farmers and forty six farm laborers. The remarkable number of insane among the farming class was called attention to on a previous occasion in these columns. Consumption caused seventeen deaths and pneumonia twenty-six. The cases of pneumonia occurred at the time of the overflow of the sewer. Farm and garden products to the value of $12,827 were produced on the lands of the institution during the year.

M.S. edical Coll

CHANGE OF ADDRESS.

Atwater, M. B., from Marysville to 107 Grand St., Helena, Mont.
Becker, E. C., from Riverside to 1751 Milwaukee Ave., Chicago, Ill.
Drake, G. W., from Chattanooga to Nashville, Tenn.
Davidson, S.S., from Mercer to New Castle, Pa
Holmes, W. F., from 311 Ogden Ave to 210 N Kedzie Ave., Chicago, Ill.
Lehan, J. W., from Chicago, Ill to Alexander, Ia.
Pressey, A. J., from 841 E. Madison Ave., to 900 Fairmount Ave., Cleveland, Ohio.
Prather, D. J., from Little Rock, Ark., to Los Angeles, Cal.
Reynolds, J. F., from Louisville, Ky., to Mt. Sterling, Ky.
Scherer, O., from 101 Jefferson Ave. to 116 Miami Ave., Detroit, Mich.
Schultz, W. C, from Lomira to Mayville, Wis
Stout, J. C., from Los Angeles to 911 Laguna St., San Francisco, Cal.
Storer, W. D., from 1102 Wrightwood Ave., to 485 E. Fullerton Ave., Chicago, Ill.
Tuggle, S. P., from 302 Stockton St. to S. E. corner Geary and Stockton, San Francisco, Cal.
Welcome, J. W. B., from Sleepy Eye, Minn., to 620 Jefferson St., Los Angeles, Cal.
Wysor, J. C., from Charleston, W. Va., to Clifton Forge, Va.

LETTERS RECEIVED.

Braymer, C. W., Camden, N. J.; Blanck, J. E., Allentown, Pa.; Bonner, C. A., Dayton, Ohio; Byerly, A. J., Coggon, Iowa; Bellevue Hospital Medical College, New York, N. Y.; Brown, LeRoy, Heron Lake, Minn.; Baker, A. R. Cleveland, Ohio.

Chesterman & Streeter, Philadelphia, Pa.; Cleveland, C. C., Minneapolis, Minn.; Center, Charles Dewey, Quincy, Ill.; Casselberry, W. E., Chicago Ill.

Dios Chemical Co, St. Louis, Mo.; de Schweinitz, E. A., Washington, D. C.

Fischer, Louis, New York, N. Y.

Henry, F. A., Louisville, Ky.; Hospital College of Medicine, Louisville, Ky.; Hummel, A. L., Advertising Agency (4), New York, N. Y.; Hoffman, N. W., Philadelphia, Pa.; Hertzler, Arthur E., Halstead, Kas.; Herriges, P., Hingham, Wis.; Hughes, C H., St. Louis, Mo.

Klingensmith, T. A., Jeannette, Pa.; Koechl, Victor, & Co. (2), New York, N. Y.

Laconic Publishing Co., New York, N. Y.

Moffitt-West Drug Co., St. Louis, Mo.; Mariani & Co., New York, N. Y.; Medical Electric Co., New York, N. Y.; Mogk, W. A. (2), Ann Arbor, Mich; Merrick, M. B., Passaic, N. J.; McCullough, G. T., Missoula, Mont.; Moore, W H., Brockport, N. Y.

Oelrichs & Co., New York N. Y.; "Oak Grove," Flint, Mich.

Price, J. Wesley, Booneville Miss.; Pigram, Eli, Duncan, Miss.

Rosenthal, Edwin, Philadelphia, Pa.; Reber, Wendell, Philadelphia, Pa.; Rice, I. L. G., Auburndale, Mass.; Reynolds, L., Horton, Kas.

Stevenson, Sarah Hackett, Chicago, Ill.; Schering's Grüne Apotheke, Berlin, Germany; Savage, G. C., Nashville, Tenn.; Smith, Kline & French Co., Philadelphia, Pa.; Sweetser, H. B., Minneapolis, Minn.

Thom, D. M. B, Mardin, Turkey, Asia.

Wright, John, San Jose, Cal.; Wagley, T. J., Cleburne, Texas; Weston, Frank R., Onalaska, Wis.; Wingate, U. O. B., Milwaukee, Wis., Walesby, A E, Louisville, Ky

Yucca Mfg. Co., Jackson, Mich.; Young, F., Rural Dale, Ohio.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from December 11 to 17, 1897.

Capt. Isaac P. Ware, Asst Surgeon, ordinary leave of absence granted, under orders for duty at Benicia Bks., Cal., is extended one month on account of sickness.

Major Louis Brechemin, Surgeon (Ft. Sherman, Idaho), is granted leave of absence for one month, to take effect about Dec 15 1897, with permission to apply to the Adjutant General of the Army for an extension of two months

First Lieut Guy C. M. Godfrey, Asst. Surgeon, will be relieved from duty at Ft. Sheridan, Ill., and will report in person to the commanding officer of the detachment of troops at Finn's Point, N. J., for duty at that place and at Ft. Delaware.

be implicated, is less fatal to the eye than a similar wound in the sclerotic." The hemorrhage in the former instance, is into the anterior chamber, and mixing with the aqueous humor it is rapidly absorbed; whereas in the latter, if hemorrhage ensues, it is into the vitreous, and frequently also between the choroid and retina. Blood in the vitreous is slowly absorbed, while irreparable damage is done to that portion of the retina which has been displaced by a blood clot. Wounds of the sclerotic sometimes heal with difficulty, and the difficulty increases as the location of the wound recedes from the margin of the cornea. This is probably occasioned by the fact that the margins of the wound remain patulous, the tissues of the sclerotic refusing to yield to the diminished size of the vitreous within it; hence it is that wounds in the sclerotic where only a small quantity of vitreous has escaped, there is a tendency for the lips of the wound not to come together, and a consequent inability for primary union. These wounds, however, unite quickly if the edges are brought in apposition by a fine silk suture. Dr. Bowman reported two cases illustrating this fact. "In the first patient there was a wound in the sclerotic which had remained patulous for three days, and in the second, no attempt at union had taken place one week after the accident, yet, in each case, immediate union followed after the edges had been brought into accurate apposition by a single fine suture." The occasional cystoid cicatrix, which is found, could, we think, be avoided by recourse to suturing. The danger of a wound to the eyeball is immensely increased, if the injury is located in the sclero-corneal region involving the ciliary body. The risk to the injured eye is very great, but the chief danger is the chance of the other eye becoming involved in a sympathetic ophthalmia.

Lastly, we come to consider briefly that class of wounds in which the projectile remains within the eyeball. Every penetrating wound of the globe should be especially examined with reference to the possibility of there being a foreign body within the eye. The history of the case should be carefully gone into with a view to ascertaining the exact nature of the material which struck the eye, whether large or small, by what force and in what direction it was propelled against the eye. The eye itself should be examined first superficially, then the iris and lens. If the wound in the cornea suggests the possibility that a foreign body may have penetrated it, and yet the foreign body is not visible in the iris or lens the pupil should be dilated with atropin to bring the lens into full view, because it may have lodged in the margin of the lens and behind the iris. Oblique illumination is of immeasurable value in this examination of iris and lens. If such an examination does not reveal the foreign body, and the conditions are favorable, a thorough ophthalmoscopic examination of the whole fundus should be made, and the foreign body located if possible. Unfortunately, however, these injuries are sometimes attended by hemorrhage, which entirely obstructs the view of the interior of the eye. Dr. Rohmer[4] in a very able article on "Extraction of Metallic Foreign Bodies from the Posterior Segments of the Eye by the Electró-magnet," says: "When a foreign body reaches the deeper parts of the eye, it will cause disorder varying in intensity and gravity according to its size, the region of its entrance, its degree of cleanliness, its chemical composition, the place which it occupies, and its action on the neighboring parts. After its penetration, the eye may be immediately and irrevocably lost from the extent of the lesion, escape of vitreous, hemorrhage or infection. Or the foreign body entered by a very small opening, and only caused an insignificant lesion, with partial or complete preservation of vision."

The location of a foreign body in the eyeball will in a measure determine the degree of tolerance, the different structures reacting differently to its presence. In the lens, for instance, a small foreign body may be borne well for years, and be ultimately removed with the schriveled and hardened cataract. In the posterior segments, however, a foreign body will rarely be tolerated. In the vitreous, choroid, and ciliary body, even though the foreign body became encapsulated there will sooner or later develop a plastic or purulent inflammation, with consequent destructive ophthalmitis.

The treatment of these cases will depend upon the nature of the foreign body. Coppez made the observation that in seventy cases of foreign body in the posterior hemisphere of the eye, forty-two were iron or steel, ten were lead-shot, ten fragments of cartridges or pieces of copper, six fragments of stone, one zinc, one wood.

If the foreign body is magnetizable it should be removed as soon as possible after the accident with the electro-magnet. From the statistics[5] gathered at the clinic in Zurich by Hirschberg it is apparent that during the four years preceding the use of the electro-magnet in cases of metallic fragments in the vitreous, there were twenty-four cases treated, all of which were recorded as failures, that is, 100 per cent. During four succeeding years in which the electro-magnet with antisepsis were employed, of thirty-five cases there were only twenty-four failures, that is, 68 per cent. In his own practice without the magnet he did not have one successful case, during the first ten years. In the following ten years with a magnet, of thirteen successful cases, seven were noted as satisfactory, and six as mediocre. These figures certainly justify the use of this method, and we need not discuss this proposition at greater length.

If the foreign body is not magnetizable, the eye should be enucleated as soon as there are signs of obstinate inflammation.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
BY CARL H. VON KLEIN, A.M., M.D.

IX.—THE ACADEMIE ROYALE DE CHIRURGIE AT PARIS.

PIERRE JOSEPH DESAULT.

(Continued from page 179.)

Medicine had from the first not kept pace with surgery in France; the latter had always been pursued with partiality, while the former had been neglected, so that, with a few exceptions, French physicians had not made brilliant records. The chief reasons for this failure of medical study were, the too brief period devoted to it, the neglect of the supplementary studies, the selling of the doctor's degree, and above all the separation of medicine from surgery. This had continued in France, as in Germany, since that unfortunate time when the Catholic church forbade the clergy to perform any operation whatever. As a result the science sank to the level of a trade. Indeed, the Italian, Lanfranchi, who in 1295 had fled to Paris, taught both sciences, practiced both, and declared that their separation was an evil; but centuries must pass before the Revolution ushered in a wholesome reform. The political equality of physicians and surgeons, and of the sciences of medicine and surgery, had been established, and must have, as a consequence, the reunion of the two sciences. Suggestions for the improvement of medicine were sent in by different societies. Chaussier showed the absurdity of the separation of medicine and surgery, and exposed the abuse, on the part of the body surgeons, of extorting money and selling appointments (1789). The Royal Society of Physicians also, in an address to the national convention, contended for the inseparability. The propositions which were made agreed with the report or instruction by Talleyrand, one of the best minds which arose out of the Revolution; but the flight and capture of the King diverted the attention of the national convention from the subject of education, and Talleyrand's plan, along with others, was pigeon-holed. The convention met. The leaders of the Reign of Terror were reproached with wishing to banish science and the arts, as they decreed the suppression of the Academy and the societies and caused the persecution and death of certain scholars. The accusation is not entirely just. They abolished those institutions and those learned societies, because they had been privileged and endowed, and now the sentiments would not allow of the existence of any privileged body. They bore upon themselves the stamp of despotism, and their organization conflicted with the principle of equality; therefore they must fall. Lavoisier must die, not because he was a great scholar, but because he had been a tax-levier. Desault's imprisonment was the result of the personal hatred of certain rogues, but his scientific deserts saved him, for he remained under arrest only three days. A physician in Arras was denounced at the instance of his colleagues, and executed because he had a picture of the King in his room. It is also to be remembered, that much of the mutilation of works of art is to be ascribed only to subalterns; Henriot, the commander of the national guard, demanded that all libraries be committed to the flames. But no systematic extirpation of the sciences took place, and even at that time, among other things, the botanical garden in Paris, was considerably enriched. Then followed the strenuous persecution of the monasteries and the clergy; a mass of old parchment-rolls, which perhaps contained valuable manuscripts, was used for cartridges. According to the crude conception of liberty and equality which the mob had, even scholars, because of their prominent position, must be opposed to it; they were treated with distrust. All the destruction wrought resulted in less injury to science than the complete diversion of all forces to the field of politics, the consternation, and the death of many talented men upon the battlefield. All this thrust science to one side. During this time Vicq d'Azyr died, bowed with grief over the horrors of the Revolution. Excepting a law for military hospitals the convention did nothing positive. After the fall of the tyrants, the need of improvement in medicine again appeared in the foreground. Till 1792, when the Revolution abolished public instruction in medicine, the separation of medicine and surgery had been rigorously maintained; when in the year 1794, at the suggestion of Chaussier and Fourcroy, the Ecoles de santé, described in a previous chapter, were founded, *medicine and surgery were again united.* Without doubt the Revolution accomplished this, instruction was essentially improved and practical clinics organized. According to the proposition of the physician and deputy Guillotin. whose name is immortalized in the executioner's ax, all academical degrees and titles should be abolished, and all practitioners should bear the name physician, which was changed in 1794 to officier de santé. In spite of many reforms, the social conditions left much to wish for. One who wished to practice must pay twenty francs a year (though advocates paid nothing), and officiers de santé were classed with furniture dealers, carriage-makers, hair-dressers and others, in the fourth tax-class.

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[4] Annales d'Oculistique, March, 1896, p. 174.

[5] Hirschberg: Centralbl. f. prak. Augenclinik, 1891, p 251.

Let us return to the French surgeons. In the first half of the eighteenth century, the scepter of surgery was held by *Jean Louis Petit* (1674–1750), before whom all contemporaries must bow. Even as a boy he studied anatomy under Littre, who lived in the house of his parents, and in his 12th year he began the preparation of those lectures which he afterward delivered to his students. Later he studied surgery under Maréchal, and in 1692 became military surgeon in the French army in Flanders, where he was charged with the supervision of a hospital in Tournay. After his retirement from the army (1700), he went to Paris, became master of surgery and began to give anatomic and surgical lectures. Some years after (1705), appeared the work on diseases of the bones (chiefly fractures and dislocations), upon which the young Petit laid the foundation of his later fame. This work, of which Boerhaave said "tractatus hic nunquum sibi parem habuit," was for half a century the best of its kind. Petit wrested the treatment of fractures out of the charlatanism of the bone-setters (bailleurs), and instead of straining after theories and hypotheses in the manner of his time, he gave his experiences and operations. It had hitherto been a general misfortune that only those who had no surgical practice were writers, while the practitioners seldom published their notes. The Paris Academy of Sciences and the Royal Society of London admitted Petit as a member, although according to the standards of that time he was no scholar. His reputation soon became so great, that the kings of Poland and of Spain invited him to their kingdoms and made him very flattering proposals, which, however, he declined. He worked many yaars on his celebrated "Traité des Maladies Chirurgicales," which, in three parts, only appeared after his death (1774), and contained a rich experience and a mass of new ideas. Petit wrote little, but his works were classics (mostly in the "Mémoires de l'Académie), and there was no lack of venomous critiques against him. We have him to thank for the invention of the screw tourniquet, by which operations on the extremities became less dangerous; for the circular amputation: the operation for strangulated hernia without opening the hernial sacs, besides many improvements upon methods of operating. He was an eminent operator. *Le Dran*, one of the best of surgeons, officiated with him in the Charité. With clear comprehension and sound judgment he combined an easily understood diction, and distinguished himself above many of his countrymen for a simple, fundamental exposition. Especially celebrated as a lithotomist, and as one of the first to perform the exartic. humeri, his works ("Obs. de Chir.," 2 Th., 1731), which offered improvements upon many methods of operating, were received by all nations with great applause; Cheselden, indeed, translated his "Traité des Operat." (1742). His works on abdominal wounds and gunshot wounds are good. *Morand*, who was first appointed to the Charité and afterward to the Invalides, owed his scientific education and rich experience to a firmness of purpose and great ambition, and his acquirements made him unsympathetic toward many of his vain colleagues, with their useless inventions of instruments. Never properly appreciated by his country, he declared that he was persecuted by his own countrymen as well as by foreigners (Sharp). Bitterly prejudiced against the Académie de Chirurgie for that reason, he withdrew from it entirely; so La Martinière and Louis could hardly succeed in giving him the position of body surgeon, which involved his assuming the duties of the secretary of the academy. He was appreciated in Germany; E. Platner translated his works and Richter said, in 1776, that a La Peyronie, Le Dran or Morand must soon arise, if the glory of the Académie de Chirurgie was not to fall. Morand endeavored to make surgery as simple as possible, and to spare operations ("Opusc. de Chir.," 2 Bde., 1768–72). He attained a reputation by the introduction into France of the side incision for lithotomy, after he had been sent to London by the Royal Society for the purpose of learning Cheselden's method. With him began the history of exarticulatio femoris, based upon experiments upon animals which he had two of his students make. He also recommended extirpation of the ovaries. In a demonstration of Bilguer's work on amputations, Morand showed himself as having a better mind and a far higher education than his German opponent. In *Garengeot* much energy and mechanical ability were combined with some insolence, in that, in adopting the new methods of other surgeons, he suppressed the names of the discoverers, and ignored their claims. He was demonstrator in the surgical school, and in later years was military physician, and as such was very active in the Seven Years War. Besides anatomic works, he wrote on operations (2 Vols., 1720), and instruments (2 Vols., 1723), works which contained many improvements and were very popular at that time. The invention of the dental forceps is ascribed to him. Even his own countrymen considered him a braggart. *Quesnay* was more celebrated as a national economist than a physician. Appointed by La Peyronie as secrétaire perpétuel to the academy and as professor in the Ecole de Chirurgie, he became body physician to Louis XV., who esteemed him highly, and ennobled him. Frequent attacks of the gout prevented him from employing himself in practical surgery. He wrote of suppuration, gangrene (so-called white gangrene), injuries of the head and trepannation. Imbued with a love of agriculture from his youth up, he advocated, in many political essays, the principle that the prosperity of the state depended on agriculture, and not on the mercantile and manufacturing system. Of almost the same age as Quesnay was *Arnaud* de Ronsil, who in Paris specialized on hernia, and was able to accumulate a mass of material, as the monastic nurses of the St. Lazarus were directed to send to him every patient suffering with strangulated hernia. His monograph on hernia marked a new epoch. He was the first to accurately make known the symptoms and to tell how strangulated hernia was to be distinguished from adherent hernia, to treat herniotomy thoroughly, to describe hernia obturatoria and ischiadica, and to indicate the course of the art. obturat.; for the enlargement of the lig. Poup. he suggested the use of the blunt hook named from him, instead of an incision; and for fear of injuring the art. epigastrica in an operation for crural rupture he entirely avoided the scarification of the abdominal ring. He was demonstrator of bone-diseases in the Ecole de St. Côme, but because of certain unpleasantnesses he went to London in 1746, where he practiced for thirty years. Besides the vain *De La Motte* and the eminent operator *De La Faye*, in Paris, there were in the provinces a few noted surgeons. *Le Cat*, in Rouen, was first a priest, then an architect, and finally a surgeon. As an able operator in lithotomy he became involved in a quarrel with Frère Côme, whose method he entirely discarded. *Le Vacher*, in Besançon, a son-in-law of Morand, was also known through his side incisions. In case of cancer of the breast he recommended an operation as the only remedy. *Verdier*, to whom J. L. Petit committed the management of his anatomic theater, was an anatomist rather than a surgeon. He showed that the bladder as well as the ovaries could be contained in the hernial bag. *Anel* was renowned as an oculist in the first half of the century; he wrote on hydrops of the lachrymal glands, and on lachrymal fistula ("de fist. lacr.," 1713), for which he recommended probing and injections with his syringe; he died in Turin in 1730. Then *St. Yves* and *Francois Poufour du Petit*, who measured the diameter of the eye, discovered a new method of depression of cataract, and already in 1727 undertook the extraction of cataract. The dispute over the nature of cataract, which had hitherto been regarded as a film over the lens, attracted Antoine Maître-Jean and Brisseau, who demonstrated on a cadaver that cataract had its seat in the lens.

In the middle of the century lived *Antoine Louis*, a man who in science combined high aspirations and a tireless activity with a comprehensive knowledge of the history and literature of surgery and of medical jurisprudence. His services were more considerable as a teacher and writer than as a practitioner; he advanced surgery itself but little. In place of the tourniquet, he introduced into practice generally indirect digital compression in hemorrhages after amputation, although this was not now first employed, as I have shown in giving the view of Malgaigne and Lister. As one of the first who argued, in Latin, in behalf of the admittance of surgeons into the College, he took a vigorous part in the strife between the faculty and the College. With his passionate temperament, he became involved in quarrels with the monks in the Charité, left it, campaigned a little, and then undertook the presidency of the College St. Côme. After Morand's departure in 1764, he became secretary of the academy, and as such was extremely active. The younger surgeons demanded that the memoirs should not be confined to résumés, and attacked him sharply because of his opposition, and especially Valentin with much bitterness reproached him, asserting that he did not understand the first elements of surgery, knew no Latin, and reproaching him with his experience with a case of harelip in which he had recommended an English plaster instead of the suture: this silenced him. His great vanity would acknowledge no equal, and his zeal for the academy now cooled to such extent that he discontinued the memoirs, gradually retired, and for the last eighteen years of his life was inactive. The University of Halle had conferred upon him—already a Doctor of Laws and an advocate in parliament—the degree of Doctor of Surgery, and the Academy of Vienna elected him to membership. Aside from his already mentioned work in the memoirs, which was for the most part very prolix, he devoted himself to simplifying instruments, allayed the fears of the public on the subject of being buried alive, and sought to rescue syphilitic cases from the hands of the quacks. Out of the nursery of a poor tailor, *Antoine Petit* raised himself to a professorship. He described two round anterior ligaments which extend from the uterus to the os sacrum, recommended injections through the nose by means of a bent tube for obstruction of the tuba Eustachii, and demonstrated upon a cadaver that the circulation in the thigh is not entirely stopped by ligature of the art. cruralis. The medical school in Paris owed to his generosity two new professorships which he endowed richly; he also founded, with his own funds, a hospital in Fontenai-aux-Roses, and provided for four physicians of the poor in the city of Orléans. *Sue* followed Louis as surgeon in the Charité; he held this position twenty-five years, and was also successor to his teacher Verdier, as professor of anatomy. His works on bandages and elements met with approval. The professor of surgery and inspector of the military hospital, *Hevin*, wrote a detailed work on foreign bodies in the esophagus, through which he saved Verduc's esophagotomy from oblivion; he also wrote on gastrotomy, which he repudiated, and on nephrotomy. *Le Blanc*, in Orléans, published a popular work on operations in which he repeated Le Dran and Louis. In Lyons, *Pouteau*, with his great partiality for moxas, was most prominent. These remedies had been entirely displaced by the hot iron method, but in 1760 he rescued them from oblivion and reintroduced them; he prepared them, as the Egyptians did, out of cotton, and recommended their use in severe rheumatic pains, dropsy, Pott's hump, tuberculosis, etc. He first made known Fleurant's method of opening the bladder through the rectum by means of a curved trocar, and described a method of lithotomy ("Mélanges de chir. and Oeuvres posthumes," published by Colombier). Together with a colleague, he offered a prize of 50 louis d'or for the best work on the nature of cancer poison. Another excellent surgeon was *David*, in Rouen, who in the same year as Pott, described the hitherto unknown caries of the spinal column ("Sur les effets du mouvement et du repos dans les maladies chir.," Paris, 1779). He furnished the first accurate description of necrosis (1782), as well as observations on psoas abscess. Lead preparations, and especially subacetate of lead, were introduced by *Goulard*, in Montpellier, into the treatment of various diseases. *Frère Côme* was known in Paris as a skilful, disinterested, though somewhat crude surgeon. He entered the Hôtel Dieu, then the monastery of the Feuillans, but without renouncing his profession. His methods by means of the lithotome caché (1751) involved him in many quarrels. Further, he contrived a bent trocar for opening the bladder over the symphysis pubis, and the caustic from arsenic, which is named from him. The celebrated obstetrician *Levret* surpassed all his predecessors in this science, and did good service as a surgeon in devising a twisted band for the treatment of polypus in the nose, and in the uterus.

We now come to the close of the eighteenth century. The German and French surgeons had one thing in common in that two of their number far surpassed the rest, and that both lived in the beginning and at the close of the century. Yet there was the greatest difference that the two German surgeons, Heister and Richter had indeed acknowledged gifts, while the French surgeons, J. L. Petit and Pierre Joseph Desault were great surgeons in the true sense of the word, for they possessed genius and experience, two qualities which must necessarily be combined. In spite of the great advancement which French surgery had made in the course of the century, at its close there still existed many needs and many mistaken ideas. There prevailed an unclassified mass of local remedies, which the surgeons modified and multiplied at their own will. There was an abundance of professional skill in the treatment of fractures, but on the other hand, the knowledge of their pathologic significance was slight. Almost daily a mass of instruments and operations were invented and modified. In wounds the tampon was greatly abused, in hemorrhages the bandaging was bad and they were compressed in a still worse manner. An extravagant use of trepanning was made. In the operation for harelip they strove too much after simplicity, at the expense of safety. The operations for rectal fistula were overdone, and the treatment of diseases of the urinal ducts was still in its infancy.

Now appeared *Desault* (1744–1795). As a poor village boy, he was instructed by the Jesuits in the ancient languages and mathematics; he made great progress in the latter and in order to maintain himself honorably he gave instruction in geometry. His father destined him for the priesthood, but in vain; he applied himself to surgery, but from his first teacher he was able to learn only shaving and bleeding. At the school in Béfort, anatomy was his favorite study. After five years he went to Paris, where, at that time Louis, Morand and Sabatier shone as surgeons; Verdier and A. Petit as anatomists. "To learn was his first requisite; to know, his first sweet pleasure; to surpass the others, his first passion." After a six months' illness, in consequence of great exertions in the anatomic amphitheater, in 1766 (the same year in which A. G. Richter began to teach) he offered, for the first time, private lectures in anatomy. At first, he encountered endless obstacles. The professors became resentful when their lectures began to be deserted, and those of Desault (who had scarcely left school) to be crowded; envy and fear of being eclipsed by the rising star excited them. Louis, who had persuaded him to adopt the profession of teaching, attended his lectures a great deal in order to give them prestige through his own reputation At that time, instruction in anatomy, in the detail of its descriptions, was still very inaccessible. Desault brought to its study a greater accuracy and system, and while he adapted it to the needs of the surgeon, *he created surgical anatomy in France.* In a few years public opinion regarded him among the greatest anatomists. He was not compared to the celebrated surgeons; jealousy sought, by the exaggeration of his fame as an anatomist, to overshadow his reputation as a surgeon. His career as a surgeon began with lectures on operations, and by his accurate descriptions Desault attracted a large number of students. He invented a new bandage for fracture of the clavicle, the regular setting of which had for centuries, been thought impossible, but the test of it, for lack of practice, had to be left to others, and was successfully made in the Salpetrière. For amputations he recommended the straight knife instead of the curved, an improvement which was recognized in the Hospital Bicêtre. He introduced again the direct ligature of the arteries, which seems to have been forgotten in France since Paré; it was first employed in amputations at Bicêtre. Louis, curious to see the result, feared the cords would be removed too soon, but after four days they had to be cut in order that the healing should not be retarded. These discoveries laid the foundation of Desault's fame in surgery, which now gained for him a professorship in the Ecole pratique, although, because of his poverty he was not a member of the Collège de Chirurgie. In spite of much secret opposition they made an exception and elected him to that body (1776). This gave occasion for his "Dissertation on the Extraction of Bladder Stones," a work marked by accuracy and conciseness. In 1779, he, with his friend Chopart, published the "Traité des maladies chirurgicales et des opérations," but later he would not acknowledge this work, which contained much that was old, incomplete and confused, so he had as many copies as possible bought and burned. In 1782, he became first surgeon in the Charité, and there prepared a cabinet of anatomic specimens. Three years later he removed to the Hôtel Dieu, where we have already become acquainted with him as a teacher. During his great activity in the hospital, Desault began to fill the gaps in surgical pathology. Disgusted with the superfluities in the system of surgical remedies, he limited their number. Bold in undertaking and persistent in carrying out his designs, he transformed almost every branch of the science of operations, returning to the utmost possible simplicity in methods of operating. He accurately described luxation of the radius, and devised a bandage for the little-known fracture of the olecranon, by which the bending of the forearm would be prevented. He adapted this to the analogous fracture of the patella. He also contrived a new bandage for the upper-thigh. He made the bandaging of Theden in case of varicose ulcers universal, and recommended the use of the tent in case of scirrhous tumors of the rectum. He rescued many methods from oblivion such as the continuous extension in fractures, the ligature in case of umbilical hernia, the gorgeret of Marchettis in case of fistula of the rectum, and so forth. With diseases of the urinal passage he considered the puncturing of the bladder as a superfluous method. He was the first to show the great value of the flexible sound, which could serve at the same time as a conductor of food into the stomach, and to remove foreign bodies in the esophagus. The ligature for throat polyps, was simplified, the kiotome and an instrument for the extraction of foreign bodies from the bladder, by which lithotomy could be avoided, were invented. Desault attached his name to an operation for aneurysm and introduced into France the ligature of the artery above it, and suggested in certain cases a ligature under the sack. An amputation was, to him, only a last resort. He was the first in France to show the unsafe nature of the results of trepanning, the use of which must be limited; he showed also the advantages of tartarus emeticus in cases of concussion of the brain, etc. As an operator he was bold, skilful and simple, and sought to introduce good instruments to general use, discarding what were superfluous.

The many innovations through which he, a model of correctness in observation, gave to surgery a greater simplicity, almost entirely changed the form of the science; on this account the difference between the surgery of the books of his time and that of his lectures is extraordinarily great. Desault's practical mind widely extended the limits of his profession, and there began with him, as the founder of the surgico-clinical method of instruction a new epoch in French surgery, which was based chiefly upon anatomy and physiology.

Hitherto his teachings had become known only through his numerous students, and in being disseminated from mouth to mouth had frequently reached the world in a mutilated condition. In 1791, therefore, he began to publish a *Journal de Chirurgie*, with reports of his clinics (4 Vols.), according to Richter's opinion the most important contribution which had been made to surgery for a long time. In the latter years of his life, in order to fill in the gaps in this work, Desault chose as an assistant his favorite pupil, Bichat, whom he took into his house and to whom he dictated his ideas. (J. L. Petit had worked in a like capacity.) In this way the "Surgical Inheritance," published by Bichat (3 Vols., 1795) was written.

Desault was for a long time a member of the Académie de Chirurgie, but turned away from it, as the taste for medical association was lacking in him. Slow in thought and at times difficult of perception, he had no love of those empty hap-hazard disputes, and found no enjoyment in work of which the graceful style was the best part.

When the storm of the Revolution broke out he was almost the only one who continued to give surgical instruction; in spite of his faithful work in the Conseil de Santé for the regulation of the medical service he did not escape proscription. Not a day passed without new denunciations, until finally his implacable enemy, Chaumette, the president of the Commune, twice had complaint made against him on the ground that he had refused his services to the wounded. The Committee of the Revolution issued a warrant for his arrest (1793); he was arrested in the middle of a lecture in the Hôtel Dieu and according to the report of his persecutor was incarcerated in the prison of Luxemburg "for the honor of mankind." Numerous appeals from patients and students poured in, so that after three days they were compelled to liberate him. He resumed his lectures. In the following year he was chosen professor in the newly established Ecole de Santé, for which, however, he had no sympathy. The political disquiet, the fear of new proscriptions, the death of certain friends in battle and on the scaffold shocked him deeply; from this time on he became feeble. Suddenly he was stricken with a violent nervous fever. His pupils streamed in to take care of him; Chopart and Corvisart treated him. He was delirious from the first and died on the fourth day. The people said he was poisoned, because he died a few days after the death of Louis XVI., whom he had treated in the Temple; they said he fell as a sacrifice to his steadfast denial concerning any criminal intentions on the life of that child, and other similar stories.[1]

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[1] The commissair of the Temple, Breuillard, asked him: "C'est un enfant perdu, n'est ce pas?" The answer was: "Je le crains, mais il y a peutêtre dans le monde des gens qui l'espèrent."

The Moniteur for June 4, 1895, says: "La France l'Europe entière vient de perdre le citoyen Desault, officier de santé en chief de l'Hospice de l'humanité, le premier dans la pratique comme dans l'enseignement de l'art, qu'il a professé. Son nom est depuis longtemps célèbre dans tous les pays du monde ou la chirurgie est en honneur. son nom ne périra point. Son pays lui doit d'immenses travaux et de nombreux

According to Bichat's account, Desault was a man of middle stature, strongly built. Sharp features, small eyes, a full forehead and round face gave his physiognomy a certain severe, though not forbidding, expression. His step was vigorous, his carriage noble, his gesticulation animated, his voice strong, his speech at times difficult, as if his lips did not always find the right expression for his feeling. His diction was seldom elegant but always expressive. He knew no other pleasure than to study and to teach. He early won the confidence of the public, but for a long time neglected it, in so much that, according to his own confession, up to the age of 32 he had not earned six livres in his practice. His rare zeal led him to sleep in the hospital, that he might be always at hand, although he was not compelled to do so. In spite of his noble and generous soul, which loathed all the machinations of intrigue, his spirited and passionate character often carried him too far, so that the students did not always enjoy gentleness on his part; yet he was easily calmed again. A thirst for fame possessed him; with this and with his aspirations for surgery he imbued all his students. Desault had many friends, whom he gladly met; yet jealousy also provoked enemies, whose aspersions he met with silence and contempt. There have been few surgeons who wrote so little and yet whose fame extended so widely. He was surrounded by the most favorable circumstances for developing talents and every year the enthusiasm of 400 students proclaimed his discoveries. His teachings spread through the surgical world with great rapidity. Bichat said that Desault had found his own peculiar way of observation and had little learning; his genius alone, with which science had little to do, was the source of his services. His judgment, in this case, as in the case of A. G. Richter, was at fault. Desault was certainly not learned in Latin flourishes and quotations which passed for learning at that time. Bichat himself admitted this when he denominated as superfluous that sort of surgical learning which moved a hundred learned pens to write that which fifty writers before them had borrowed from twenty others, who in turn had copied. Desault knew the writings of his countrymen and also of the English and Germans, wherein he distinguished himself above most Frenchmen. He understood how to make use of foreign material and with this kind of learning contributed materially to science. Medicine appeared to him as a dark labyrinth, in which men wandered at random. He also thought that it was not possible to practice both professions at the same time to advantage, and, fed by partisan spirit, was fixed in his opinion against obstetrics and even against medical assistance in surgery. His enemies are fond of quoting an assertion which has been ascribed to him, that surgery must be reduced almost entirely to the knife and that six months were sufficient to educate a good surgeon. Desault was a genius created for surgery, and left his mark on everything he touched. They were able to say of him that if surgery had not existed it would have owed its origin to him.

His teacher was *Sabatier*, at first an anatomist, afterward Morand's successor in the Invalides and professor of operative surgery in the Ecole de Santé. Napoleon appointed him a member of the National Institute and also consulting surgeon. To his quiet but tireless progress surgery owed many improvements. Among many writings the most important, aside from an anatomy, is his "Médecine Opératoire" (3 Vols., 1796); clear and exhaustive, written possibly with too little critical spirit, it excelled the earlier handbooks. *Chopart*, sick and old before his time, wrote a long work on diseases of the urinary organs and introduced a partial amputation of the foot. When his truest friend, Desault, became seriously ill he did not leave him for a moment. They said that grief, possibly combined with an injury which he had suffered to his foot, contributed largely to his sickness immediately following; he died a few days after Desault. *Lassus*, in Paris, was very learned; he was a good teacher but made few original observations. The works of *Deschamps* contained nothing new; his eight-volume works on lithotomy was only of historic value. Desault's successor, *Pelletan*, whose activity in hospital work we have already mentioned, in his "Clinique Chirurg." (3 Vols., 1810) described many interesting cases, and among them was the first accurate description of fatty hernias. We will return later to the French military surgeons.

At the end of the eighteenth century, there opened a new epoch in French medicine, as well as in surgery. The herald of it was one of the deepest thinkers and finest observers, which the history of medicine presents—*Xavier Bichat* (1771–1802). He died at the age of 31, the creator of a new science, histology, and should be placed at the side of men like Aristotle, Bacon and Descartes, whose works, just as his own, mark an epoch in the history of human thought. His mind, richly equipped with the positive knowledge gained in Desault's school, had no less an object than, by an accurate study of the human organism, to tear down the structure of the old medical science and build up a new one. He perceived that the experiment which Cuvier had introduced to that end, did not suffice, and so he began to examine the tissues. Two years before his death, his "Traité des membranes en général et des membranes en particulier" appeared, and in 1801, his celebrated "Anatomie générale," in which it was shown that the whole human body consisted of twenty-one different simple tissues. He had examined each of these in its changes through differences in humidity, atmosphere, temperature, in different periods of life and in disease, in order to determine the normal and pathologic development. He realized that these investigations must in time come to be of the highest importance to pathology, and that medical observations were of no avail, if one did not know the seat of the disease. In another, just as celebrated work, "Recherches physiologiques sur la vie et la mort," he distinguished the various systems of which the organism is made up: the ganglion from the cerebral system, the organic from animal life. Bichat's doctrines had the greatest influence in the medical science of our century, and were received with the greatest applause throughout Europe. Too early, he became a sacrifice to his science; a restless activity in anatomic and surgical lectures, and in the anatomic amphitheater (in a sin-

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élèves. En ce moment la République n'a point une armée dont les plus
habiles officiers de santé ne soient les élèves de Desault Telle fut la
supériorité de ce grand chirurgien, que la postérité qui commence,
hélas! trop tôt pour lui, le nommera sans doute un grand homme.
Desault fut un excellent citoyen; nos derniers tyrans l'avaient perse-
cute. Leurs derniers complices ont causé sa mort La journée du 1.
prairial a déterminé la crise désespérée qui l'a précipitée à 49 ans dans
le tombeau. Un de ses amis inscrit à l'heure même des funerailles ces
vers au pied de son buste:

Porte du temple de Mémoire,
Ouvrez vous! Il l'a mérité.
Il vécut assez pour sa gloire
Et trop peu pour l'humanité

gle winter he conducted 600 dissections, which kept him day and night in the atmosphere of cadavers) planted the germs of sickness; yet, when dying, he regretted that he could not complete his work. Corvisart could justly maintain to Napoleon, that no one had accomplished so much that was useful, in so short a time. In him an amiable reservation was united with strong passion; he counted fame as the food of his talent, and the hope of gaining it was the stimulus for all his work. Along with Bichat, Pinel and Corvisart in Paris, made themselves especially prominent in French medicine, in that they first insisted on the importance of objective phenomena and considered the anatomical element before all others. *Pinel* again brought forward the observation of nature, in his "Nosographie Philosophique" (1798) which was based upon the principles of Hippocrates. According to him, sickness was an abnormal variation of the various organic tissues; one must therefore consider the symptoms as external indications of disease, along with the variations of the organs, examine the seat of the disease, and only draw conclusion after a mass of phenomena had been observed. While supporting the old principles of the earlier school he gave French medicine the form of a physical science, and as an enemy of all manias for medical systems fought with the best results the Brown swindle in France. *Corvisart* recommended in his medical clinic the new medico-diagnostic method, and especially recommended the observation of the physical symptoms. To this end he rescued from oblivion the percussion method of Auenbrugger, and improved it (1808).

(To be continued.)

SOCIETY PROCEEDINGS.

The Mitchell District Medical Society of Indiana.

Proceedings of the Annual Meeting held at West Baden Springs, Indiana, June 8 and 9, 1897.

REPORTED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION EXCLUSIVELY.

FIRST DAY—MORNING SESSION.

The Society assembled at 9 A.M., and after hearing the reports of the officers and standing committees, adjourned to 2 P.M.

FIRST DAY—AFTERNOON SESSION.

The Society met promptly at 2 o'clock, with the Vice-President, Dr. J. GARLAND SHERRILL in the Chair.

The first paper presented by ADOLPH O. PFINGST, M.D., on

BLENNORRHEA NEONATORUM.

Until 1806 this disease was supposed to be due to scrofula, exposure of the eyes to the bright light, to cold, etc. Its relation to vaginal and urethral diseases was first pointed out by Schmidt in 1806. The true nature of the infecting material, however, was first made known in 1879, when Neisser demonstrated the gonococcus in the discharge from the eyes. Dr. Pfingst said that infection of the new-born child has usually taken place in transit. The child may, however, escape infection, and have the poison transmitted to it after birth by uncleanliness of the attendant. Usually within twenty-four hours after infection there is abundant discharge of pus, along with chemosis of the conjunctiva, and swelling of the lids. The disease reaches its acme in from four to ten days, and the swelling of the lids, and chemosis of the conjunctiva recede by the twelfth day. One eye is usually first affected, the disease appearing on the second or third day after birth; while in from one to four days later, the second eye is affected. The disease in the second eye is seldom as severe as in the first. He believes too much reliance is placed on the nitrate of silver, and regards swelling as an indication for cold applications; in this stage of the disease the silver is apt to do harm. Attempts at making applications of silver lead to the aversion of the lids, a manipulation in the performance of which causes abrasions of the cornea, thus providing for the ready entrance of the infection into the deeper structures. His method of applying cold is to have small pieces of linen, or small bits of cotton on a cake of ice, near the patient, and transfer these from the ice to the eye, and change every minute for an hour at a time. After two hours the cold applications are to be renewed as before. Every fifteen to thirty minutes the eye should be opened and flooded with some solution, as boric acid, or sterilized water. He believes the dangerous character of the disease should be thoroughly impressed upon the parents and attendants. After all swelling has subsided, he then begins with a 1 per cent. solution of nitrate of silver, increasing gradually to 3 per cent., making the application once every day, and following each application by irrigation with sterilized water. He has used argonin, experimentally, in a child five days old, and found it less irritating than silver, the disease yielding promptly to the treatment. His experience in two other cases has been equally encouraging.

Dr. DUDLEY S. REYNOLDS, being called on to open the discussion, expressed his approval of the sentiments of the essayist in regard to the irritating effects of nitrate of silver. He said he had not used the nitrate in any case for any purpose, for more than fifteen years. He cited the case of a man 27 years of age, in the second week of gonorrhea, who came to him on Friday evening with the right eye red and watery; the patient complained of a burning sensation in it. He prescribed borate of sodium solution to be instilled into the eye every hour until the irritation subsided, and directed the patient to report the next morning at 9 o'clock. On the second visit the eye was swollen, and there was a discharge of bloody serum mixed with the tears. He at once sealed the left eye with Buller's shield, and sent the patient to the hospital, with the following prescriptions:

℞.	Sodii boratis	℥ iij	96 00
	Sodii chloridi	℥ j	32 00
	Acidi carbolici (C. P.)	ʒ ss	2 00
	Aqua destillatæ	cong. j	4000 00

Misc. Ft. solutio. Sig.—Use as an irrigation for the eye every twenty minutes.

℞.	Balsam copaibæ	ʒ j	4 00

Misc. Ft. capsulæ No. 12. Sig.—Take one every three hours, with a cup of malted milk or beef tea (made of Armour's extract) alternately during the day.

The patient was allowed to drink water *ad lib.* The eyes were directed to be irrigated every hour through the night. This treatment was persistently carried out. The superior periphery of the cornea became clouded. The chemosis of the conjunctiva on the third day was so great that only a small portion of the vertex of the cornea was visible. The lids were simply pulled apart to allow irrigation to be done, no attempt at eversion being made. After the sixth day, the swelling having subsided, and the chemosis still being extensive inferiorly, it was drained out above by a superficial ulceration of the cornea. The treatment was not changed, however. On the eighth day the following was ordered:

℞.	Hydr. bichloridi.	gr. j	065
	Sodii chloridi.	ʒ j	4 00
	Aquæ destillatæ.	℥ vj	192 00

Misc. Ft. solutio. Sig.—Drop into the eye every evening, once after irrigating.

On the twelfth day there was no discharge from the eye, and the bichlorid solution was discontinued, the irrigation being repeated three times a day. The capsules of copaiba were continued all this time. There was now no urethral discharge. On the fifteenth day fluid nourishment was discontinued, and the patient was allowed to go to the table with convalescents. On the seventeenth day he was allowed to leave the hospital, having entirely recovered. The superficial ulceration of the cornea was limited to the periphery. There is to be expected from this plan of treatment almost uniform results, where it can be carried out rigidly. He does not believe anybody but a trained nurse can successfully conduct this treatment.

In closing the discussion, Dr. Pfingst said, he was pleased to hear Dr. Reynolds proclaim his opposition to nitrate of silver, and especially so, as he had suggested a successful substitute. He had formerly seen no case treated without it. He mentioned that Dr. Knapp of New York, had abandoned the nitrate of silver in such cases, and now relies upon ice and irrigation, in both infants and adults. Whether the ice or the irrigation is most important it would be difficult to say. Indications for the cold applications, however, are swelling of the lids. By request Dr. Reynolds gave his views on Credé's method of protecting the eyes of the new-born. He believes it impossible for the eyes to become infected during the period of birth, as the closed lids, protected as they are, at the line of contact, by the lash, over which the vernix caseosa is spread evenly, the pressure of the maternal parts can only secure more complete closure of the lids. The period of incubation of the gonococcus is not greater than twelve hours from the period of inoculation. It will, therefore, appear at once, that it is impossible for inoculation to take place during birth, and show no sign of its presence for twenty-four or forty-eight hours after the birth of the infant; and, it may be truthfully stated that a majority of the cases do not appear until after the third day. He believes the attempt to instill anything into the eyes of the new born should be regarded as meddlesome interference, fraught with mischief only. This opinion is based upon a large experience at the Louisville City Hospital. He has known periods of time when Credé's method of protection was employed, and every eye so treated became subsequently infected with purulent matter. For months at a time, when no interference was permitted, no case of ophthalmia appeared. I am as certain, said he, than ophthalmia neonatorum is nearly always the result of inoculation by the nurse, or others handling the infant after its birth, as I am that three and two make five. He does not believe it possible for the eyes to become infected during the period of birth, excepting in badly managed cases of instrumental delivery. He feels assured that if neither the accoucheur nor the maternal nurse are allowed to touch the eyes of the child, they will almost certainly escape infection. Those eyes alone are in danger which are handled by the same fingers that handle the mother, or are engaged in handling infected persons.

Dr. **Edmund D. Laughlin** introduced the subject of "Minor Surgical Procedures," which in his judgment include the first handling of emergency cases. Many a case of comparatively insignificant injury assumes a more or less alarming gravity and importance by the careless manner of the first handling of the case before it goes to the hospital. He believes that the same antiseptic precautions should characterize the first touch in every case of mechanical injury that surgeons undertaking capital surgery observe. If persons likely to be called on to take charge of the injured or wounded at the time of accident, are to be selected from the laity, they should be properly trained in aseptic methods, in order that no dangerous infection result from the first handling of the patient. If surgeons allow themselves to manipulate injured parts with unclean hands, it can scarcely be expected that persons unfamiliar with the principles of aseptic and antiseptic methods may be safely entrusted to touch the wounded, even in conveying them to the hospital.

Dr. **J. Garland Sherrill** of Louisville read a paper on

PERITONITIS.

He devoted the principal part of his paper to the discussion of the proper management of infected cases. He believes the amount and character of the infecting dose will determine both the degree of severity of the attack and the rapidity of its development. Tuberculous peritonitis is now regarded as clearly a surgical affection. The tuberculous peritonitis characterized by miliary nodules in the walls of the peritoneum, not complicated by tuberculous processes elsewhere, almost uniformly yields to the devices of surgery and no sort of medication will serve even to mitigate or delay the progress of such

In plastic peritonitis, saline purgatives are restorative sometimes curative; in septic cases operation may save medicinal treatment never does. The indications for operation in peritonitis may be stated briefly as follows: When the focus of inflammation can not be reached through the natural outlets, when the patient exhibits anxiety and mental depression. If the pulse is above 140, of diminishing quality, although operative interference may be clearly indicated; the prognosis is grave and no delay should be permitted. He admonishes the profession against the use of opium in all cases, as it diminishes vital energy, obscures the intellect, arrests excretion and masks all the important symptoms by which the surgeon might otherwise be guided in his choice of methods.

Dr. **Ulrich H. Hon** of Bloomington related a case in which he used opium, saline aperients, fomentations, stupes, etc., with a promptly fatal result, the patient and friends declining operative interference. He believed, however, it would be impossible to altogether dispense with opium.

Dr. **Philip C. Holland** related a fatal case in which hepatic abscess ruptured in the inguinal region, discharging one gallon or more of fetid pus. In another case where the inciting cause was appendicitis, operation was followed by returning abscesses and the patient finally succumbed.

Dr. **Thomas A. Hays** thought the general practitioner must have some ready and promptly efficient agent for the relief of pain. He reported an interesting case of appendicitis in which he had consultation, and operative interference was decided necessary; later the patient relapsed and presently a conical tumor appeared in the iliac region. The tumor ruptured spontaneously and the patient discharged large quantities of pus through the bowels. The patient finally recovered. Another case of recurrent appendicitis finally recovered without surgery. He asked whether Dr. Sherrill would advise operative interference in recurrent cases. Dr. Sherrill said in reply that the tendency to recur in appendicitis is one of the characteristics of the disease, and the time to operate is not always easy to determine. He knew of no rule that might be laid down for any considerable number of cases. When rupture takes place into the bowel no operation should be attempted, as recovery will almost necessarily follow. As a general rule, however, he would consider that the danger is far less than the danger of septic peritonitis from rupture. Although opium might be necessary in cases of hepatic calculus, because we have no better means of combating pain, he simply abhorred its use in all forms of peritonitis, and would include in this list all cases of appendicitis.

Dr. **E. D. Laughlin**, whose experience has been large and who was one of the earliest operators in the field, adopting the report of Dr. Buck of New York in 1872, which, after full discussion in the journals, turned out to have an apparently scientific foundation, reported his own first experience in 1875. He well remembered the first case in which he used the knife, evacuating nearly a half gallon of pus from the peritoneal cavity. At that period he made no attempt at excising the appendix, but contented himself with evacuation of the abscess, irrigation of the cavity and drainage. He occasionally sees cases in which aconite and opium with hot or cold applications promptly secures relief. His rule in reference to the selection of cases for operation is this. He practices aspiration daily and as soon as pus appears in the aspirated fluid he operates; otherwise he relies upon medicinal treatment. His patients rarely die. His success is such that he feels entirely satisfied with his method. He regards irrigation and drainage as all sufficient. He asked Dr. Sherrill what he considers the best method of drainage, what kind of tube he prefers, and how he manages to keep it clean.

Dr. **Sherrill** said, in reply, that the best drainage is by means of a glass tube, frequently sucking up the accumulation with a sterilized syringe, thus keeping the tube clear. In cases where there is much oozing of blood, he prefers to secure drainage by packing the wound with gauze, using only the pure sterilized material. In appendicitic cases, where the inflamed area is not in contact with the anterior abdominal wall, he always packs the wound with gauze before operating. He believes that whenever the disease produces a feeble and frequent pulse, with an anxious and careworn expression of countenance, the conditions demanding surgical interference are present. In all such cases he considers it little less than trifling with human life to delay.

Dr. **Ulrich H. Hon** offerred his protest against the sweeping denunciations of opium which had been made in this and other societies. He considers that an agent so long relied upon by the profession and people to relieve pain should not be lightly spoken of. While he uses it sparingly he considers it an absolute necessity, and the chief if not the sole reliance in neuralgia, and the pain of peritonitis, appendicitis and a large class of other afflictions.

Dr. **Sherrill** thought that Dr. Price was rather too radically dogmatic in his denunciations of opiates, and while he himself will not consent to entirely give up its use, he is convinced that the indications for its use are very narrow and diminishing annually. He could scarcely think of any condition, excepting the pain of bilious colic, in which its use could not be dispensed with.

Dr. **Dudley S. Reynolds** said: The hour of necessity for revising and recasting the long established theories of pathology is now upon us. We can have no excuse for prescribing remedial agencies that overwhelm the sensorium, destroying the patient's consciousness of his suffering, when a reasonable familiarity with the principles of pathology might disclose the cause of the pain. If pain is due to local inflammation or simply to blood pressure, opium is positively contraindicated. The salicylates, pilocarpin, saline aperients and electricity may be relied upon in many of these cases; opium never. The so-called neuralgia of anemic persons may be relieved by systematic feeding. The pain of gastro-intestinal irritation, whether due to pressure of distending gases or the local irritation of abnormal ferments, will not only fail to yield to opium, but the patient's life may be endangered by its use, in obtunding the sensibilities of the patient; while dangerous inflammatory processes may be kindled in the intestinal tract. In rheumatic or gouty pains the salicylates act promptly and efficiently; opiates add nervous prostration and still further obstruct all the emunctories, thus aggravating all the conditions of the disease and limiting the chances of reëstablishing active elimination; upon which alone recovery depends. The pain of iritis is nearly always severe, frequently agonizing at night, but it yields promptly to the salicylates and is always aggravated by opiates. The same may be said of the early stages of inflammatory glaucoma. It is better to do nothing where no probable cause of pain can be discovered than to poison the vital centers with opium. Recent pathologic research, with a due consideration of our methods of diagnosis, will nearly always unfold rational principles of therapeutics. Ignorance overwhelms the patient's sensorium and flatters itself that the relief of pain at any cost is a consummation devoutly to be wished. That opium in some form will, for a long time, continue to hold an empiric place in the materia medica I do not doubt. That it has now or ever has had any scientific place I most emphatically deny. It is not a good substitute for atropin in bilious colic; it can not take the place of chloroform as a general anesthetic; its use in diarrhea is not only empiric, but positively pernicious, as it suspends peristalsis, which is nature's mode of expelling dangerous ferments.

On motion of Dr. Burton, a paper entitled "Empyema in Children," by Prof. Philip F. Barbour of Louisville was read by title and referred for publication.

On motion of Dr. Burton, the following Committee on Necrology was appointed: C. F. Askren, U. H. Hon, G. W. Burton and E. D. Laughlin.

On motion the Society adjourned to 8 P.M.

Evening Session.

Promptly at 8 o'clock the Society was called to order by Vice President Sherrill.

Dr. Wm. D. Pennington of West Baden delivered an exceedingly well-written and appropriate Address of Welcome, in which he set forth why a medical society should meet at a health resort, and expressed officially a cordial welcome in behalf of the proprietors of the Springs and the profession of that locality.

At the conclusion of Dr. Pennington's address Dr. Dudley S. Reynolds of Louisville was called on to respond in behalf of the Society.

On motion of Dr. Wm. V. Morgan of Indianapolis, the President appointed the following Committee on Nominations: Prof. P. Richard Taylor, Louisville, chairman; Dr. G. W. Burton, Mitchell; Dr. Edmund D. Laughlin, Orleans.

On motion, the Society adjourned.

Second Day—Morning Session.

The Society met prompty at 9 o'clock, Vice-President J. Garland Sherrill in the chair.

Dr. Elihu P. Easley of New Albany read a paper on

ALBUMINURIA, ITS CAUSES AND SIGNIFICANCE.

He pointed out those delicate changes in the blood supply of the renal organs, varying from slight congestion to inflammation, in which the albumin is eliminated in varying quantities, with or without tube casts; maintaining that elimination of albumin is simply one of the phenomena of blood pressure in the kidneys. Besides a wide variety of local irritants, this condition is often due to derangement of the heart's action. It attends certain organic diseases of the heart, and is a well-known condition in cases of prolonged pyrexia. A variety of toxic conditions of the blood which alter or disturb the blood supply to the kidneys, as well as those which affect their nutrition, are recognized as causes of albuminuria. Finally, it may result from any cause of faulty elimination of the debris resulting from physiologic changes.

Dr. B. Merrill Ricketts of Cincinnati, opened the discussion. He had no doubt that various forms of toxemia caused albuminuria. He recited a case of auto-infection in an aged man with prostatic enlargement, in which albuminuria was a symptom. In acute congestion of the kidneys lumbar nephrotomy has been found an efficient remedy for the constitutional symptoms. At the same time it has been known to promptly correct the albuminuria. It has been employed in both acute and chronic nephritis. In cases attended with general dropsy, drainage relieves the overtaxed renal organs. In a desperate case, Dr. Ricketts opened the abdomen, evacuating an enormous quantity of fluid and irrigating the peritoneal cavity with a normal solution of chlorid of sodium. He kept up the drainage by means of a tube, which he retained in the abdominal wall. The patient lived in comparative comfort for ten weeks. Muscular debility was greatly relieved by massage, while the symptoms of impending suffocation were completely controlled by peritoneal drainage. The amount of albumin in the urine was not altered in this case, but it is certain that the patient's life was greatly prolonged, and the state of his existence rendered vastly more tolerable.

Dr. John L. Masters of Indianapolis, has observed in cases of albuminuria, attended with retinitis, that in proportion as changes in the retina would diminish by dietic and constitutional treatment, the albumin diminished *pari passu;* and he has no doubt of the fact that blood pressure, if not the cause, is a constant companion of that form of retinitis so often found in persons with albuminuria.

Dr. Sherrill recited the case of a woman with pelvic disease, suffering with albuminuria, and a grave form of heart lesion. The necessity for surgical interference was so great that chloroform was administered, and an operation done, relieving the patient of a painful, and almost intolerable state, without influencing either the condition of the heart, or materially altering the amount of albumin in the urine. As a rule he fears to operate in such cases. In emergencies, however, he considers the use of chloroform comparatively safe.

Dr. Ricketts, in answer to a question, said there was no contra-indications to necessary surgery in the mere presence of albumin, even with tube casts.

Dr. E. D. Laughlin reported the case of a man 27 years of age with albuminuria, hyaline tube casts, and occasional attacks of hematuria. In this case the salicylate of sodium and bicarbonate of potassium in an infusion of gentian, regularly administered, gave prompt relief to the distressing headache, and finally brought about complete recovery. This was a desperate case, and extremely unpromising, but two years have now elapsed since the treatment was discontinued, and the man remains robust, strong and hearty, thus verifying Dr. Reynolds' views concerning the value of the salicylates in nephritis, as well as other local inflammations.

Dr. Easley, in closing the discussion, related a case of a pregnant woman who was promptly relieved of albuminuria by an infusion of stigmata maydis. As pregnancy advances, the disease may return, and it may be that other measures will have to be resorted to.

Dr. B. Merrill Ricketts of Cincinnati, read a paper entitled

PROLAPSE OF THE RECTUM, AND HEMORRHOIDS.

He denounces Whitehead's operation, and likewise what is known as the American operation. He considers postural treatment an important adjunct. He also believes that postural habits may greatly obviate the liability to prolapse of the rectum. In chronic cases of prolapse, of the third and fourth degree, he believes that section, and anastomosis offers the best means of relief. This, however, is by no means the only method to be employed. In extreme cases of the fourth degree he has for a long time practiced the process of reefing the intestine by a submucous ligature introduced by passing a small semi circular needle into the mucosa, keeping the point as nearly within the muscular wall of the tube as possible; the needle being armed with kangaroo tendon is brought out at the point of entrance, having described a complete circle. This tendon is then tied up tightly, and in the same horizontal plane a second, and then a third suture completes the necessary folding up or reefing of the tube. This folding together of the intestine is preferable to any attempt at invagination, as the subsequent inflammatory adhesions incorporate the confined tissues of the mucosa into a conglomerate mass with the surface of the muscularis. A second operation in the same case may be necessary to complete the reduction of the prolapse. This is rarely necessary, however, even in cases of the fourth degree. After a series of elaborate experiments in the preparation of suitable material for a suture, he has been led to prefer the kangaroo tendon because it may be relied upon to remain *in situ,* without softening, for at least thirty days, giving ample time to secure a fixed position of the parts in their new relation. In preparing this tendon for use he warns the profession against formalin, because it is not only highly irritating to the tissues, but makes the tendon friable, and insecure from its liability to break. Dr. Ricketts exhibited his needle, and presented each member of the society with one. It is curved about 195 degrees, and represents a section of a circle about two and one half inches in diameter. It is simply a strong steel needle.

Dr. Wm. V. Morgan of Indianapolis, has occasionally been rewarded with satisfactory results after linear cauterization. He has been occasionally successful, in cases of the first and second degree, by the introduction of kangaroo tendon just within the mucous line of the anal orifice, completely encircling the rectum at the inferior border of the sphincter. Placing one finger in the anus the kangaroo tendon is tied tightly and the knot pushed in so as to bury it from sight. This amount of contraction by a sort of puckering string, sets up irritation, restores activity to the contiguous muscular fibers, and secures the patient from a tendency to prolapse. He thinks that Dr. Rickett's operation is perhaps better in cases of the third and fourth degree. He has occasionally practiced the method of dilating the sphincter by passing one finger at a time until the whole five were introduced, pushing the hand up in the rectum as far as the sigmoid. Where dilatation has been practiced in this manner, good results have frequently followed.

Dr. RICKETTS, in conclusion, spoke of excision of the rectum as high as the sigmoid, in severe cases. He expressed his unalterable opposition to clamp and cautery, which he has reason to believe is too often followed by secondary hemorrhage. He thinks there are some operators who advocate this plan, who could throw a good deal of light on the subject if they felt so inclined.

The next paper was

LACERATED WOUNDS OF THE EYE

By Dr. DUDLEY S. REYNOLDS of Louisville. He recited a number of cases of severe injuries to the eye in which ultimate recovery followed. One was an extensive laceration of the cornea, iris and crystalline lens, with a foreign body which had been in the eye for five days. The foreign body being removed, iridectomy was done and the lens underwent slow absorption, resulting in complete recovery, with good vision. Another case of a stone cutter, who had extensive laceration of the cornea, the iris and lens being involved, iridectomy was done and the lens extracted at once. In this case recovery followed. This patient returned to his business for several years and finally took charge of a small store, kept a set of books, and enjoyed good vision until the time of his death, which occurred recently. Another was a case of extensive laceration of the sclera, evacuating a large amount of vitreous humor and rupturing the capsular ligament of the lens, allowing the iris to protrude through the scleral wound. Iridectomy, with suturing of the scleral wound, was followed by recovery. The eye becoming cataractous, the lens was extracted eleven years subsequent to the original injury; and on April 13, 1897, the opaque capsule in this eye was divided with needles and the patient with +16.00 D. was able to read No. 1 Snellen. Although the field of vision is greatly contracted, acuity of perception is perfect. He recited another case of interest in which a guncap had produced an extensive laceration of the sclera, exposing the ciliary muscle. The wound united promptly, leaving the eye apparently free from any irritation. Remaining so for a few months only, it became irritable, and subsequently developed a typical form of inflammatory glaucoma, with ultimate loss of sight, and sympathetic irritation in the fellow eye, necessitating enucleation of the injured eye, and iridectomy in the fellow eye. Sight is so impaired that the man can not see to read, although he is able to pursue the business of a farmer.

Dr. JOHN L. MASTERS of Indianapolis, opened the discussion by calling attention to the great gravity of slight injuries where infection of the wound takes place. He pointed out the almost inevitable certainty of loss of sight in those eyes which are pierced by foreign bodies which can not be located and removed. He recited thé case of a penetrating wound followed by absorption of the lens, in which good vision was ultimately obtained. Another case was cited, of a man shot in the face, destoying one eye, the other one being slightly injured. The destroyed eye was enucleated; there were no evidences of a [illegible] body in the other eye. In time it became irritable and [illegible]dy; general treatment afforded temporary relief. Ophthal[illegible]opic examination showed a gray mass in the anterior por[illegible] of the choroid. Recurring attacks of dimness of sight, [illegible]panied by irritation in the eye has been finally followed [illegible] cataract, and now there is bare perception of light. He thinks the cases recited by Dr. Reynolds are of great interest to every member of the profession, but they should be looked upon as extraordinary cases. They illustrate what may be accomplished when the foreign body can be removed from the eye.

Prof. P. RICHARD TAYLOR of Louisville, wished to emphasize the importance of the case recited by Dr. Reynolds, of the man whose eye was injured by the guncap as affording additional evidence of the unfavorable character of injuries of the ciliary muscle or ciliary body. Cicatricial formations in the ciliary muscle or body imprison the nerves and keep up a perpetual state of irritation and finally provoke the so called sympathetic inflammation, followed by blindness.

Dr. Masters might have added to his list of dangerous wounds from penetrating bodies, a large class where the infecting material enters with the foreign body; the infection being thus carried directly into the eye, inflammation is excited at once. It is therefore not sufficient that the foreign body be located and removed, but we should be well assured that no infection has accompanied the injury, otherwise we should at once enucleate the eye, and save the patient a prolonged period of suffering and the dangers of constitional infection, which have occasionally been overlooked with fatal result to the patient.

Dr. ULRICH H. HON of Bloomington presented a specimen of uterine mole, or hydatiform degeneration in the chorion. The patient was suffering with hemorrhage, and had voided a large mass of this material. On examination a considerable amount of retained cystic matter was removed, and the hemorrhage ceased. There was more than enough to have filled a quart vessel. The condition, though rare, is sufficiently well known. The mass resembles a collection of hydatids, being made up of a minute series of spheroidal cysts, which are the degenerate remains of the villi of the chorion.

Dr. WM. V. MORGAN pointed out the fact that these remains are, in medico-legal cases, always accepted as the products of pregnancy.

Dr. WM. J. PURKHISER of Salem read a paper on

MEDICAL EXPERT WITNESSES AND EXPERT TESTIMONY.

He pointed out the lamentable fact that courts of justice sometimes accord the distinction of expert to a thoroughly incompetent medical witness, thus continuing to bring the profession into ridicule. He thinks a better knowledge of medical jurisprudence is necessary to the maintenance of the dignity of the profession in medico-legal inquiries.

Dr. DUDLEY S. REYNOLDS opened the discussion by pointing out the character of the preparation which the law requires of a medical expert witness. He maintains that medical jurisprudence is one of the most important subjects taught in the medical colleges, and that it is not sufficiently appreciated by many institutions. If the medical expert witness duly informs himself in relation to the subject about which he is going to testify, carefully avoiding any manifestation of bias in opinion, he may escape the suspicion of having a personal interest in the success of the party-litigant in whose interest he was summoned. It is not expected that every man knows everything, and the medical expert witness should not hesitate to express his ignorance about matters concerning which he is uninformed; but the court will not hold him guiltless if that ignorance includes any matter of general information in the profession.

Dr. B. MERRILL RICKETTS spoke of the treatment of the medical expert witness by expert lawyers, who never lose an opportunity to bring the medical profession into ridicule when this testimony is damaging to one side or the other. He has a habit of defending himself on the witness stand, and recently had occasion to say to the judge and counsel that they knew nothing of such matters as the shortening of a leg after fracture. He defended himself by showing the ridiculous character of the questions of the counsel, and demanded the right to make himself understood to the jury and court, in the definition of a difference in the results of injuries in the thigh bone of children and adults.

Prof. P. RICHARD TAYLOR, chairman of the nominating committee, reported as follows: For president, J. Garland Sherrill of Louisville; vice-president, Wm. D. Pennington of West Baden; secretary and treasurer, George W. Burton of Mitchell; corresponding secretary, Ulrich H. Hon of Bloomington.

Executive Committee: Dudley S. Reynolds, Louisville; B. Merrill Ricketts, Cincinnati; Elihu P. Easley, New Albany; Edmund D. Laughlin, Orleans; William V. Morgan, Indianapolis.

The special committee on necrology reported through its chairman, Dr. Askren, a series of resolutions on the deaths of ex-presidents Riorden of Bedford and Charlton of Seymour.

The committee on sanitation and State medicine, of which Dr. U. H. Hon was chairman, reported a series of resolutions which were adopted. The committee was continued, with instructions to secure suitable papers, from the best informed persons, for the purpose of elucidating the recent sanitary laws of Indiana, to be made the subject of special consideration at the next meeting.

The chairman of the executive committee was instructed to arrange suitable railway concessions for the next meeting of the Society.

On motion, the Society adjourned to meet at West Baden Springs, Dec. 28 and 29, 1897.

PRACTICAL NOTES.

A Remedy for a Form of Tinnitus Aurium.—Dr. F. Steiner (*Arch. f. klin. Med.*, lviii, 2, 3) in discoursing upon his conclusion that polyneuritis is a frequent complication of acute rheumatism, the basis being probably an epineuritis, recommends the fluid extract of ergot as a remedy for the tinnitus aurium caused by the long continued use of sodii salicylate and potassii iodid.

The Treatment of Exophthalmic Goiter by Section of the Cervical Sympathetic.—Reclus and Faure (*Gaz. Hebd. de Méd. et de Chir.*, June 24, 1897, p. 592) have reported a case of exophthalmic goiter occurring in a woman in her third pregnancy and following emotional disturbance. Medical treatment had been without benefit and electricity brought only passing amelioration. The exophthalmos was so pronounced that the eyelids could not be closed and the corneæ had suffered from the want of protection. The thyroid gland was greatly enlarged; the pulse ranged between 120 and 130; and the constitutional disturbance was profound. The cervical sympathetic was readily resected on either side through an incision along the posterior border of the sterno-mastoid muscle and improvement speedily ensued. By the seventh day the exophthalmos had almost entirely disappeared and the ulceration of the cornea had cicatrized. The swelling of the neck had diminished; the pulse was reduced to 90; the trembling was less marked; and the general condition was greatly improved.

Surgical Treatment of Tumors and Enlargements of the Thyroid Gland.—Paul (*British Medical Journal*, July 3, 1897, p. 1) reports twelve cases of adenoma of the thyroid gland, five of parenchymatous goiter and six of exophthalmic goiter treated surgically, and details the histologic appearances found in the structures removed. In the first twelve cases tumors weighing up to three-quarters of a pound, and in the remainder portions of the gland, some of a very considerable size, were removed, without a fatality. Healing was rapid in all, only a few patients being under surgical treatment more than a fortnight. In six of the cases of adenoma there was complaint of constitutional symptoms, and in all of these young active gland-tissue was present; in the remaining six, symptoms of mechanical obstruction only were present. In the latter the tumor was very small, colloid, fibrous or almost entirely cystic, with little or no active secreting epithelium. The patients suffering from mechanical obstruction alone were entirely relieved by the operation, while those in which constitutional manifestations also were present were additionally relieved or very much improved in regard to these. Of the five cases of parenchymatous goiter sufficient time had elapsed after the operation in only two to permit of the expression of an opinion. The removal of one lobe was followed by atrophy of the other lobe, with the establishment of perfect health and freedom from symptoms of myxedema. The immediate effect of the operation in the cases of exophthalmic goiter consisted in a marked amelioration of all the symptoms. In some cases the first improvement was so decided as to appear remarkable and to leave no doubt as to its relation to removal of thyroid tissue. This early improvement may be followed by slow progress, so that several years must elapse before a final judgment could be given.

Successful Treatment of Internal Aneurysms with Injections of Solution of Gelatin.—Lancereaux has tried injecting 50 c.c. of a sterilized 1 per cent. solution of gelatin in a 1 per cent. salt solution at 37 degrees C., as Dastre announced in 1895 that a solution of gelatin injected into the veins of a dog renders the blood much more coagulable. Lancereaux reported at the Académie de Médecine (*Bulletin*, June 22), the one case in which he has tried this treatment. The patient was a man of 46 who had been affected with an aneurysm of the first part of the arch of the aorta for two years. It had become as large as the head of a child, 14 x 15 centimeters, and was rapidly increasing with distinct expansive pulsation; the accompanying oppression and pain, dyspnea, etc., were most distressing and the thinness of the wall showed that the aneurysm was on the point of bursting, when the injections of gelatin were made as a last resort. Twelve injections as above (January to May) relieved the patient of all his pain and reduced the size of the tumor 2 centimeters. It has grown firmer and the pulsation is no longer radiating but with the aortic current. He left the hospital to attend to his usual occupations, saved from certain death by this harmless and evidently efficient treatment, the only one known for internal deep aneurysms beyond the reach of surgical intervention. A slight redness at the spot of the injections in the gluteal region and a slight transient increase of temperature after the first injection were the only inconveniences.

Instrumental Evacuation of the Uterus.—Doléris has a comprehensive article in the *Journal de Méd. de Paris* of June 20, on the treatment of incomplete abortion. He states that instrumental evacuation of the uterus is neither a difficult nor dangerous operation, if it is performed with extreme gentleness and care, *without chloroform*, the bladder emptied first, using the fenestrated forceps, the swab and the curette as indicated, an attentive assistant pressing down the fundus, with repetition of the dilatation in the course of the operation and frequent intra-uterine and abdominal palpation, and the traction of the cervix with *three*-pronged forceps. He concludes by swabbing out the uterus with creosoted glycerin and a copious irrigation at 40 degrees with a dilating sound, finally packing it with iodoform gauze very slightly impregnated with creosoted glycerin at 5 per cent. (The gauze loses its absorbent powers if much impregnated, besides irritating the vaginal mucosa.) He renews the dressing every two or three days, with an intra-uterine irrigation each time. In 44 hospital cases of curetting the gravid uterus (33 post-abortum and 21 post-partum), he has had neither accidents nor death.

Cholecystitis Complicating Typhoid Fever.—Mason (*Boston Medical and Surgical Journal*, May 13, 1897, p. 449) has reported the case of a woman, 30 years old, who came under observation in the third week of an attack of typhoid fever, with dry brown tongue, palpable spleen, rose spots and distended abdomen. Anorexia, vomiting and constipation had been prominent symptoms. Widal's serum test yielded positive results. There was no leukocytosis. Toward the end of the third week the patient complained of increasing abdominal pain that became localized in the right hypochondrium, where a tumor four inches in diameter developed, extending from the costal border toward the umbilicus. The swelling was very tender, absolutely dull on percussion and descended on full inspiration. The patient presented appearances of collapse and it was feared that rupture of the gall bladder distended with pus would take place. Celiotomy being concluded to be too grave an operation to undertake under the circumstances, the gall bladder was tapped at a point an inch below the costal margin and four and a half inches from the umbilicus. Three and a half ounces of sero-purulent fluid were withdrawn, pale in color, looking more like urine than bile. The aspirating needle moved up and down with the action of the diaphragm. No gallstones could be felt with the point of the needle. After its withdrawal a pad and a swathe were applied to prevent the escape of septic fluid into the peritoneal cavity. The relief to pain was immediate. On the next day all of the urgent symptoms had disappeared and they did not return. The pulse fell from 140 to 120 and defervescence followed in five days. The gall bladder gradually retracted; convalescence ensued, and when the patient returned for observation after a month nothing abnormal was found in this region. Examination of the fluid removed disclosed the presence of microörganisms that yielded the various reactions of typhoid bacilli.

The Radical Cure of Hernia by Implantation of Sterilized Sponge. As the result of experimental observations upon rabbits in the Physiological Laboratory of the Johns Hopkins University, Platt (Johns Hopkins *Bulletin*, March, 1897, p. 41) was led to attempt implantation of sections of sponge in the inguinal canal for the purpose of forming a firm connective tissue barrier to the descent of the bowel and adnexa in the radical-cure of hernia. In the actual application of the method an incision about two and a half inches long is made directly over the inguinal canal, following its course, the lower end extending about half an inch upon the scrotum. If the hernia is down the operation is so much the easier. The canal if laid freely open. The sac, whether congenital or acquired, is opened in its entire length, the hernial contents reduced and the sac cut away close to the ring if congenital, while if acquired it is cut square off after being ligated as high up as possible and dropped beneath the ring. In the case of the congenital sac it is often necessary to leave the thin inferior layer *in situ* and adherent to the cord. Next a section of fine firm surgical sponge is cut about an inch and a half in diameter and an eighth of an inch in thickness. This is sterilized without boiling by immersing in a solution of soda, washed in sterilized water, treated with potassium permanganate and oxalic acid and then thoroughly washed in sterile normal saline solution. A radical cut is made in the section. The constituents of the cord are gathered together as high up as possible and placed in the center of the section and at a right angle to it. The edges of the cut in the sponge are now overlapped slightly and two sutures are inserted into the sponge to keep it in place on the cord, which now pierces its center. The section of sponge is spread out beneath the internal ring and the conjoined tendon is sewed firmly by two or more quilted sutures to Poupart's ligament, using a needle in a handle. The inguinal canal is now snugly sewed up with silk sutures and over all the skin is sewed with silkworm gut. It is absolutely necessary to use some kind of drainage at the upper angle of the wound, as there is invariably some serous oozing and swelling. This may be removed in twenty-four hours. The patient is confined to bed upon his back for three weeks. If a boy, it is well to use the Bradford frame, to keep him from sitting up and twisting about in bed. The skin sutures are removed on the ninth or tenth day, the wound being treated on ordinary antiseptic principles. After three weeks the patient is permitted to sit up in bed for a day or two; then he sits up for two or three days in a chair, and afterward he goes about as usual. It is unnecessary to use any support over the site of operation beyond a light strip of gauze to protect the fresh cicatrix from friction.

The Bacteriology of the Follicular Enteritis of Children.—The *British Medical Journal* quotes an article by Dr. Finkelstein of Heubner's clinic, from the *Deutsche medicinische Wochenschrift*, regarding two forms of the gastro-intestinal enteritis of infants that appear to be due to an infection. The source of the contagion lies in the stools. Two groups of the disease are to be distinguished, the dysenteric and the toxic. The actual cause of the disease must therefore be able to give rise to irritation of the mucous membrane, and to produce toxic products. The bacteriologic examination of the purulent masses in the author's case showed the presence of abundant rod-like microörganisms contained in the pus cells, and varying much in appearance. Often they were arranged in twos. All the different forms were shown to belong to a single microorganism. By cultivation a microbe possessing extraordinary resemblance to the bacillus coli communis in almost pure culture was obtained. The author then details his inoculation experiments. In mice it produced, when introduced with the food, a disease very like Löffler's mouse typhoid. The morbid appearances corresponded exactly to those described by Heubner as taking place in the epithelium in cholera infantum, but ulcerative processes were absent. The microörganism is only present in the glands, and hence the death of the epithelium must be due to a toxic action. The bacillus is also able to produce remote toxic effects. Growth on potatoes showed differences from that of the bacillus coli, otherwise the differences were rather those of degree than kind. Experiments on animals yielded more important results. Virulent cultures of the bacillus coli were shown not to be able to act pathologically on healthy mucous membrane. A close relationship existed between the bacillus in question with the bacteria known to produce the manifestations in meat poisoning. Thus it does not appear correct to class this microörganism as the bacillus coli. The virulence of the microörganism varies greatly, and can be diminished by culture. As regards its pathogenic properties, it was found constantly present in over fifty cases of typical enteritis and colitis dysenterica. All cholera-like forms must not be grouped as follicular enteritis. If the microbe has lived and flourished in the milk consumed, the symptoms of intoxication may begin forthwith. It may be said that follicular enteritis passes through the stages of dyspepsia, intestinal catarrh, up to a cholera-like disease. When the intestinal epithelium is destroyed, the bacillus may get into the blood stream and produce a septicemia as well as hemorrhagic purulent metastases. Mixed infections are common. There are two forms of the general infection: one resembling typhoid, and the other giving rise to high fever, collapse and rapid death.

Partial Rupture of the Spinal Cord Without Fracture of the Spine.—Watts (*British Medical Journal*, March 13, 1897, p. 654) has reported the case of a man 65 years old, who while partly under the influence of alcohol fell from a cart that he was driving. He was able to arise and walk to his home, a distance of a mile, where he put his horse away and sat down in a chair by the fire. His neck felt a little stiff, but it was free from pain. Three hours from the time of the accident the man noticed that he had no power in his right hand, then that his left hand was paralyzed and then that he could not move his legs. The paralysis came on so rapidly that it seemed to affect all of the limbs almost simultaneously. When the patient came under observation, two days after the accident, the respiration was entirely diaphragmatic. He answered questions rationally and presented no cerebral symptoms. Movement of the neck caused pain, but there was none when the head was held still and none in the course of the nerves. There was no bruising of the skin and no irregularity of the spinous processes. The patient was able to raise his arms from his sides to a horizontal position and he could also move them across his chest. He could flex but not extend his forearms. He could make no movement of hands or fingers. The knee jerks and the plantar jerks were wanting. Sensation was lost upon the trunk and lower extremities below the level of the third costal cartilage; there was no hyperesthesia above this level. There was loss of sensation also on the anterior and posterior surfaces of the forearms, on their inner halves, on the whole dorsum of the hands, on the inner part of the palms and on the palmar aspects of the little fingers. There was retention of urine and the bowels were constipated. The pulse was 56, full and regular. The temperature was subnormal. The urine contained a trace of albumin. No alteration in the extent of the paralysis or of the aresthesia was noticed and the patient's mind remained clear until his death, which took place twelve days after the accident from edema of the lungs. Upon postmortem examination the spinal dura mater was found to be torn transversely across in its left half and the cord beneath was likewise torn across for a corresponding extent. On antero-posterior section the cord was seen to be soft in consistence and grayish in color at the seat of rupture and for a half inch above the superior limits of the gray area being indistinctly defined by a somewhat irregular transverse line. This condition appeared to exist throughout the entire transverse extent of the cord. The rupture was seated exactly opposite the articulation between the sixth and seventh cervical vertebræ; a little movement was possible at this joint, but the posterior common ligament was intact and there was no evidence of fracture.

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SATURDAY, JULY 31, 1897.

THE ANTIVIVISECTION BILL.

We notice that the esteemed Senator GALLINGER of New Hampshire is extremely anxious about his antivivisection bill. The following occurred on the presentation of the Memorial of the AMERICAN MEDICAL ASSOCIATION on the subject—*Congressional Record*, July 2, 1897:

MR. COCKRELL. "I present resolutions unanimously adopted at the annual meeting of the AMERICAN MEDICAL ASSOCIATION in Philadelphia June 2, 1897, remonstrating against the passage of Senate bill No. 1063, for the further prevention of cruelty to animals in the District of Columbia. I ask that the Memorial lie on the table and that it be printed as a document."

The VICE-PRESIDENT. "Without objection, that will be the order."

MR. GALLINGER. "I will inquire as to what is the Memorial particularly?"

MR. COCKRELL. "They are resolutions opposing the vivisection bill reported by the Senator."

MR. GALLINGER. "Resolutions adopted by a medical association?"

MR. COCKRELL. "Adopted by the AMERICAN MEDICAL ASSOCIATION at Philadelphia."

MR. GALLINGER. "In this connection I desire to state that I entered a mild protest a while ago against the printing of numerous documents relating to this one bill. We have, I think, four or five different documents already printed. Some of them are in severe and unjust criticism of the committee, stating absolute untruths regarding the action of the committee. I do not object to the printing of the Memorial, and yet it does seem to me rather strange that when a committee has considered a matter carefully, giving a long hearing to both sides, permitting the opponents of the bill to print 300 pages in the report of statements in opposition, that they should then flood the Senate with memorials, resolutions and protests, and that we should print them at the expense of the Government."

MR. COCKRELL. "This Memorial consists of only two or three pages, and it is in appropriate form."

The VICE-PRESIDENT. "The Memorial will be printed as a document, in the absence of objection, and referred to the Committee on the District of Columbia."

It does not appear that there is need of any particular comment upon it, except to show the hostile attitude that the Senator has taken.

IDLENESS AND INSANITY IN PRISONS.

The following press dispatch tells a tale that perhaps deserves some editorial comment from a medical point of view:

> New York, July 22.—Since the anticonvict labor law went into operation on January 1 twenty prisoners in the Kings county penitentiary have lost their reason. Madness began to assert itself without anything to attract public attention. It attacked the victims one at a time until last week, when nine convicts, under the dull torture of enforced idleness, went mad. Five of these unfortunate men were removed yesterday from the penitentiary to the State asylum at Matteawan. The remaining four will probably be disposed of today. Three are federal prisoners and their destination is the asylum at Washington. Madness in one case is laid at the door of mental torture, long sustained. In all the other cases enforced idleness—twenty hours of each day passed behind iron bars in trap-like cells—seems to give the explanation. The increase of lunacy as shown by figures among the male convicts is alarming. The records of 1890 show one case of lunacy; in 1891, three; in 1892, one; and for the three following years a total of four. Then prison work fell off and for the first seven months of 1896, a period corresponding to the time during which the anticonvict labor law has been in operation, nineteen prisoners lost their reason.

The prophecy was made when a similar measure was being pressed prohibiting convict labor in another State than New York, by the head of one of the chief penal institutions, that the result would be so large an increase of lunacy amongst the convicts that they might as well turn the prisons at once into asylums, only reserving a space for the necessary and inevitable preliminary lapse from reason to occur in. This was uttered as a rather forcible statement of the probable outcome of such a law as it appeared to him, but it is one that contained a large element of truth and only a moderate amount of exaggeration. Idleness and confinement would tax the resistance of an intellect that has abundant resources, and much more the untrained and more or less degenerate brain of the average prison inmate who has necessarily to be deprived to a large extent of the saving influences of companionship and association with his fellows. From a purely philanthropic point of view it is not a justifiable piece of legislation to enact laws that deprive men of their reason, and it may be a question whether if tested it might not come under the constitutional prohibition of cruel and unusual punishments. In case of prisoners convicted before the passage of such acts, they constitute in spirit and in fact, if not in law, a most cruel and inhuman aggravation of the punishment to which they were sentenced.

There is an economic as well as a humane aspect in which the facts may be considered. Mental breakdowns under such conditions is not the most hopeful type of insanity and it promises to largely increase the burden upon the community. A convict may reform, many of them do to a certain degree, and make harmless if not very valuable members of society. It is the aim of philanthropists to bring this about and to make penitentiaries reformatories rather than places of vindictive punishment. If their function is to become manufactories of chronic dements it will be of very little advantage; the insanity added to the original evil tendencies will hardly make them any safer for the community while it will insure their becoming dependents upon the taxpayers. In no way it can be viewed is the anticonvict labor legislation advantageous or respectable.

It is probable that the labor unions and others who have favored these acts, gave very little attention to any possible consequences except the immediate results they had in view. It would not be creditable to them to suppose they would deliberately wish to condemn all convicts of all grades of guilt to a possible and even probable fate that is commonly described as almost or altogether worse than death, however true this may be, and yet this is just what they have practically done. It is useless to say that they can be employed without competition with outside labor, for if that were possible it would have been resorted to in the New York institution—it must be presumed that it was either impracticable or was made so by the wording of the law; no prison authorities would readily abandon their best resource for government as well as for profit in such institutions.

This is only one of many instances where inconsiderate law-making is done that ought to have been modified or avoided. If enlightened medical counsels could prevail, if medical men could take part in making our laws, or if something besides what is called practical politics could be more considered by our legislators, such a disgrace to the State as this inhuman and backward step in prison administration would have probably not occurred. It is not at all necessary that prison labor should injuriously compete with workers outside, but the outcry at the present time is too indiscriminating, and inconsiderate legislation is too often demanded with such results as are shown in the paragraph quoted.

THE NATURE, DIAGNOSIS AND TREATMENT OF COLLATERAL HEMIPLEGIA.

It is not our purpose here to dwell upon the diagnostic features of the various forms of paralysis of cerebral origin or upon the difficulties that not rarely attend their differentiation. We wish rather to refer to an interesting observation made by Ortner (*Deutsche medicinische Wochenschrift*, June 10, 1897, p. 372), in connection with cases of hemiplegia in which palsy and cerebral lesion are on the same side of the body—collateral hemiplegia—in contradistinction from the cases in which the two are on opposite sides—contralateral hemiplegia—and which if verified will prove an exceedingly valuable aid in diagnosis, as well as an important guide in treatment.

Ledderhose maintains that in cases of hemiplegia dilatation of one pupil, and more especially unilateral papillitis, upon the same side as the paralysis of the extremities is indicative of a lesion upon the same side of the brain. Both of these symptoms are, however, so uncommon under the conditions in hand that they are of little actual diagnostic aid. The peculiarity that Ortner points out as distinctive of collateral hemiplegia consists in the manifestation of greater respiratory activity upon the side of the chest corresponding with that of the flaccid muscles than upon the opposite apparently unparalyzed side. In ordinary cases of contralateral hemiplegia this insufficiency of the respiratory muscles is noted upon the same side as the weakness of the extremities, or of the face and tongue, that is, that opposite to the seat of the lesion.

In explanation of the apparently paradoxic relation between the distribution of the paralysis and the seat of the lesion in the cases of collateral hemiplegia it has been suggested that there may be imperfect, or even total failure of, decussation of the pyramidal fibers in the medulla, but of this proof is yet wanting. It has also been thought that the result might represent the indirect influence of the affected hemisphere upon its uninjured fellow, but such a condition should then be common and attended with paralysis of both sides of the body, more pronounced upon that opposite to the situation of the lesion. A similar objection may be lodged against the view that the disturbance is a more general one, such as may result from diminished consistency or edema of the second half of the brain. That the palsy might be attributable to an undiscovered lesion in the opposite hemisphere seems in the highest degree improbable and it is not more likely that it owes its origin to representation of both sides of the body in the cortex of each hemisphere.

The most probable explanation is that which attributes the condition commonly to an extra-cerebral (meningeal), cortical or subcortical lesion, causing primarily general muscular resolution and secondarily irritation of the muscles upon the opposite side of the body. As a result we have a tonic state of the muscles upon this side and a flaccid state of those upon the other (same side as the lesion), without, however, interfering with the activity of the muscles of respiration upon the latter side. The most common condition that gives rise to this train of phenomena is hematoma of the dura or internal hemorrhagic pachymeningitis, of which the symptom under consideration may be considered in some degree diagnostic.

In a study of thirty-five cases of collateral hemiplegia it was found that the onset was attended with loss of consciousness in twenty-four; and of thirty-eight cases the lesion was situated in or adjacent to the cortex in twenty-six, the internal capsule and the fibers passing through it escaping in all. Of twenty-seven cases of intracranial lesion in or about the cortex, with hemiplegia upon the same side of the body, in not less than seventeen was the lesion extracerebral, and in thirteen of these it consisted of hematoma of the dura or hemorrhagic pachymeningitis. From these facts the conclusion seems justified that so-called collateral hemiplegia is a relatively common manifestation of either hematoma of the meninges or internal hemorrhagic pachymeningitis and the diagnosis of these hitherto obscure and latent conditions is facilitated by the recognition of apparent paralysis of the members of one side of the body with unimpaired respiratory activity upon the same side.

The state of the respiratory activity is also a diagnostic index in cases in which symptoms of bilateral cerebral irritation exists, as failure of this function upon one side under these circumstances is indicative of the existence of an intracranial lesion upon the opposite side, alone or at least in preponderant degree. The establishment of a correct diagnosis in some cases of the kind under consideration will suggest surgical intervention, with a reasonable prospect of finding the lesion, and in many instances also of successful removal of the source of irritation and paralysis, with consequent recovery and saving of life. Ortner is able to report five cases in which a correct diagnosis was reached upon the basis of the phenomenon to which he has called especial attention.

THE EFFECTS OF THROMBOSIS AND EMBOLISM OF THE CORONARY ARTERIES.

Instances of thrombosis and embolism of the coronary arteries of the heart, the resultant functional disturbances of which can be carefully studied, are of great value and interest because of the light thus thrown upon the circulatory conditions in the myocardium of man. Such cases sometimes furnish conditions that may be said to correspond to circumstances produced by well planned physiological experiments.

A recent and instructive case of this kind is one of thrombotic occlusion of the main stem of the right, and embolic occlusion of the left, coronary arteries of the heart in a 32 year old man reported by Chiari[1] of Prague.

The postmortem examination showed, as indicated, that the patient had died from complete occlusion of both the coronary arteries. The very beginning right coronary artery was occluded by a thrombus which had developed some days before death and which had been followed by myomalacic foci surrounded by beginning reactive changes. The left coronary artery was closed by the embolism of a fragment of the thrombus in the right coronary vessel. This embolism was the immediate cause of death. It occurred a few minutes before death and gave rise to a sudden collapse that lasted but a few minutes before the final stopping of the heart's beat. The cause of the thrombosis is referred by Chiari to a, for such a young person, quite marked sclerosis of the beginning of the aorta and to the presence of a chronic nephritis. Of the cases in the literature that are in the main identical with this, Chiari mentions those reported by Hammer,[2] Oestreich[3] and Barth[4]. In Oestreich's case it concerns a 32 year old man that died suddenly. Above the orifice of the right coronary artery was a pedunculated thrombus attached to the wall of the aorta; this thrombus covered exactly the ostium of the artery. In the left coronary artery was a long, yellowish-gray embolus. Barth's case was one of occlusion of the opening of the right coronary artery by a thrombus in the corresponding sinus Valsalvæ due to a beginning sclerosis at this point. A but little advanced sclerosis in the beginning of the aorta may therefore give rise to very serious consequences on account of consecutive, thrombotic, coronary occlusion; most frequently the right coronary artery is the one affected; but in two cases at any rate, namely Oestreich's and Chiari's, the left coronary artery has been closed by a secondary embolism.

The important fact to be learned from the case reported by Chiari is that rapidly developed complete occlusion of the main stem of the right coronary artery need not cause immediate death; the occlusion may be nearly or quite latent. Chiari thinks that in this case the occlusion occurred about two days before death, because at that time an abnormal condition of the pulse had been observed. The thrombosis had caused numerous foci of softening in the myocardium but the right ventricle had not been completely deprived of nourishment because it had carried on its usual function. Langer[5] showed by means of injection experiments that the two coronary arteries communicate with each other by branches that pass transversely across the anterior surface of the heart; furthermore that they anastomose through the vasa vasorum of the great vessels of the heart with the pericardial, the bronchial and even the diaphragmatic vessels. Hence the occlusion of the main trunk of one coronary artery does not deprive *the entire cor-*

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[1] Prager Med. Wochenschrift, Nos 6 and 7, 1897.

[2] Wien. Med. Wochenschr., 1878, No. 5

[3] Deutsche Med. Wochenschr, 1896, No. 10

[4] Deutsche Med. Wochenschr, 1896, No. 16.

[5] S. Ber. d. Ak. k. d. Wiss. in Wien, June, 1880.

responding vascular district of blood when the occlusion takes place gradually, as for instance, in case of uncomplicated sclerosis of the coronaries, then the collateral circulation may have time to develop to a considerable extent so that the disastrous consequences are in a measure warded off. The sudden occlusion of one or both main coronary trunks places greater demands upon the collateral circulation than can be met, and there may follow rather rapid suspension of the cardiac function. In Hammer's case the occlusion of the right coronay artery was followed by a condition of collapse that lasted thirty hours; the pulse was gradually reduced to eight beats in the minute; after the second sound came a distinct rumbling noise which Hammer connected with the shaking up the diseased part as the healthy half contracted. In Barth's case, which was not observed clinically, death followed after the patient had been feeling ill for several hours. In Oestreich's case the occlusion of the right coronary artery was probably not complete, and this partial thrombus undoubtedly existed for some time without any symptoms. In Chiari's case the symptoms during the time that only the opening of right coronary was closed consisted in some slowing of the pulse, which was slow and arhythmic, small and weak.

Lastly, it may be well to indicate that the results of the observations concerning the occlusion of a coronary trunk in the heart of man do not correspond exactly with the results of experiments on animals,[6] and to emphasize that great care should always be used in the application of the results of animal experiments to human pathology.

ATHLETICS IN RELATION TO HEALTH AND LONGEVITY.

Of all the things that enter into our tastes and aptitudes, but few excite more interest at present in the community at large than that of athletic sport. The thing itself, eminently Anglo-Saxon, is not among the tastes of the average French youth, who at the age of 16 usually takes to cigarettes, absinthe and a mistress, while most of our boys at college, keenly devoted to athletics and outdoor games, are incurring the fears of over-anxious parents as to the doubtful, if not deleterious, effect of this agency of modern education, concerning which many errors still prevail. One of the more current of these is that athletes are subject to organic disease and die young.

Regarding the three different educations that we receive, namely, that of the family, that from our school masters, and that of the world, the authorities own that mere book learning *in itself* is of little consequence in determining one's place in life, when compared with the inestimable value of good family antecedents and training and the worldly attrition with well-chosen associates. With no intention to undervalue the worth of study and sound scholarship, most of us may recall the honor men of our school days, who have turned out to be mere prigs and book worms, while those who stood nearer the foot of the list have been the successful ones to whom life's prizes have fallen. To be sure, books have their use, but as a rebuke to mere bookishness there seems to be much significance in the remark of the late Professor Henry of the Smithsonian Institution, regarding the agglomeration of medical books then in the Army Medical Museum, to the effect that it would be all the better for original research and the benefit of medicine, if some Calif Omar would apply the torch and wipe out the whole collection. Of course this wholesale denunciation of books, when viewed with judicial calmness, is merely an enlightened common sense protest against these dumb teachers, which do less for practical education than well-regulated acquaintance and intercourse with men.

Our species being eminently gregarious, there is from a socialistic point of view no branch of education more valuable than the fellowship arising from the community of thought and feeling that obtains in all collections of young people engaged in outdoor games or athletics. Notwithstanding the acknowledged good of such recreations by historians and philosophers since the days of Hippocrates, many popular fallacies yet prevail even among medical men, as to the effect of physical training and its bearing on health and longevity, and it would be difficult to equal the distortion of facts and temerity of language put forward in certain quarters in the howl against present day athleticism. Most of the published opinions that go to make up the popular notion relatively thereto, have emanated either from physicians having no practical acquaintance with athletics, or from sporting men who knew nothing of medicine.

Truth, as usual in such matters, lies between the two extremes. While a few exceptional cases break down and die young, it is now a well-ascertained fact that the beneficial effects of training and exercise tend to the benefit of the greater number by increasing health and longevity. The contention of this thesis was established in a paper embodying the experience of thirty years, read before the American Medical Association in Cincinnati, in which were cited many examples of athletes who lived to a hale and hearty old age.[1] The numerous macrobiotic instances therein cited are not open to the objection of being exceptional, since the writer's information and views have been supplemented by other observers in the same line, notably by John Boyle O'Reilly in his book about boxers; by the researches of Dr. J. Madison Taylor of Philadelphia (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 1892, xviii, 705-710), who arrives at the same conclusions; by Dr. B. W. RICHARDSON of London, who, though disposed to condemn excessive athletics, concluded one of his last lectures at Oxford by saying that "good active sports and exercise in reason are amongst the clearest means of maintaining a long and happy life;" and last but not least, by the admirable essay of Sir MORRELL MACKENZIE, who ridiculed the sweeping statements that are still made from time to time as to the ruinous effects of exercise and training on the majority of those who find pleasure in the use and development of the strength with which nature has endowed them. In addition to the instances cited by these writers, others have appeared from time to time in the public prints. The former champion of the prize ring of England, JOHN GULLY, grandfather of the present speaker of the House of Commons, died at 80, and within the last few weeks the celebrated wrestler, MARSEILLE, whose prowess was witnessed years ago by many French grandfathers at country fairs, departed this life with the record of an octogenarian.

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[6] Samuelson, Zeits. f. kl. Med. ii. B., 1880; Cohnheim, Virch. Arch., B. 85, 1881; Von Frey, Zeits. f. kl. Med., B. xxv., 1894.

[1] Popular Fallacies Regarding Athletes and Athletic Exercises. Journ. Amer. Med. Assn., Apr. 27, 1889.

As an offset to the foregoing instances, we are often confronted with vague statements relating to the untimely death of several notables who have figured in the athletic world for the last twenty years or so; but in nearly every instance, as far as can be ascertained, the cause of break down was owing to immoderate indulgence, or the neglect of simple hygienic rules, resulting in such specific trouble as alcoholism, cirrhosis of the liver, or venereal disease. Dr. SARGENT of Harvard says from extensive personal knowledge he thinks the early demise of athletes directly attributable to free indulgence of gross appetites and passions and not to the result of athletic work.

We need only refer, in conclusion, to the accurate statistics collected by competent authorities, and to elaborate actuarial calculations, which demonstrate that oarsmen have in point of fact a longer expectation of life than others, and that the alleged baneful effects of boat racing are absurdly exaggerated. So prone, indeed, are the opponents of athletics to be blinded by prejudice, that these statistics have been abused even to the extent of quoting them as proof of the disastrous consequences, as we once heard a medical man do who, in citing the figures of Dr. MORGAN's accurate investigation, mentioned the "seventeen" victims, but said not a word about the remaining *two hundred and seventy-seven.* The mistake of mourning over one broken-down athlete and refusing to be comforted by the thought of a hundred others who were benefited by physical training, finds its counterpart in the denunciation of swimming by certain people who say that good swimmers are sometimes drowned, yet they totally ignore the hundreds who escape drowning from knowing how to swim.

Writing with the authority of experience and the maturity of observation, we therefore have forced upon us the induction that no good reason exists for the wholesale condemnation of athletism. On the contrary, it is evident that the healthy exercise of the physical powers is one of the necessary pastimes of a manly and vigorous race, and that next to food and sleep athletics has the largest share in the recreation of human life and in counteracting the tendencies of this hyper-neurotic age.

UNITED STATES COURTS VS. POST OFFICE AUTHORITIES ON ABORTIFACIENT NOSTRUMS.

There is a decided conflict between the United States courts and the United States post office as to the status of abortifacient nostrums. According to a recent decision in Judge SEAMAN's court, the United States Courts will enforce contracts for the sale of abortifacient remedies which are not permitted in the mails. The nostrum involved in the decision has been extensively advertised in the lay press as well as in the homeopathic journals as a "preventive of conception and a regulator of menstruation." In the case in which Judge SEAMAN's court rendered judgment the manufacturer of this nostrum was sued for violation of contract by a woman who had obtained certain territory in southern Indiana. She asserted that after she had worked up a good trade in this territory, the manufacturers filled orders in it without paying the commission, and her claim was based on this alleged fact. As the territory involved is largely a rural one, the dangers to the health of both mothers and children can not well be over-estimated. If the ordinary theory of law be correct, contracts to perform illegal acts such as the sale of this nostrum, are null and void. It can not be pleaded in the present instance that there is no evidence tending to show that the nostrum was of the character described. The United States post office authorities have already excluded it from the mails. It would therefore be no arrogation of authority for the United States district attorney to ask that the case be thrown out of court on the ground that the enforcement of the contract is against public welfare. As the Milwaukee Medical Society is in the court district and as the case will probably be appealed, that Society could render a great service to itself, to the local profession, to the profession and people of the United States, by inducing the local district attorney to do his duty. In this way the Milwaukee Medical Society could teach certain nostrum venders a very telling lesson.

CONCERNING THE EDITORIAL MANAGEMENT.

We clip the following from "A Journal of Reform and Progress in the Medical Sciences," under the head of "current comment." The truth is that every article connected with, or relating to the Ophthalmic Section that has appeared in the JOURNAL in the last three or four years, has been written by some member of the Section, and if our esteemed contemporary will re-read that "memorable diatribe" to which he refers, he will see there is nothing in it objectionable to the Section as a body, nor has anything of the kind ever appeared in the pages of the JOURNAL.

"There has been a revival of generous proportions in the editorial rooms of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and the Spirit has warmed the hearts of the special editorial writers since that memorable diatribe against the Ophthalmic Section of the National ASSOCIATION. The current issue of the JOURNAL goes out of its way to praise the Section quite as much as, a short time ago, it abused it. The JOURNAL has a large safety valve—praiseworthy editorials are by the editor, objectionable ones are by a special collaborator whose name it is not considered desirable to mention."

THE NEW SPELLING.

In answer to a valued contributor who objected to dropping the final "al" from the words physiologic*al* and biologic*al*, the Editor recently wrote:

"In regard to request for change of spelling I have to say that the JOURNAL long ago adopted the recommendation of the American Association for the Advancement of Science. However, your reprint will appear spelled as you wish. I quite sympathize with your feeling in the matter, but I suppose that our ancestors—some of them at least—raised a protest when the word 'arme' had the final 'e' dropped; the word 'legge' lost one 'g' and one 'e'; when the word 'thighe' lost its final 'e.' These happen to occur to me as I sit here, as specimens of how our language has grown by excision."

We print this because of other protests of the same character; in Vol. XXII, p. 25 will be found more specimens of the same sort.

CORRESPONDENCE.

The Section on the Practice of Medicine at the Late Meeting of the Association.

BUFFALO, N. Y., July 26, 1897.

To the Editor:—Your editorial in the JOURNAL of July 3, entitled "The Late Meeting of the Ophthalmic Section of the AMERICAN MEDICAL ASSOCIATION," must have attracted the attention of all your readers. The ASSOCIATION meeting was so notable in all respects that there may be danger of losing sight of the great excellence of the work in the various Sections.

It may not be out of place to emphasize once more the high estimate universally expressed of the work done in the Section on the Practice of Medicine. Knowing from experience how difficult it is to arrange a program satisfactory to all of a large body of physicians, the list of papers read and the discussions brought out are recalled not only with gratification but a certain amount of wonder.

It ought not to be necessary to reiterate the titles of papers nor to point out the wide range of subjects covered. It must be a satisfaction to remember that all parts of the country contributed and on adjournment the members separated with increased feelings of mutual respect. The suggestion is ventured that this program be preserved as a model for Dr. John H. Musser's successors in office. Very respectfully yours,

CHAS. G. STOCKTON, M.D.

PUBLIC HEALTH.

Thyroid Gland Extract as a Galactogogue.—The *Inter-colonial Medical Journal* of Australia contains, among other papers, an interesting communication by Dr. R. R. Stawell upon this subject. The value of a reliable medicine that would promote the secretion of milk would be immense, so that Dr. Stawell's results will have an interest for many practitioners. He details only nine cases, and, while admitting that this is but small clinical experience from which to generalise, concludes with some reservations that extract of thyroid gland is an efficient galactogogue. The dose given was from three to five tablets per diem. In view of Dr. Stawell's results we think that medical men are justified in giving the treatment a trial.

Detection of "Preservatives."—The use of preservatives in milk and butter has increased very largely during the last few years, in fact, during the summer months the practice of adding a preservative to milk may be said to be general. The preservative which finds most favor with the milk trade, is that known as "formalin," a more or less strong solution of formic aldehyde. Boric acid, borax, or a mixture of the two, are occasionally used for milk, and very largely for butter. From the public health point of view, this question of the addition of preservatives is most important. Whether or not such substances, in the quantities usually added to food, are injurious to health is still considered to be unsettled; but there can be no doubt that under the "Sale of Food Drugs Acts," the purchaser has a right to demand that the articles so doctored shall be labeled as containing a foreign ingredient. A very delicate method for detecting "formalin" in milk is O. Hehner's test, which consists in diluting the milk with its own volume of water, and carefully floating it over a little concentrated sulphuric acid, containing a few drops of ferric chlorid solution, contained in a test tube. In the presence of formalin a violet ring develops at the junction of the two liquids. This color is permanent for several days, if care be taken to prevent the tube being shaken. Carried out in this way one part of formalin can readily be detected in 200,000 parts of milk. In the absence of formalin, a brownish-red color develops, after some hours, not at the junction of the two liquids, but lower down in the acid.—*Public Health* (London), March.

Ptomain Poisoning by Pork.—Dr. Wynter Blyth reports, in the *London Sanitary Chronicle*, the cases of a boy and girl, aged respectively 11 and 5 years, who were brought to death's door by the ingestion of boiled pork, on a Saturday (March 27). Forty-eight hours later, the father, the boy and the girl were seized with choleraic symptoms, and at 2:30 on Monday afternoon the mother became similarly affected, but in a lesser degree. At 11 A.M. of that day, the boy and the girl had high temperature, the father choleraic symptoms, cramp, numbness of the feet and hands, and smarting of the eyes. The father, the mother, and the boy got better by about Tuesday, but the girl by Wednesday morning was almost pulseless, with cold extremities, and very nearly died. She, however, revived, and ultimately recovered. The pork was examined by the medical officer of health on April 1, on Wednesday, that is, four days after it was bought, three days after it had been boiled. At that date its appearance and odor were perfectly normal, but on passing it through a small sausage machine the finely divided fiber had a distinct stale smell. The pork was analyzed by Gautier's process, and ultimately a crystalline substance not in normal pork was separated. This substance was alkaline in reaction, gave fine crystals when united with hydrochloric acid, and precipitates with the ordinary alkaloidal reagents (save the chlorids of gold or platinum). So small a quantity was, however, obtained, that it was not practicable to examine it farther or to determine whether the substance was really a poisonous "ptomain," although this is naturally the inference. It may be suggested that the ptomain was in quantity in the meat on Sunday, and what the writer found was a small residue which had escaped destruction in the process of putrefaction.

Reforms for Hospitals and Reformatories.—The "Greater New York" has many unanticipated problems to solve, some of which belong to the semi-penal institutions, where poverty is a non-recognized crime. The New York State Board of Charities not long ago received a report on the condition of the Kings County Hospital, showing insufficient accommodations and not enough of restrictions in the admission of inmates. This hospital combines what in the city of New York itself would be divided up into the workhouse and almshouse, hospital and places for acute cases. It is astonishing, says the report, to find that any of the work is well done in this overcrowded, improperly equipped and ill-constructed hospital for the poor of one of the largest cities of the world. The Board has also received the report of the inspectors of the various reformatories in the State. The House of Refuge on Randall's Island is found in good condition and neatly kept. "We earnestly recommend," the report says, "the separation and the removal of the girls' department from that of the boys' in this institution. This evil in the development of our juvenile reformatory system is so patent and embarrassing that this committee urges positive and immediate action on the part of the Board to initiate this separation." The same recommendation is made in the case of the Rochester State Industrial School. Much serious comment is likewise made upon the reformatory system of the "Excelsior" State particularly in its dealings with juveniles, classed as first offenders. The Board holds that the present system is making more real criminals than it reforms. In the case of juveniles, male and female, especially under 16, commitments should be made directly to the reformatory as a guardian rather than as a penal institution. This course is followed in France, and none of the juveniles sent to reformatory or correctional institutions of that country are committed as convicted of a felony, but as a precautionary measure. The root of the evils in question is not so much with the hard-working officials and a hampered medical profession, but with so-called "statesmen" and pretended political economists. Public weal is one matter—appointments quite another. Between the trades unions and the tax-payers the honest humanitarians have but little consideration.

The Duality of Vital Statistics.—Vital statistics are as a barometer in which the sanitarian sees indexed the sanitary necessities of any locality, and traces its accordance or otherwise with those laws of health by which its death rate is either diminished or increased. Every one is aware of the *wonderful duality of statistics* and how they can be used and mixed by a skilful hand so as to furnish materials for any taste, and to prop up any shaky theory. Appealed to in evidence of conclusions thoroughly diverse, they often remind one of Meyrick's story of the chameleon, anent the description of which the two travelers so materially differed—the one asserting that its color was green, while the other swore it was blue. The umpire called in to decide pronounced it black as jet, and the beast itself, when produced, was found white as snow. So is it that statistics are appealed to for every purpose, and are often in the hands of party advocates or prejudiced opponents little better than a pack of cards in the hands of a skilful conjuror. Still, statistics can not be set aside or unduly underrated. Those vital statistics which it is the registrar's duty to collect are of such a nature as not to be capable of easy distortion. Each locality or district can separate them for itself, and learn those special lessons which they are fitted to convey. To show the practical use to which these statistics may be put, take the system originated many years ago in Leith, and now in force in Glasgow. The city is divided into a number of what might be called sanitary districts, each registrar supplies the sanitary authorities with a return showing every birth and death in each street; these figures are tabulated, and by a little comparison the undue mortality of any place within the districts is authoritatively ascertained, the causes of death enumerated, and other information bearing upon the health of the city indicated. Such a course is evidently approved by the framers of the new Public Health (Scotland) Bill, as there appears a clause providing that every registrar shall send a return of the deaths in his district to the medical officer of health, although the payment indicated in the bill is quite inadequate. However advantageous to the general work of sanitary reform may be the results of registration as embodied in the publications of the registrar-general, it must be evident that for local application they require to be more fully and minutely analyzed. Some physiognomists, it is said, derive their chief pleasure from the examination, not of the more prominent features of the human countenance, but of the minute lines, curves, and wrinkles such as escape the notice of the general observer Public money invested in the direction of obtaining these statistics is advantageously invested, and ought not therefore to be stingily applied. The public reap the benefit in that improved sanitary condition which throws a lifeguard round their homes, promotes their daily comfort, drains the prolific sources of disease, and robs the epidemic of its deadly strength. Public authorities may expend much labor and means in seeking to promote the social and sanitary well-being of their constituents, but without some intelligible basis from which to start, and some reliable data to direct, they can not be expected to attain commensurate results. Those who, from their position are qualified to aid them in their urgently important work ought to be dealt with in a spirit of liberality, indicating, on the one hand, their earnestness of purpose, and ensuring on the other hand, that the best thing being done in the best way will produce the best and most enduring results. Such an onerous and responsible position is held by every registrar in Scotland, and particularly by those called upon to act in the leading centers of population, but the recognition of this fact by local authorities is the exception and not the rule. Looking to the remuneration of other public officials who are not burdened with a tithe of the registrar's responsibilities, nor surrounded by any statutory civil and criminal penalties, it must be admitted that the provision made for registrars is most inadequate. Mr. John Archer in *Sanitary Journal* for April.

European Sanitaria for the Treatment of Tuberculosis.—Dr. Kaurin of Christiania, Norway, has published in *Lagevidenskaben* the results of his observations concerning the tuberculosis retreats on the continent. In Switzerland he visited Heiligenschwendi, in the Canton of Bern, 1,100 meters above the level of the sea. It is also surrounded by forests and faces toward the south. The climate here is more severe; in winter the thermometer descended to −37 degrees C., and in June the maximum temperature is +15 and minimum +7 degrees C. The treatment employed was hygienic-dietetic and was followed by good results. In the Canton of Graubunden he visited Davos, an Alpine valley, situated 1,500 meters above the level of the sea. The two small villages there are now yearly visited by more than thirteen thousand people having tuberculosis. The mean temperature is +2.6 degrees C., and the mean barometric measurement 631 mm. The snow covers the fields until May and +20 to +30 degrees C. is frequently recorded. From so severe a climate the patients return home much improved in health. In spite of the elevation, there seems not to be any disposition to hemoptysis; whereas it is contraindicated to send patients up there with developed anemia, neurasthenia, heart or laryngeal affections. Here in Davos there is a very peculiar institution, a school sanitarium for boys and girls sent by families disposed to tuberculosis, or with incipient phthisis. Boys and girls with poor health are sent up there also, and healthy children from the neighborhood frequent the same school. From Switzerland the author visited some places farther north in Sudeter Mountains and praises Gobersdorf, which is situated 560 meters above the level of the sea. Here, as in Davos, the patients with fever are kept out in the fresh air, and with good effect. Here, also, as in other places, 24 per cent. are cured. In the suburbs of Berlin he visited the barracks of Doeckert, situated in a large pine grove and given up to the Red Cross Society, for the benefit of tuberculous people. The cost per day is three marks per capita. Here, as well as in Malchow and Blankenfeldt, are two hospitals for tuberculous patients from Berlin hospitals, and situated on the plains irrigated by the Berlin sewers. The result is very satisfactory. In Malchow and Blankenfeldt the cost per day is only two marks and the treatment does not last more than forty-four days. Even if not cured in this short time the patients go back to their homes in the city improved in health and trained to a better mode of living. The celebrated establishment at Falkenstein in Nassau, of which Dr. Dettweiler is the director, is situated 400 meters above the level of the sea, surrounded by extensive forests on the southern slope of Taunus Heights. Not far away is Ruppertshain, a sanitarium for a poorer class of people, costing from two and a half to five marks a day. The climate is dry and a little windy, with a good deal of rain in spring and fall; in the winter the thermometer falls below the freezing point, generally to 8 or 10 degrees Celsius, and a little snow falls. The temperature changes slowly. The buildings are three stories, with corridors for patients on the front—open but protected with canvas against rain and direct sunshine. The regular treatment, lasting three months only, is based on the Bremer-Dettweiler method, the open-air treatment, the treatment in the corridors, and abundant nourishment, with regular exercise to strengthen the heart, and the disinfection of the sputa. Medicine is not much used; mostly to relieve symptoms. The result is very satisfactory, the percentage of cured being 24 (13 per cent. entirely cured and 11 per cent. able to resume work). Of 99 cured, 72 remained well for three to nine years after treatment, 15 had a relapse, and of those 12 were again cured after a renewal of the treatment. The little village, Falkenstein, close by, with 800 inhabitants, seems not to suffer from this so-much dreaded neighborhood, inasmuch as the death rate from tuberculosis here is less now than formerly.

BOOK NOTICES.

The Menopause; a Consideration of the Phenomena which Occur to Women at the Close of the Child-bearing Period, with Incidental Allusions to their Relationship to Menstruation; also a Particular Consideration of the Premature (especially the Artificial) Menopause. By Andrew F. Currier, M.D. Cl. 8vo. pp. 309. New York: D. Appleton & Co., 1897. From A. C. McClurg & Co., Chicago.

This book is not only entertaining from a literary standpoint, but it is meritorious from a professional point of view.

The author's chapter on the artificial menopause is interesting, but rather disappointing. Surely there must be sufficient experience in the after-effects of ovarian and tubal extirpations, to say nothing of hysterectomies, to have made more definite statements and more extensive observations. One must admit the truth of what the author says, but there is much more to be gathered.

The general trend of the book is to combat the view that the period of the menopause is a period fraught with danger. On the contrary, that period should be considered as a physiologic process and be passed with as little pathologic sequence as the menstrual period came on. The book is on a very practical topic and we are sure it will be well received.

A Short Practice of Midwifery, Embodying the Treatment Adopted in the Rotunda Hospital, Dublin. By Henry Jellett, B.A., M.D., etc., with a preface by W. J. Smyly, M.D., late Master of the Rotunda Hospital. With forty-five illustrations and an appendix containing the statistics of the Hospital for the last seven years. pp. 323. Philadelphia. 1897. Price $1.75.

This little volume will prove acceptable not only to those who desire a brief account of the practice of the great Rotunda Hospital, but to those interested in keeping pace with the progress of modern midwifery. Aseptic methods are taught and we regard the work as an excellent epitome and well worth careful study by students everywhere.

Crime and Criminals. By J. Sanderson Christison, M.D. Chicago: *The W. T. Keener Co. 1897.*

This is very evidently not a systematic treatise on criminology, as the author admits. It is only some brief sketches, mostly of a few not uncommon or specially prominent types of criminal defectives. It is popularly rather than scientifically written, and the author states in his preface that the work is largely a reproduction of newspaper articles which, it would appear from his preface, have aroused attention both in Europe and America. He has therefore collected them and published them, with some additions, in book form for the benefit of the public.

While the style of the book is generally readable, the author would have done well had he revised it more carefully in some parts. The publishers have done their work well; the make-up, illustrations, etc., are very good.

ASSOCIATION NEWS.

Committee on Transportation.—*To the Editor:*—The committee on rates to Denver in 1898 has been appointed by President Sternberg as follows: Dr. W. H. Daly, Pittsburg, Pa., chairman; Wm. Pepper, Philadelphia, Pa.; X. C. Scott, Cleveland, Ohio; J. D. Griffith, Kansas City, Mo.; C. M. Drake, Atlanta, Ga.; L. H. Montgomery, Chicago, Ill.; H. O. Marcy, Boston, Mass.; J. W. Graham, Denver, Colo. The President says: Dr. Daly writes me that the committee is already industriously at work and that a rate of one-half and thirty days time seems to be the certain outcome of their labors."

Yours very truly,
W. B. Atkinson, M.D.

Section on Ophthalmology.—Members of the Section on Ophthalmology, and others interested, who have not already subscribed for the bound volume of the proceedings of that Section for 1897, may obtain a copy when issued by sending name and addres and $1 to the Journal office, or to Horace M. Starkey, 70 State St., Chicago. These orders should be sent in within the next two weeks.

SOCIETY NEWS.

Indian Territory Medical Association.—At the regular semi-annual meeting of the Indian Territory Medical Association held at South McAlester, I. T., June 29 and 30, 1897, the following officers were elected for the ensuing year: President, E. N. Allen, M.D., South McAlester; first vice-president, G. W. West, M.D. Eufala; second vice president, J. B. Roleter, M.D., Oklahoma City; secretary, LeRoy Long, M.D., Caddo.

New Jersey Medical Examiners.—The annual meeting of the State Board of Medical Examiners of New Jersey was held at Jersey City, Monday, July 5. Dr. George F. Wilbur of As-bury Park, was elected president; Dr. E. L. B. Godfrey of Camden, secretary, and Dr. A. Uebelacker of Morristown, treasurer. There were sixty-eight candidates who reported for the June examination, of whom 12 per cent. were rejected.

French Congress of Surgery, to be held at Paris, October 18, will discuss the questions of "Contusions of the Abdomen" and "Indications for an Operation and Treatment of Cancer of the Rectum." Sec. L. Picque, Rue de l'Isly 8, Paris.

Twelfth International Medical Congress.—*To the Editor:* –In a letter dated July 7 Dr. H. Kümmell, surgical director of the New General Hospital (Neues Allgemeines Krankenhaus) of Hamburg, in the names both of the local Hamburg and the General Imperial Committees of the Twelfth International Congress, begs to invite American Congressists to inspect the hospital and the new hygienic establishments. The medical men will be at the hospital daily from 10 A.M. to 2 P.M.; still they request American Congressists to kindly notify them, if possible, of the days of their intended visits. Very respectfully.

New York, July 19, 1897. A. JACOBI.

Mississippi Valley Medical Association.—Meeting at Louisville Oct. 5, 6, 7, 8, 1897. The Executive Committee met recently at Louisville, in conjunction with the local Committee of Arrangements, the following being present: Drs. Stucky, Grant, Mathews, Love, Holloway and Reynolds. It was determined to make the coming meeting the largest and best in the history of the Association, and everything points to a fulfillment of this endeavor. The railroads will make a round-trip rate of one and a third fare, or probably one fare. The address on surgery will be delivered by Dr. J. B. Murphy, Chicago; the address on medicine by Dr. John V. Shoemaker, Philadelphia. Title of papers should be sent to Dr. H. W. Loeb, Secretary, St. Louis, Mo.

The Neuron at the German Congress of Internal Medicine.—Goldscheider remarked in his address that we assume now that each neuron with its axis cylinder and dendrites is a functional and nutritive unit, communicating by contact alone with the rest, but if a sufficiently powerful stimulus is applied, it will be transmitted like a wave, entirely around the whole of the central nervous system, preferably following the routes offering the least resistance. Each neuron has an individual standard of excitability—a limit that must be passed before it shows the effect of the excitation. This limit varies under different conditions. Slight excitation increases the excitability of the neurons, but violent excitation decreases it and is followed by hypo-esthesia of a whole region. Such a condition exists in hysteria, while on the other hand, neuralgia and the tachycardia accompanying neuralgia, produce a hyperexcitability. The same stimulus in these conditions produces a much more intense excitation than in normal. Psychic conditions also affect it. These variations in the standard of excitability of the neurons must be borne in mind in organic diseases of the nervous system, in which the lesion does not account for all the phenomena observed. In tabes, for instance, we do not know whether the lightning pains precede the establishment of the lesion, or whether the subjective troubles are caused by it. Substitutions and compensations are accomplished by an increase in the faculties of hitherto inactive neurons. We know that stimulation of certain portions of the skin will affect the viscera, showing a connection between the cutaneous sensory neurons and the sympathetic neurons. The effect on the brain during sleep, of the stomach and intestine loaded with food, can be compared to the effects of cutaneous pruritus. Therapeutics must not be restricted to remedy the anemia or hyperemia of the nervous elements, but also aim to affect the irritability of the neurons. In case of hyperalgesia of one member, for example, the pain can be reduced by acting upon the neurons of the symmetric member; electrization, for instance, will increase the excitability of the neurons, while massage and hydrotherapy may divert and thus reduce it. These measures open or close the road to excitation. The stimulus of cold or hot baths removes the sensation of fatigue. Various measures can be used to assist the will, too weak to determine alone a motor action. Suggestion, for instance, which can be considered an excitant of the neurons. Thermic influences also have an incontestable effect on the vasomotor and trophic neurons. Even in certain degenerative processes dynamic action on the neurons may have a useful therapeutic effect. The assumption of a dilation or contraction of the blood vessels is not an adequate explanation of the effects of thermic stimulation. The entire nerve substance is affected in a certain measure by its exciting effect on the trophic neurons. He advocated in conclusion "dietetics of the neurons" as more effectual than all pharmaceutic means in progressive degenerative conditions of the nervous system. M. Sternberg of Vienna added that the standard of excitability in the individual neuron (the *Neuronschwelle*), is the result of the equilibrium between the force applied and the resistance, and is therefore necessarily variable. "We have been concentrating our attention on the study of degenerative processes in the nerves, but in nature everything is not always either *black* or *white*. There are intermediate stages, which have not yet been sufficiently studied."

NECROLOGY.

JAMES S. WHITMIRE, Metamora, Ill., who died July 15 (*vide* JOURNAL, p. 200) received the degree of M.D. from the Medical Department of Illinois College in 1847. He afterward studied in Rush Medical College and while there was awarded the first *ad eundem* degree ever conferred by that college, his thesis embodying investigations made by him concerning iodin as an antidote to rattlesnake venom. In 1856 he also received the degree of M.D. from Jefferson Medical College. As surgeon of the Fifty-sixth Illinois Volunteer Infantry, with rank of Major, he participated in the battles of Iuka, Miss., and of Corinth, and after the latter had the reputation of performing the only successful hip operation (performed on a Confederate soldier) that had been done in the Western Department up to that time. Dr. Whitmire was the first to use a 6 per cent. solution of carbolic acid as a subcutaneous injection in erysipelas. (Reprint from "Physicians and Surgeons of America.") He had been a member of the Illinois State Medical Society since 1850; helped organize the Woodford County Medical Society; and was a member of the N. C. Illinois Medical Association and the AMERICAN MEDICAL ASSOCIATION.

DELOS A. CRANE, M.D., at Holland Patent, N. Y., July 22, aged 76 years. He was a graduate of Castleton Medical College, Vermont, class of 1841; was well known in Oneida County, and up to his death was a special Pension Examiner from the date of his appointment in 1865.

WILLIAM H. MCNAUGHTON, M.D., for two years Health Officer of Watervliet, N. Y., July 22, from consumption, aged 34 years.

EDWARD M. HIGGINS, M.D., Hot Springs, Ark., July 18, from apoplexy, aged 43 years. He received his medical degree in 1877 from Queen's University, Kingston, Ontario, of which city his father is a resident, and there Dr. Higgins was spending his vacation.

WILLIAM C. WEST, M.D., Geneseo, Ill., died at his home July 10, 1897, of suppurative pancreatitis. Dr. West was born in Maryland Feb. 27, 1835, and had been an active practitioner for thirty-four years, having been graduated from the College of Physicians and Surgeons of Keokuk, Iowa, 1863. He was a member of the AMERICAN MEDICAL ASSOCIATION, of the Illinois State Medical Society, and for a number of years a leading member of the American Microscopical Society. His remains were taken to Monroe, Mich., for burial.

RESOLUTIONS ON THE DEATH OF DR. B[illegible].—At a regular meeting of the Alumni Association of the University Medical

College, Kansas City, Mo., held on Monday, July 12, 1897, the following resolutions were unanimously adopted:

WHEREAS, it has pleased the Almighty Providence to remove from among us by the act of a cowardly assassin, our honored and beloved friend and teacher, Dr. Lyman A. Berger, be it

Resolved, That his untimely death in the prime of professional life and usefulness, fills our hearts with deepest sorrow, and has created a lamentable vacancy in our faculty.

Resolved, That in the demise of Dr. Lyman A. Berger our profession has lost a trusted member and a zealous and valued colleague, and our Alma Mater a faithful and kind hearted friend.

Resolved, That his efforts in behalf of medical education in materially advancing the progress of the University Medical College are greatly appreciated; and as the founder and patron of its obstetrical clinic he has permanently contributed to its usefulness and earned the lasting gratitude of not only our Association and the medical profession, but of the community at large.

Resolved, That we fervently sympathize with the grief-stricken family, who have lost an exemplary husband, a devoted father and a true physician.

Resolved, That the foregoing resolutions be spread on our minutes, a copy thereof be sent to the bereaved family of the deceased, and the same be published in the daily papers of our city, the local medical periodicals and the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

B. ALBERT LIEBERMAN, M.D., Chairman,
A. L. HUNT, M.D.,
B. L. SULZBACHER, M.D., Committee.

ROBERT HUBBARD, M.D., Bridgeport, Conn., July 18, aged 76 years. In 1862 he was commissioned surgeon of the Seventeenth Regiment Connecticut Volunteers. After a few months' service he was promoted to surgeon of brigade under General Howard. For meritorious conduct at the battle of Chancellorsville, Dr. Hubbard was promoted to be medical inspector —assistant medical director—on the staff of General Devens. At the battle of Gettysburg, he served as medical director in charge of the Eleventh Corps. When the Eleventh Corps was ordered to Lookout Mountain he again served as medical director under General Hooker, and in that capacity took part in the battles of Lookout Mountain, Missionary Ridge and Ringgold.

MATTHEW P. LYON, M.D., died at Camden, Wash., May 18, aged 79 years. He crossed the plains to California in 1849, and has resided in Washington since 1878.

JOHN N. BEACH, M.D., West Jefferson, Ohio, July 17.——Henry C.
Paschal Davis, M.D., Keokuk, Iowa, July 16.——Tyler Hull, M.D.,
Hinkle, M.D., Oakland, Cal., July 13.——Alfred
Dimondale, Mich., July 17, from blood poisoning.——Alfred
Marshall Mayer, M.D., July 13, aged 66 years, and for the past
twenty-one years professor of physics at the Stevens' Institute
of Technology, Hoboken, N. J.——Selden W. Noyes, M.D.,
Higganum, Conn., July 12, aged 51 years.——P. L. Garvey,
M.D., Oakland, Ill., July 11.——Prof. D. Hofer, Munich.——
A. Nocquart, Brussels, professor of path. anat., from infection
at a necropsy.——Schutzenberger, professor of chemistry at
the Collège de France.——Legros, professor of phys. at Brussels.——G. Fissore, professor of med. path., Turin.——T. de
Carvalho, professor emeritus of surgery, Lisbon.——Cernea,
professor of int. path. at Jassy.

MISCELLANY.

Personal.—Dr. Frederick Holme Wiggin has been appointed a delegate from the New York State Medical Association to the British Medical Association meeting at Montreal.

Dr. W. W. Potter has been reappointed health officer of Spokane, Washington.

A Medical Lending Library has been recently opened in connection with M. Boas' medical book store in Berlin, which circulates valuable antiques as well as the most modern works.

A Museum of Hygienic and Sanitary Appliances, with a library of appropriate literature and a hall for addresses on this subject, has just been opened in Moscow.

The Professional Fifty-year Jubilees of V. Koelliker and Professor Lefebvre have just been celebrated with affectionate zeal by their friends at Wurzburg and Louvain, respectively. The former is 80.

Women to be Admitted.—It is understood that hereafter women will be admitted as students into the medical classes of the College of Physicians and Surgeons of Chicago.

Extirpation of Struma in Hypnosis.—The operation lasted forty-five minutes; no pain was felt and the patient recovered in nine days. She was a woman of 38, especially susceptible to hypnotic suggestion, which had previously relieved her of neuro-rheumatic pains several times.—*Cbl. f. Chir.*, June 26.

Chain Instead of Weights for Precision Scales.—The inconveniences of the tiny weights required for delicate scales have been obviated by the substitution of a chain fastened to the beam, graduated, and moved by a lever from outside the case. The chain is arranged so that weights can be used as usual when desired. Serrin, in *Nouveaux Remèdes*, June 24.

Monument Erected to Duchenne of Boulogne.—A portrait medallion of the great neuro-pathologist was uncovered with appropriate ceremonies recently in Paris, inserted in the wall of the pavilion that bears his name in the Hospital de la Salpetrière. The bas relief below represents Duchenne applying the electrodes of an inductive machine on a patient, with the inscription: "Duchenne de Boulogne, 1806–1875, Electrisation localisée. Physiologie des mouvements. Neuropathologie."

Excision of an Extensive Lupus with Skin Grafting.—Matagne describes in the *Gaz. Méd. de Liége*, June 17, his operation to relieve a girl of 16 of a lupus, 12 by 9 centimeters on the arm, which had developed fourteen years before, after vaccination with vaccine from another person. He tested the patient with tuberculin before attempting to operate, and completed the excision with transplantation of skin from the thigh. Five years have passed since without a relapse and the patient seems absolutely cured.

Production of Light by Living Creatures.—Dubois confirms authoritatively his recent announcement that the light produced by the pholas dactylus is caused by the combination of an enzyme insoluble in alcohol, soluble in water and destroyed by heat (luciferase), with a substance soluble in alcohol (luciferin). Both of these substances are found associated in the walls of the respiratory passages of the pholas, and can be extracted from the tissues by alcohol and water in turn. By combining the alcohol solution of luciferin and the aqueous solution of luciferase with plenty of oxygen the light is produced.—*Cbl. f. Phys.*, May 1.

Three Laparotomies on One Patient for Sarcoma of the Adnexa.—Five years after a septic adnexitis consecutive to a criminal abortion, a malignant sarcoma developed in a pyosalpinx; extirpation. One year later the sarcoma grew again in the adnexa and abdominal wound; extirpation, with slight injury to the intestine. Again the sarcoma developed in the intestinal wound, but extirpation this time was soon followed by the death of the patient. The necropsy showed fatty degeneration of the internal organs. There had been nc metastasis of the malignant growth, which had been thus successfully fought for nine years.—*Cbl. f. Chir.*, June 26, from *Lieeknicki viestnik*, No. 3, 1896.

National Charities Conference at Toronto, Canada, held early in July, was a symposium of excellent ideas, despite certain bureaucratic tendencies. Necessarily morals rather than sanitation or dispensary abuses claimed most of the attention of the readers and speakers. The veteran received a large share of attention during a morning session, and "Homes" were discussed in their practical phases and limitations. "Practical Charity and Jewish Methods" was the suggestive title of one paper, and the "Value of Investigation and Dangers Incident to it" was that of another. Children were well cared for, as may be gathered from the subjects of the essays, an example being afforded by the address of William P. Letchworth of the State Board of Charities, New York, which was entitled "Dependent Children and Family Homes." We trust above all that pride of opinion did not mar the amenities of debate, and that clamor did not interfere with the enjoyments of reform.

"About Children" is announced by the *Medical Gazette* Publishing Company. The author is Dr. Samuel W. Kelley, Professor of Diseases of Children in the Cleveland College of Physicians and Surgeons, the editor of the *Gazette.* Advance orders will be filled in September.

The Mission Hospital at Sitka, Alaska, is doing splendid work. The building contains ten rooms and two large wards. It is in charge of a resident physician who lives in a cottage on the grounds. The matron and head nurse is a graduate of the Buffalo Hospital Training School. She has four native girls in the training school. The hospital was built for the care and the treatment of the children of the mission, but natives and even whites are admitted in emergency cases. During last year nearly 200 were treated in hospital and 1,160 were given dispensary relief; 93 surgical operations were performed.

The Birth Rates of France and America.—The lay press seems to be in the throes of a hot canvass over the relative morality of France and America, so far as suppression of their relative population is concerned. The *Chicago Inter-Ocean* furnishes the following summary: "While in France the birth rate is 22 per 1,000, in Nevada it is 16.30 per 1,000; in Maine, 17.99 per 1,000; New Hampshire, 18.4 per 1,000; Vermont, 18.5; California, 19.4; Connecticut, 21.3; Massachusetts, 21.5; Rhode Island has 22.5 per 1,000, a little more than France; Wyoming has 21.8 per 1,000, and Oregon 22.5. If it were not for immigration, the population would be gradually falling off, and according to statistics the inhabitants of New England and the Pacific coast will be replaced by another race within a period varying from sixteen to 200 years."

Koch's New Tuberculin. — Nencki, Maczewski and Logucki (*Presse médicale*, No. 46) publish some critical remarks on the new preparation of Koch, which merit the attention of the profession. Nencki observed while trying the new tuberculin on a patient, after every injection a considerable reaction with general indisposition, chills, fever, etc. Examining the tuberculin which he used for the injections he found it containing numerous pneumococci, staphylococci and streptococci. Two other bottles which he opened with every aseptic precaution contained the same bacteria. Inoculated on sterile nutrient media they grew very well. It seemed very probable that during the manufacture of the product, as published by Koch, a contamination could easily occur. In spite of this Koch does not believe that an improvement of his method can be thought of. It is evident that such contaminations can lead to considerable danger for the patient, and it will be necessary that the manufacturers furnish sufficient guarantees for absolute purity of their products by a severe and reliable control, before they can be generally tried as to their efficacy.

Population of Russia.—The St. Petersburg correspondent of the *New York Times* under date of June 10 writes: "The published reports of the Russian census, taken last January, are interesting from many points of view. According to the results now known, the population of the whole Russian Empire is a little less than 130,000,000. This is without counting certain provinces of Caucasia and Turkestan and the inhabitants of Northern Siberia, the exact figures of which have not yet reached St. Petersburg. St. Petersburg has 1,267,000 inhabitants; Moscow a little less than a million without the suburbs. The most interesting figures of the census are those concerning Warsaw and Odessa. The Polish capital, which in the days of Polish independence had less than 50,000 people, now has a population of 615,000 souls. Odessa's rapid growth is even more remarkable, for a century ago it was nothing but a poor fishing village, and it now has over 400,000 inhabitants. The towns of Riga, Lodz, Tiflis and Astrakhan have likewise increased in a remarkable manner.

Tricks on the Charitable.—The New York State Board of Charities in reporting on the modes of placing out dependent children, states substantially that "the worst of these is by an individual claiming to represent the 'National Children's Home Society' of Chicago, under a charter granted by Illinois to the 'American Educational Aid Association.' Some three years since he applied for an incorporation of a branch of the society, which was refused. In spite of the failure to obtain approval, he has continued to solicit funds and place out children. He has been responsible, apparently, to no supervising authority for the funds which he has secured from the benevolent. As high as 40 per cent. of the subscriptions raised by this soliciting agent was by agreement retained by him."

Higher Medical Education.—The *Alchemist and Neurologist* (April, 1897) waxes wroth over "State medical detectors called examining boards" and refers to "a new proposition to examine the professors." The *reductio ad absurdum* is rather pertinently put by the question, "but if the faculties are to be examined by a board of examiners who will examine the examiners and attest their qualifications?" We agree in spirit with the paragraph that "defamation of American medical colleges by little mediocrities in medicine has about reached the limit of toleration by the friends of medical education in the profession." To this we may add the truism that critics are seldom originating geniuses.

More Rigor in Medical Examinations.—The Massachusetts medical practice act has been made more rigorous in operation by the decision of the State Board of Registration in Medicine to increase the requirements at examination. Formerly the graduates of medical schools were asked only two questions under each of five topics and the non-graduates five. Now all are required to be examined on ten, and they must average 70 per cent. on the total in order to pass. In recent examinations about 25 per cent. of the applicants have been rejected, and the proportion may be increased by the added restrictions. There will be no dearth, however, in the supply of doctors. At an examination this week the candidates numbered 225, and 21 of them were women. Under the operation of the law there has been, it is said, a distinct elevation of the practical ability and moral quality of the medical profession. It has resulted, also, in a marked improvement in some of the medical schools, which have stiffened their requirements.

Chronic Abscess of the Brain, with Rupture into the Frontal Sinus.—Zamazal (*Wien. medizinische Presse*, June 26, 1897, p. 1190) has reported the case of a man, who complained of pain in the left frontal region, with intermissions and exacerbations. The left upper eyelid was the seat of a large cicatrix, resulting from a blow received eight years previously. The patient was lost to observation for nearly two years, when he returned on account of copious epistaxis. Other than the existence of albuminuria and enlargement of the left ventricle, with a slight peculiarity in speech and signs of mild mental perturbation, no abnormality was noted. Despite measures directed to the control of the epistaxis the bleeding was repeated, the symptoms grew gradually more pronounced, coma set in after the discharge of a considerable quantity of blood and pus from the nose, and death followed. Though no reference to post mortem examination is made, the opinion is expressed that in consequence of the traumatism an abscess developed in the left cerebral hemisphere, rupturing after a long period of latency into the frontal sinus.

A Fifty-four Year Medical Course.—A medical student has just graduated in Warsaw, 75 years old. He commenced his course in 1843, but was forced to suspend it for lack of funds, and became a teacher for twenty years before he was able to return and resume it. He then partially completed the course when he became involved in the political uprising in Poland in 1863, and was sent to Siberia, where he worked in the mines for thirty-two years, when he was pardoned and returned to Warsaw to graduate at last.

The Old Pharmacopeia to be Used.—The supreme court of Ohio holds, in the case of State v. Emery, Dec. 1, 1896, that the reference, in Section 3 of the pure drug statute (87 Ohio Laws, 248), to the United States Pharmacopeia, is to the edition in general use when the statute was enacted, which was that of 1880. The sale of a drug, which was equal to the standard of strength, quality and purity laid down in that edition, it continues, is not rendered unlawful because it is below a higher standard laid down in a subsequently revised edition, though that edition was in general use when the sale was made. And a copy of the subsequent revised edition is not competent evidence on the trial of a prosecution under the statue. The reason given for this decision is that it is not to be supposed that the legislature intended to adopt, by reference, as part of the penal laws of the State, an edition not then in existence, and of which the legislature could then have no knowledge, and that to hold otherwise would be equivalent to holding that the revisers of the book could create and define the offense—a power which belongs to the legislative body, and can not be delegated.

Cyclotherapeutics.—M. Siegfried (Berlin, Nauhaim) has derived great benefit in certain cases from specially constructed tricycles with adjustable seats, pedals and cushions and made comfortable, and ordered as the therapeutic measure under the strict supervision of the physician, never allowing it as a sport to be indulged in at will. He describes in the *D. Med. Woch.* of July 1 the remarkable results attained in a few specimen cases of heart and spinal troubles, gout and relapsing polyarthritis, rheumatics with ankylosis of the joints and atrophy of the muscles. Patients confined for years to invalid chairs are restored to life and activity, attend to their business and take a daily tricycle ride alone. The cyclotherapeutic treatment is often extremely painful at first and is commenced very gradually, with baths, etc., with frequent intermissions. The special tricycles for this purpose are manufactured by the Adler bicycle works of Frankfurt-a.-Main.

Seal Upon Physician's Lips no Shield for Unlawful Acts.—In the case of Hauk v. State, where the supreme court of Indiana affirmed a conviction of producing an abortion, the court holds, Feb. 16, 1897, that the rule declared by the statute, which for- bids a physician to reveal in evidence matters discovered by him in the course of professional attendance or treatment of a patient, is intended to protect the latter and not to shield one who is charged with perpetrating an unlawful act upon the patient. The statute, it insists, can not be so construed as to permit a party charged with crime to invoke it as a weapon of defense in his own favor instead of its being used as a protection to his victim. This interpretation, in its opinion, accords with reason and is supported by authority. On these grounds the court holds that it was not error to permit the physician who attended the patient in question, at the request of the defend- ant, at the time of her alleged miscarriage, to give evidence of what he discovered upon an examination of his patient during his attendance, and also the fact that the miscarriage occurred while he was present as her physician. The fact that her death may have resulted from the improper treatment of her physician or otherwise, it further holds, would not operate to defeat the conviction, under the statute, of the one who pro- duecd her miscarriage by an unlawful antecedent act.

Gleanings.—Extractum secale cornutum found a specific for diabetes insipidus in two cases by M. Benedikt. Dose: 3 grams in fifteen doses for five days. . . . Case of chronic diphtheria complicating erysipelas, resisting serum treatment, in observation four months (Jessen). . . . Perforating peritonitis from gastric ulcer, treated by absolute deprival of food and drink by mouth or rectum; large doses of opium and two to three injections a day of salt solution, 300 to 500 c.c., which prevented thirst and kept the circulation normal. Complete recovery (Lenhartz), *D. Med. Woch.*, July 1. . . . Pulmonary lithiasis in girl of 19, twenty calculi, largest weighed 2 centigrams. *J. de M. de Paris*, June 27. . . . Felix Semon, the German laryngologist in London, created a baronet during the Jubilee. . . . To supply air to cultures of the Koch bacillus to promote growth, Lucatello starts the colony on a strip of gauze suspended in a 2 liter jar, with the lower end touching the glycerined bouillon. . . . Experiments with ovarian juice in twenty-five cases showed no effect except upon the nervous system, which was excited, especially the sexual sphere. *Gaz. degli Osp. e delle Clin.*, June 20. . . . Virulent pathogenic germs of anthrax found in the feces of immunized animals. *Gaz. degli Osp. e delle Clin.*, June 17. . . . Success of the permanent sound and deambulation in troubles caused by hypertrophied prostate (Bazy). As efficient as surgical intervention. . . . New sign of tricuspid insufficiency, a pulsation in the second intercostal space, near the left edge of the sternum. *Presse Méd.*, June 12. . . . Violent fever, hypertrophied spleen, etc., lasting a week, with albuminuria, caused by a twenty-nine hour bicycle ride. Another case had a four week typhic fever after riding 45 kilometers, with phlebitis, myositis and myocarditis. Both typical auto-intoxication from over-exertion. *Presse Méd.*, June 12.

Study of the American Medicinal Flora.—The Sub-commission of the Pan-American Medical Congress appointed to study the medicinal plants of the United States has entered into an association with the Smithsonian Institution for that purpose. The attention of our readers is called to the respective circulars issued by these organizations as follows:

"The Smithsonian Institution has undertaken to bring together all possible material bearing on the medicinal uses of plants in the United States. Arrangements have been made with a body representing the Pan-American Medical Congress, the Sub-commission on Medicinal Flora of the United States, to elaborate a report on this subject, and the material when received will be turned over to them for investigation. The accompanying detailed instructions relative to specimens and notes have been prepared by the Sub-commission. All pack- ages and correspondence should be addressed to the Smithsonian Institution, Washington, D. C., and marked on the outside '*Medicinal Plants for the U. S. National Museum.*' Franks which will carry specimens, when of suitable size, together with descriptions and notes, free of postage through the mails, will be forwarded upon application. Should an object be too large for transmission by mail the sender is requested, before ship- ping it, to notify the Institution, in order that a proper author- ization for its shipment may be made out.

[Signed] S. P. Langley, Secretary."

Instructions Relative to Medicinal Plants.—The Pan-American Medical Congress, at its meeting held in the City of Mexico in November 1896, took steps to institute a systematic study of the American medicinal flora, through the medium of a general commission and of special Sub-commissions, the latter to be organized in the several countries. The Sub-commission for the United States has been formed and consists of Dr. Val- ery Havard, U. S. A., Chairman; Mr. Frederick V. Coville, Botanist of the U. S. Department of Agriculture; Dr. C. F. Millspaugh, Curator of the Botanical Department of the Field Columbian Museum, Chicago; Dr. Charles Mohr, State Botan- ist of Alabama; Dr. W. P. Wilson, Director of the Philadel- phia Commercial Museums; and Prof. H. H. Rusby of the New York College of Pharmacy. This Sub-commission solicits in- formation concerning the medicinal plants of the United States from every one in a position to accord it. The principal points of study are as follows:

1. Local names.
2. Local uses, together with historical facts.
3. Geographical distribution and degree of abundance in the wild state.
4. Is the plant collected for market, and if so, *a.* At what season of the year? *b.* To how great an extent? *c.* How pre- pared for market? *d.* What is the effect of such collection upon

the wild supply? *e.* What price does it bring? *f.* Is the industry profitable?.

5. Is the plant, or has it ever been, cultivated and if so give all information on the subject, particularly as to whether such supplies are of superior quality, and whether the industry has proved profitable.

6. If not cultivated, present facts concerning the life history of the plant which might aid in determining methods of cultivation.

7. Is the drug subjected to substitution or adulteration, and if so, give information as to the plants used for this purpose.

While it is not expected that many persons will be able to contribute information on all these points concerning any plant, it is hoped that a large number of persons will be willing to communicate such partial knowledge as they possess. It is not the important or standard drugs alone concerning which information is sought. The Sub-commission desires to compile a complete list of the plants which have been used medicinally, however trivial such use may be. It also desires to collect all obtainable information, historical, scientific and economic, concerning our native and naturalized plants of this class, and, to that end, invites the coöperation of all persons interested. Poisonous plants of all kinds come within the scope of our inquiry, whether producing dangerous symptoms in man, or simply skin inflammation, or, as "loco-weeds," deleterious to horses, cattle and sheep. In this respect, the general reputation of a plant is not so much desired as the particulars of cases of poisoning actually seen, or heard from reliable observers. It is believed that much interesting knowledge can be obtained from Indians, Mexicans and half-breeds, and that, consequently, Indian agencies and reservations are particularly favorable fields for our investigation. Such knowledge will be most acceptible when based upon known facts or experiments.

In order to assist in the study of the habits, properties and uses of medicinal plants, the Sub-commission undertakes to furnish the name of any plant-specimen received, together with any desired information available. Owing to the diversity in the common names of many plants it will be necessary for reports, when not furnished by botanists or others qualified to state the botanic names with certainty, to accompany the same with some specimen of the plant sufficient for its identification. While the Sub-commission will endeavor to determine the plant from any portion of it which may be sent, it should be appreciated that the labor of identification is very greatly decreased, and its usefulness increased, by the possession of complete material, that is, leaf, flower and fruit, and in the case of small plants, the underground portion also. It is best to dry such specimens thoroughly, in a flat condition under pressure, before mailing. While any convenient means for accomplishing this result may be employed, the following procedure is recommended: Select a flowering or fruiting branch, as the case may be, which when pressed shall not exceed sixteen inches in length by ten inches in width. If the plant be a herb two or three feet high, it may be doubled to bring it within these measurements. If it possess root leaves, some of these should be included. Lay the specimen flat in a fold of newspaper and place this in a pile of newspapers, carpet felting, or some other form of paper which readily absorbs moisture, and place the pile in a dry place under a pressure of about twenty to thirty pounds, sufficient to keep the leaves from wrinkling as they dry. If a number of specimens are pressed at the same time, each is to be separated from the others by three or four folded newspapers or an equivalent in other kinds of paper. In twelve to twenty-four hours these papers will be found saturated with the absorbed moisture and the fold containing the specimen should be transferred to dry ones. This change should be repeated for from two to five days according to the state of the weather, the place where the drying is done, the fleshiness of the specimens, etc. The best way to secure the required pressure is by means of a pair of strong straps, though weights will do. The best place for drying is beside a hot kitchen range. When dry the specimens should be mailed between cardboards or some other light but stiff materials which will not bend in transit. It is a most important matter that the name and address of the sender should be attached to the package and that the specimens, if more than one, should be numbered, the sender retaining also specimens bearing the same number, to facilitate any correspondence which may follow. The Sub-commission requests that, so far as practicable, all plants sent be represented by at least four specimens.

[Signed] H. H. Rusby, M.D.,
Chairman of the General Commission, New York Coll. of Phar.
Valery Havard, M.D.,
Chairman of the Sub-commission, Fort Slocum, David's Island, New York.

Washington.

Washington Asylum Hospital.—The Commissioners have appointed Dr. D. Percey Hickling visiting physician to the Washington Asylum Hospital.

Coroner Appointed.—The Commissioners have appointed Dr. William P. Carr the coroner for the District of Columbia, vice Dr. Charles M. Hammett resigned.

A Death from Hydrophobia.—Health Officer Woodward, Deputy Coroner Glazebrook, Drs. Thompson, Barker and Winter have made a postmortem examination of the case of the young man who died during the present week of supposed hydrophobia, from a dog bite, and will have a bacteriologic test made by Professor Norgaard of the United States Agricultural Department. This is the first time the human body has been so examined in the District.

A New Quiz Class.—Dr. F. S. Nash, late U. S. N. has started a quiz class to prepare physicians for entering the medical department of the Army and Navy and Marine-Hospital Service.

Hospital Babies May Cry.—The crying of infants in the Washington Hospital for Foundlings has been the cause of considerable complaint by residents in that vicinity and resulted in a charge of "nuisance" being preferred to the courts and investigated by the grand jury. The grand jury refused to indite the Hospital as a nuisance or gag the babies, and makes the following report: "Complaint having been made in due form of the Washington Hospital for Foundlings as a nuisance, we, the grand jurors, after careful inspection and investigation, hereby submit the following report: We personally visited the Washington Hospital for Foundlings, and found the same to be in excellent sanitary condition and a well-conducted institution. While there is some annoyance from the crying of babies during the warm season, as has been testified to by reputable citizens, we know of no remedy to stop it, and do not think the grievance of those complaining sufficient to justify us in declaring this humane and useful institution a nuisance. We recommend, however, that the authorities be requested and, if possible, required to double their present force of nurses for night duty, as the present force is inadequate to properly care for the children. We further recommend that if it be possible to do so, the children be removed to the country during the heated term. Should a suitable place be obtained for these helpless infants during the warm months it would be of great benefit to the children, besides removing the existing cause of complaint of the residents, as they allege no annoyance at other seasons."

Annual Report of the Health Officer.—The annual report of Health Officer Woodward has been transmitted to the Commissioners of the District and is now printed as a public document. There occurred during the year 5,737 deaths. Of these 3,216 were white and 2,521 were colored. The general death rate was 20.71 per thousand. This is the lowest point reached for the past twenty-two years. A satisfactory feature of the year's mortality table is the very considerable diminution in the deaths from "zymotic diseases." The entire number of such deaths recorded was 891, while during the preceding year it was 1,051. In certain diseases of this class the death list shows an increase. Thus the number of fatal cases of diphtheria rose from 75 to 110; of whooping-cough, from 22 to 65, and of grip from 53 to 118. The decrease in the total number of deaths of this class is accounted for by the diminution in the number of fatal cases of measles from 70 to 3; of scarlet fever from 13 to 1; of croup (so called), from 9 to 6; of typhoid fever, from 228 to 117; of malarial fever (so-called), from 81 to 57, and of diarrheal diseases, from 168 to 358. The number of deaths from diphtheria has not during any previous year fallen so low since 1889. The actual number of cases of this disease which were reported was 618. There is no previous record of any year with but a single death from scarlet fever. He says while it is not entirely safe to base conclusions upon this improvement in the death rate for a single year, yet its coincidence with the closing of a very considerable number of surface wells; with the replacement of more than a thousand box-privies by water-closets, and the proper drainage of the premises: and with a closer supervision of the milk supply is very suggestive of some relation of cause and effect, and possibly justifies us in expecting still further improvement in the future. The present fall in the typhoid fever death rate is especially satisfactory, as it had continually increased since 1887. The death rate from this disease for the past year (.53 per thousand) is the lowest since 1884, and is considerably lower than that for the past twenty-two years (.64). The number of deaths from tuberculosis was 858, while during the preceding year there were 977. The number of deaths from suicide was 57, an increase of 9 over the corresponding figures for the preceding year, and an increase of 6, or almost 15 per cent. over the highest number previously recorded. The average number of suicides per annum during the past twenty-two years has been 17.2. The number of births reported was 4,573, which is probably at least one-third less than the number which actually occurred, owing to the carelessness of the physicians in making the returns.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from July 17 to 23, 1897.

First Lieut. Henry R. Stiles, Asst. Surgeon, so much of the order as directs him to report for duty, is amended so as to direct him to report for duty at Ft. Preble, Maine, relieving Capt. Henry S. T. Harris, Asst. Surgeon.

Capt. Robert R. Ball, Asst. Surgeon (Ft. Adams, R. I.), extension of leave of absence granted is extended until Oct. 15, 1897.

Capt. Marlborough C. Wyeth, Asst. Surgeon, upon the arrival of Lieut. Lewis at Ft. McPherson, Ga., will take station at Baltimore, Md., and assume the duties of attending surgeon and examiner of recruits, relieving Capt. W. Fitzhugh Carter, Asst. Surgeon. Capt. Carter will report Oct. 4, 1897, for examination as to his fitness for promotion, and on completion thereof ordered to Ft. Assiniboine, Mont., relieving Capt. George E. Bushnell, Asst. Surgeon. Capt. Bushnell, upon being thus relieved, ordered to take station at Boston, Mass., and assume duties of attending surgeon and examiner of recruits.

Capt. George McCreery, Asst. Surgeon, is relieved from duty as attending surgeon and examiner of recruits at Boston, Mass., and ordered to report at the Soldiers Home near Washington, D. C., for temporary duty, relieving Capt. Charles M. Gandy, Asst. Surgeon.

Capt. Walter D. McCaw, Asst. Surgeon, upon the arrival of Capt. Wells at Ft. Ringgold, Texas, is relieved from duty at that post, and ordered to Ft. Thomas, Ky., for duty.

First Lieut. Benjamin Brooke, Asst. Surgeon, is relieved from duty at Ft. Thomas, Ky., and ordered to Army and Navy General Hospital, Hot Springs, Ark., for temporary duty at that hospital.

Capt. Frank R. Keefer, Asst. Surgeon, is relieved from duty at Washington Bks., D. C., to take effect upon the expiration of his present leave of absence, and ordered to Ft. Sam Houston, Texas, for duty.

First Lieut. Alexander N. Stark, Asst. Surgeon, upon the arrival of Capt. Keefer at Ft. Sam Houston, is relieved from duty at that post, and ordered to Washington Bks., D. C., for duty.

Capt. Charles M. Gandy, Asst. Surgeon, upon the arrival of Lieut. Stark at Washington Bks., is relieved from duty at that post, and ordered to Ft. Mason, Cal., relieving Capt. George M. Wells, Asst. Surgeon. Capt. Wells, on being thus relieved, ordered to Ft. Ringgold, Texas, for duty.

Capt. Henry S. T. Harris, Asst. Surgeon, on being relieved at Ft. Preble, is ordered to Ft. Washakie, Wyo., relieving Capt. Joseph T. Clarke, Asst. Surgeon. Capt. Clarke, on being thus relieved, is ordered to Columbus Bks., Ohio.

So much of paragraph 16, S. O. 162, A. G. O., July 16, 1897, as relates to the officers hereinafter named is amended to read as follows:

Capt. Frank R. Keefer, Asst. Surgeon, is relieved from duty at Washington Bks., D., C., to take effect upon expiration of his present leave, and ordered to Ft. Walla Walla, Washington, for duty.

Capt. William D. Crosby, Asst. Surgeon, upon being relieved from duty at Ft. Missoula, Mont., is ordered to Ft. Sam Houston, Texas, for duty.

First Lieut. Alexander H. Stark, Asst. Surgeon, upon arrival of Capt. Crosby at Ft. Sam Houston, Texas, is ordered to Washington Bks., D.C., for duty.

Capt. Henry S. T. Harris, Asst. Surgeon, upon being relieved from duty at Ft. Preble, Maine, by First Lieut Henry R. Stiles, Asst. Surgeon, is ordered to Ft. Washakie, Wyo., for duty, relieving Capt. Joseph T. Clarke, Asst. Surgeon.

Major William C. Shannon, Surgeon (Jackson Bks., La.), leave of absence granted on surgeon's certificate of disability is extended three months on surgeon's certificate of disability.

Major Paul R. Brown, Surgeon (Ft. Hamilton, N. Y.), ordered to report to Col. Charles C. Byrne, Asst. Surgeon-General, president of the Army retiring board, appointed to meet at Ft. Columbus, N. Y., for examination by the board.

First Lieut. William E. Richards, Asst. Surgeon, is relieved from duty at Ft. Grant, Ariz., and ordered to report Sept. 20, 1897, for duty at Ft. Apache, Ariz.

First Lieut. William F. Lewis, Asst. Surgeon, upon the arrival of Lieut. Richards at Ft. Apache, Ariz., is ordered to Ft. McPherson, Ga., for duty.

Capt. William H. Arthur, Asst. Surgeon, will be relieved from duty at Ft. Myer, Va., on Oct. 1, 1897, and ordered to Philadelphia, Pa., and assume duties of attending surgeon and examiner of recruits, relieving Capt. Rudolph G. Ebert, Asst. Surgeon. Capt. Ebert, upon being thus relieved, ordered to report Oct. 4, 1897, for examination for promotion, and upon completion thereof ordered to take station at Ft. Missoula, Mont., relieving Capt. William D. Crosby, Asst. Surgeon. Capt. Crosby, on being thus relieved, is ordered to Ft. Preble, Maine, relieving Capt. Henry S. T. Harris, Asst. Surgeon.

Capt. Charles M. Gandy, Asst. Surgeon, is granted leave of absence for two months and ten days, to take effect upon being relieved from temporary duty at the Soldiers' Home near Washington, D. C., and will, upon the expiration of leave of absence, report for duty at Ft. Mason, Cal.

PAMPHLETS RECEIVED.

Baltimore Medical College Annual Catalogue.

Biographical Sketch of Dr. J. S. Whitmire. Reprinted from "Physicians and Surgeons of America."

Blepharoplasty. By Chas. H. Beard, M.D. Paper, 16 pages. Illustrated. Reprinted from American Journal of Ophthalmology, June, 1897.

College of Physicians and Surgeons, Baltimore, Md. Announcement for 1897–98.

Complete Blindness from Bilateral Pressure on the Optic Radiation, Probably Due to Hemorrhage. By W. W. Reed, M. D. Paper, 8 pages. Reprinted from Colorado Medical Joural, April, 1897.

Georgetown University, Washington, D. C. Announcement for 1897-98.

Kansas Medical College, Topeka, Kansas. Announcement for 1897–98.

National Songs. By Abraham Coles, A.M., M.D., Ph.D., LL.D. Paper, 16 pages. Newark, N. J.

Niagara University, Medical Department. Announcement for 1897-98.

St. Louis College of Pharmacy. Announcement for 1897-98.

Squint; with Special Reference to its Surgery. By Charles H. Beard, M.D. Paper, 16 pages. Illustrated. Reprinted from Journal of the American Medical Association.

Standard of Medical Education. By J. M. Bodine, M.D. Paper, 12 pages. Reprinted from American Practitioner and News, June 26, 1897.

Treatment of Alcoholism. By J. M. French, M.D. Paper, 16 pages. Reprinted from Medical and Surgical Reporter, 1896–97.

University College of Medicine, Richmond, Va. Announcement for 1897–98.

University of Louisville, Ky. Announcement for 1897–98.

University of Michigan, Medical and Surgical Department. Announcement for 1897-98.

Trade Pamphlets.

Lacto-peptone Calendar. New York Pharmacal Assn., Yonkers, N. Y.

Notes on the Treatment of Anemia. M. J. Breitenbach Co., New York City.

Tri-Elixiria. Tri-Elixiria Remedy Co., Memphis, Tenn.

CHANGE OF ADDRESS.

Boyer, J. S., from 3765 Rhodes Ave. to 391 45th St., Chicago.
Curtis, G. L., from 30 W. 59th to 7 W. 58th St., New York, N. Y.
Caldwell, J. R., from Greenville to State Quarantine Station, Marcus Hook, Pa.
Dewey, C. R., from Mattawan to Bangor, Mich.
Felty, J. W., from Abilene, Kan. to 910 Main St., Hartford, Conn.
Fanning, George J., from Lame Deer, Mont., to Red Lake, Minn.
Hunt, J. S., from 558 W. 63d St. to 440 Englewood Ave., Chicago.
Moore, T. W., from Everett, Pa., to 1048 3d Ave., Huntington, W. Va.
McBride, J. H., from Washington, D. C., to Hartland, Wis.
Noyes, A. A., from 2109 to 1205 N. 20th Ave., Minneapolis, Minn.
Peters, J. B., from Perrysburg to Macy, Ind.
Prentiss, D. W., from Washington, D. C., to Haven, Maine.
Stevenson, A. F., from Ashland Boul. to 535 Washington Boul., Chicago.
Trumbower, M. R., from Sterling, Ill., to 3351 Bert St., Denver, Colo.
Wright, J. C., from Des Moines, Iowa, to 225 Dearborn St., Chicago.
Weld, W. H., from Council Bluffs, Iowa, to Deadwood, S. Dak.

LETTERS RECEIVED.

Alkaloidal Clinic, Chicago.

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ORIGINAL ARTICLES.

RHEUMATOID ARTHRITIS, WITH REPORT OF TWO CASES.

Presented to the Section on Practice of Medicine, at the Forty eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa, June 1 4, 1897

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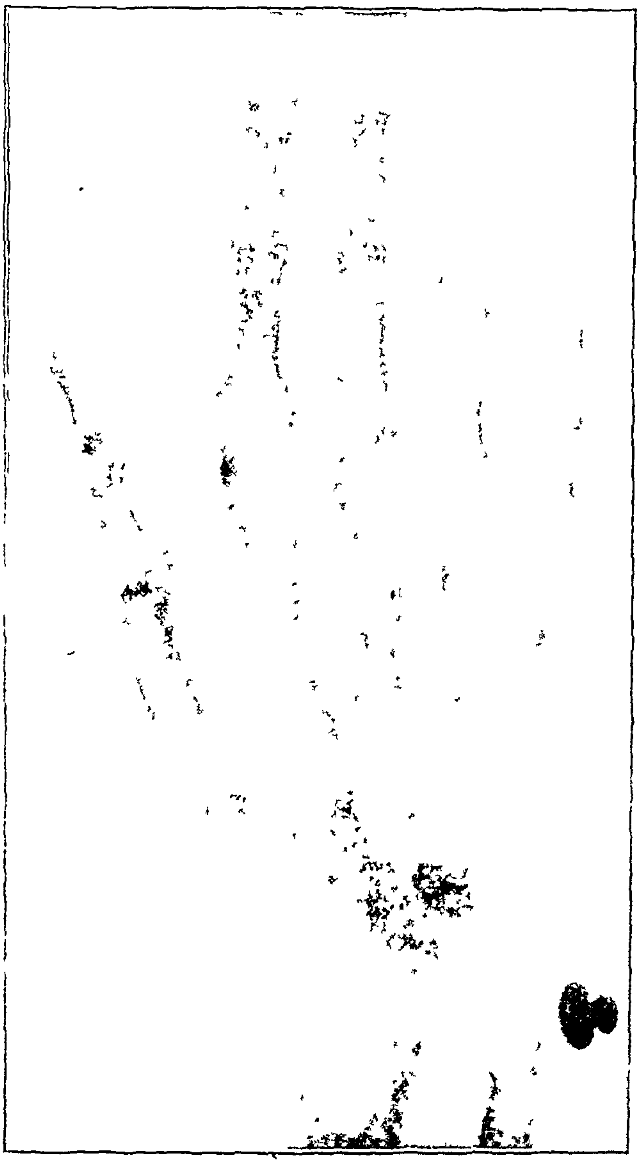
PHILADELPHIA, PA

Despite the increasing literature on the subject of rheumatoid arthritis, the ultimate nature of the disease is far from clearly established, and even at this date we do not positively know just what affections of the joints should be grouped under the name. Nothing so clarifies the nosographic atmosphere as the discovery of causes—only through causal knowledge are we able to separate diseases that are similar and to assign to them a definite place in our systems. How easy it has become for us to define typhoid fever, diphtheria, and malaria, since their etiology has been determined. As we are still unable to point out the true cause of rheumatoid arthritis, it would, I believe, be better, following the example of Virchow, Garrod, and others, to use the phrase *arthritis deformans*, as that expresses the most prominent symptom and is non-committal on the score of pathogenesis.

Morbid anatomy.—The lesions produced by arthritis deformans vary considerably with the period or stage reached by the disease. The earliest changes probably always take place in the articular cartilage, and consist in a perpendicular fibrillation of the hyaline matrix of the surface layers. Almost synchronous with this is is a proliferation of the cartilage cells. Softening and fatty processes develop later and cause erosion and disappearance of the cartilage, especially at the lateral parts of the joints, where pressure is greatest. Islands of cartilage may remain and undergo thickening. In the deeper parts of the cartilage ossification may take place. Very marked alterations also affect the synovial membrane and capsular ligament, which become irregularly thickened and distended from the formation of numerous villous processes. Chondrification and even ossification may take place in the latter, and by detachment free bodies may be formed. The bone changes are very striking. In those places where the cartilage is eroded, friction leads to polishing of the exposed bone. In the subchondral areas bone absorption takes place—here it can not be due to friction—and the amount of destruction may reach astounding proportions. While all these changes are in progress new bone is being formed in other parts of the joint, and thereby extensive irregular osteophytic outgrowths are produced, which may entirely surround the joint and contribute to the enlargement. Partial or complete ankylosis, not rarely in strange positions, is a common terminal result.

At times the disease is strictly limited to parts of the articular surfaces, as in the cases reported by Bennett.[1] In one of these the scapulo-humeral joint was normal, but the lesser tuberosity of the humerus was ground down to its base and the inner lip of the bicipital groove was gone. In a radius, from another case, the depression for the scaphoid bone was cut clean away, while the fossa for the semilunar bone was free from disease.



Next to the arthritis the most important morbid change is an atrophy of the muscles in the neighborhood of the affected joint. The muscles are paler than normal, and microscopically are seen to be smaller, but their striation is preserved.

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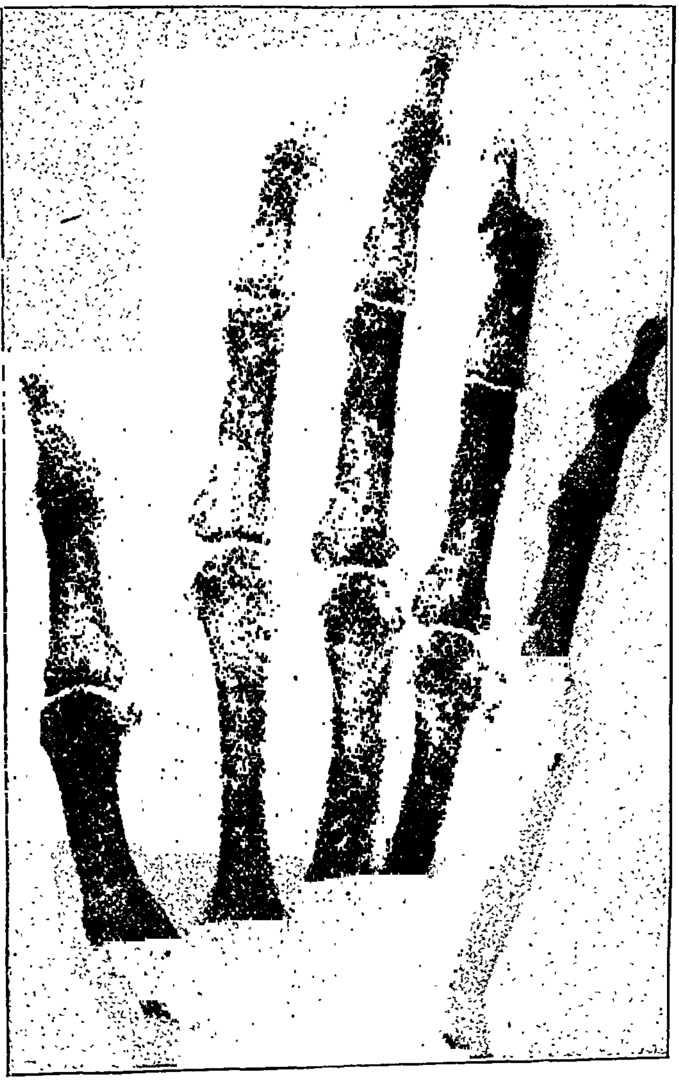
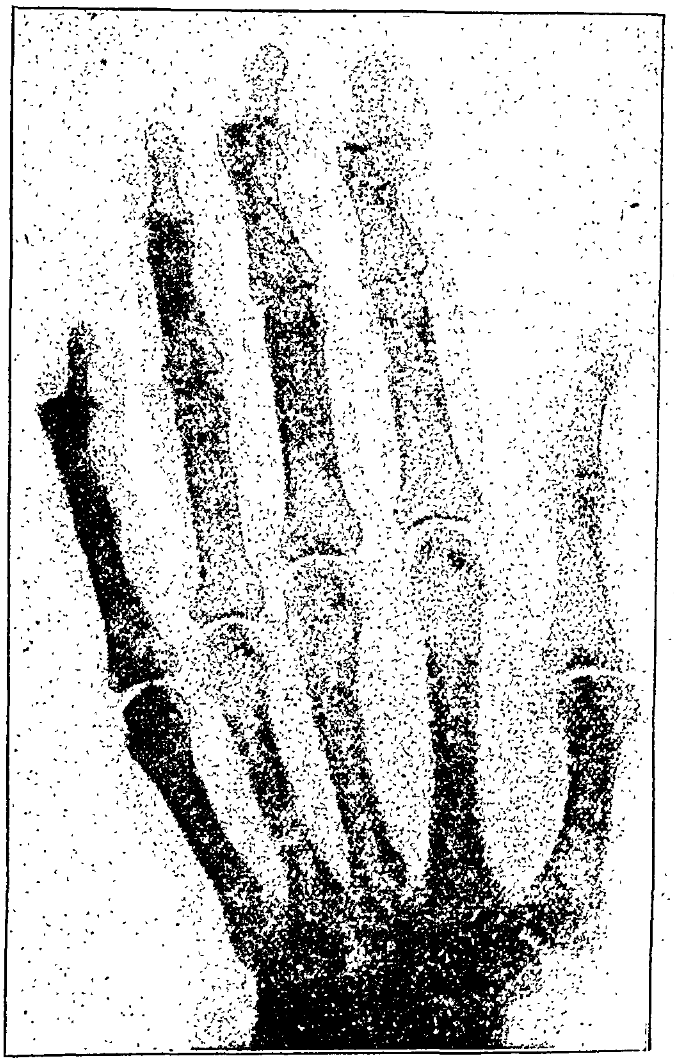
[1] Bennett. Dublin Jour Med [illegible]

The symptoms and manifestations of arthritis deformans permit us to distinguish several clinical varieties which, following in the main the systematic writers, I would designate as follows: 1. *Arthritis deformans* of severe type. 2. *Arthritis deformans* of mild type. 3. *Localized form,* and perhaps, 4. *Arthropathy,* or that form associated with gross lesions of the nervous system. Although it is customary to separate sharply the severe form from the mild, we must admit that there are many gradations bridging the chasm between the mildest, Heberden's nodes, and the severest, the terribly deforming variety.



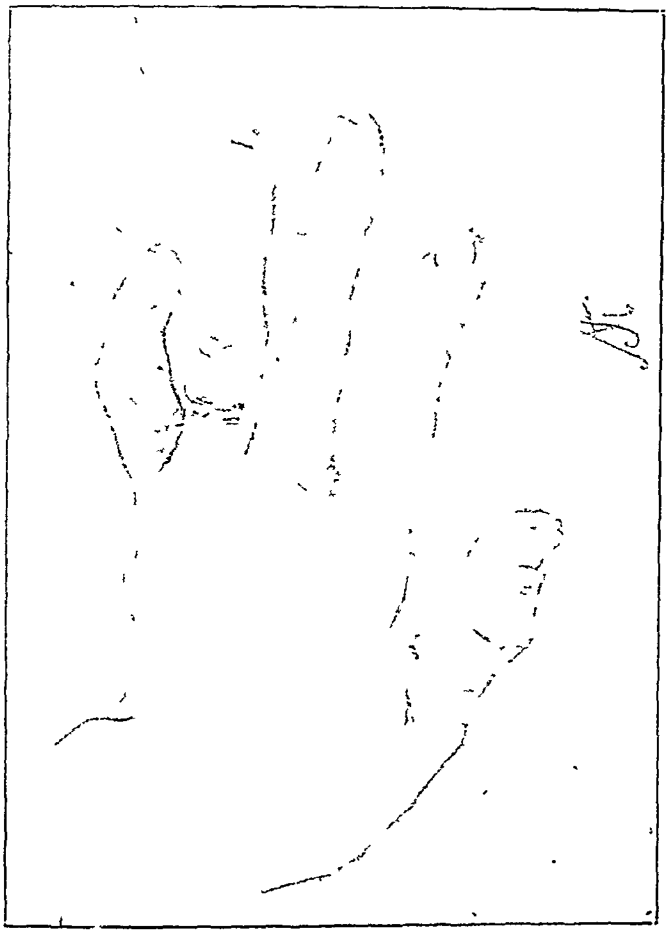
Time is too brief to enter into the symptomatology of the various forms, but I would call your attention to the revelations of the Roentgen ray when employed in the study of this disease, by passing around these radiographs kindly made for me by Dr. Stern. It may not be out of place to say a few words about the nodes to which Heberden called attention in the following words: "What are those little hard knobs (*digitorum nodi*) about the size of a small pea, which are frequently seen upon the fingers, particularly a little below the top near the joint? They have no connection with the gout, being found in persons who never had it; they continue for life, and being hardly ever attended with pain or disposed to become sores, are rather unsightly than inconvenient, though they must be some hindrance to the free use of the fingers." (Commentaries, 1818, p. 109.) The affection gives rise to an enlargement of the terminal joints of the fingers, which may be spindle-shaped or abruptly nodular; in time, deflection of the last phalanx occurs, and, differing from the hand as a whole, which is tilted toward the ulnar side, it takes place toward the radial side. There is also a slight rotation. It is commonly stated that the thumb is not affected, but while, as a rule, it escapes, it does not always do so, and I have recently seen two cases in which it was involved. Heberden's nodes are found most commonly in women, and begin to develop at the menopause or later. They occur also at an earlier period before the catamenia have ceased



I show a pencil sketch of a hand (p. 259) the seat of early rheumatoid changes, from a woman of 40, in whom the disease developed two years ago, a month after an attack of diphtheria. I may add that the patient has had three attacks of articular rheumatism, the last fifteen years ago, and has suffered for a number of years from exophthalmic goiter. Menstruation is regular.

Although the disease, when it manifests itself as Heberden's nodes, shows usually no tendency to spread, I have seen it do so in some cases that were under 50 years of age when the malady commenced. (In one patient it was associated with deformity and stiffening of the wrists.) For this reason I have ventured to assert that we can not separate Heberden's nodes sharply from the other forms, and am of the opinion that they are a manifestation of the same disease and are not a variety of gout. As we see the condition in aged women and men, it is generally not progressive.

Heberden's nodes are very common in women who have done much washing, but I have seen them in those who have never toiled at the wash-tub.



When we come to consider the pathogenesis of the disease, we are confronted by a multiplicity of theories that is quite perplexing. They may be classified in the following way:

1. *That the disease is a form of chronic rheumatism*, a theory maintained by Tooth, Charcot, Mitchell Bruce and others. Against this may be urged: *a*, the rarity of endocarditis and other visceral lesions in arthritis deformans; *b*, the exciting causes of true rheumatism can generally not be traced in the typical severe form of the other disease; *c*, the frequency of the affection in women, the reverse being true in the case of rheumatism; *d*, the usual failure of the salicylates.

2. *That the disease is a product of the mixture, in varying proportions, of the inherited taints of rheumatism and gout*, causing in one case the gouty element, in another the rheumatic element to preponderate.

3. *That it is allied to gout and is due to uric acid*, which causes the joint changes, but is again dissolved out, while in gout it remains in the joints (Haig). The view that arthritis deformans is a modified form of gout has long been abandoned. The factors leading to the development of the two diseases are totally different; the preponderance of the female sex, the absence of tophi, the occurrence of arthritis deformans in early childhood, all serve to distinguish it from gout.

4. *That it is of nervous origin.* In favor of this are the symmetric distribution of the lesions, the muscular atrophies, the absence of visceral lesions, and the general *bien-être* of the patients, which in a sense corresponds with that seen in many cases of chronic spinal sclerosis. The nervous theory appears under several phases: *a*, It has been held, as suggested many years ago by J. K. Mitchell, that arthritis deformans is primarily *a spinal disease*. The great resemblance between the joint changes of rheumatoid arthritis and the arthropathies of tabes dorsalis and syringomyelia might seem to lend support to this view; however, in true rheumatoid arthritis the spinal cord, when examined, has always been found normal. Yet there may be nutritive changes in the cord that elude our search. *b*, The disease has been ascribed to a *peripheral neuritis*, largely on the strength of the changes found (Pitres and Vaillard) in the nerves contiguous to the joints, but these neuritic phenomena are more likely consequential or at the most synchronous rather than antecedent, and accompany arthritic muscular atrophies of other kinds. *c*, The disease is a *trophic affection*—a trophoneurosis. Under the vague head of trophoneuroses we are accustomed to class a number of affections, such as scleroderma, Raynaud's disease, acromegaly, characterized by marked structural changes, for which we have no satisfactory explanation. The nervous system undoubtedly governs the nutrition of all parts of the body, whether by reason of its power to regulate the blood supply or through the exercise of a direct trophic influence, must for the present be left unanswered. It is conceivable that, as the joints are under the control of the same forces, a disturbance of the latter might bring about nutritional changes in the articular structures. But the factor that underlies the nervous disturbance remains hidden. *d*, *Uterine or utero-ovarian irritation* acting reflexly through the nervous system (Ord, Armstrong).

5. *That it is infectious.* This view was first promulgated by Schueller (Langenbeck's *Archiv f. klin. Chir.*, 1892, Bd. 45, Heft 1; *Berlin. klin. Woch.*, 1893, Sept. 4), who found a bacillus in the joints with cultures of which he was able to produce articular changes in animals quite analogous to those observed in man. More recently Bannatyne, Wohlmann and Blaxall (*Lancet*, April 25, 1896) have found a peculiar bacillus, both in the joints and at times in the blood, with which, however, they were not successful in producing unequivocal joint changes in animals.

I have given these theories at some length, with comments upon some, but in the end it can only be said that our present knowledge does not warrant a final decision on the question of the pathogenesis of arthritis deformans.

It is unnecessary to enter into a detailed account of the symptoms of the severe form, that associated with marked deformity and great restriction in mobility of the joints. I give here a summary of two cases, as they illustrate the symptoms quite well:

Case 1.—Mrs. F., whom I saw with Dr. Clarke of Philadelphia, was born in Pennsylvania, of Irish parents. She has been married sixteen years and has had eight children, the youngest of whom is 5 years old. The family history is exceptionally good. Mrs. F. was never very strong; menstruation began at 12 years of age, and was always regular except when under rupted by pregnancy and lactation. From her 17th to 38th year, the latter being her age at the time the present disease began, she was subject every spring and fall to peculiar weak spells characterized by palpitation and a feeling of debility. Ten years ago she had an attack of acute cystitis. The *arthritis deformans* began five years ago, during her last pregnancy, with pains, soreness, and stiffness in the cervical vertebræ, and on the evening before her confinement the left shoulder and arm became similarly affected. During the puerperium the other joints were involved in the following order: Right shoulder, right knee and ankle, left knee and ankle, and by the end of the sixth week both elbows, wrists, and hands. She also had slight stiffness, soreness, and tenderness in the temporo-maxillary joints. Pain has disappeared in the joints most severely diseased. Her present condition is as follows: The left elbow is somewhat enlarged, especially on the inner side, and slightly flexed; pronation and supination are restricted, and there is distinct grating on movement. The left wrist is quite stiff, backward motion being particularly limited; grating is also present. The natural contour of the wrist has disappeared, and the forearm, wrist, and hand present a continuous, unbroken outline. The back of the hand is sunken in, and the knuckles are unduly prominent. There is atrophy of the interossei and of the thenar and hypothenar eminences. Preternatural mobility of all the knuckle joints, including the metacarpophalangeal joint of the thumb, is present. The middle joints of the fingers are slightly enlarged and tender to the touch; the last joints are apparently free from disease, but with that of the thumb are hyperextended. The right elbow is enlarged and partly flexed; rotation and supination are more limited than on the left side, and the wrist is completely ankylosed and immovable. The right hand is almost like the left, except that the hyperextension of the last joints is confined to the middle and ring fingers, and is but slight. There is marked roughening and grating of the knuckle joint of the right index and enlargement of the head of the metacarpal bone. The finger is so loose that it can be rotated in a considerable arc on its longitudinal axis. Pain is absent in the joints. The nails of both hands tend to be longitudinally ridged. The cervical spine is affected, the rotary movements of the head being embarrassed. There is impaired mobility of both shoulder joints.

Lower extremities.—The right knee is enlarged and its motion impaired, especially extension. The patella does not float; the synovial capsule is thickened. Motion gives rise to pain and to cracking audible at a distance. The movements of the right ankle are impaired; the toes are stiff, but not markedly deformed. There is slight edema of the leg. The left knee is less affected than the right; the edema of the foot and leg is marked.

Upon moving the larynx a loud, rasping and grating sound is produced by the friction of the roughened cartilages on each other; the voice is somewhat hoarse. The joints of the lower jaw are slightly stiff and the mouth can not be opened to its full width. The thyroid gland is not enlarged. Hands and feet are cold and moist; sweating of other parts, the patient says, is rare. There is no pigmentation except on the instep, ankle joint, and lower part of the leg; its appearance was preceded by a severe burning sensation in the pigmented areas. The heart sounds are normal, the pulse 112. The patient enjoys fair general health and has a good appetite. She has used crutches for a year, but walks with great difficulty and is absolutely unable to climb stairs. She is gradually getting shorter in height on account of increasing flexion of the knees. Blood examination: hemoglobin 80 per cent.

Of special interest in this case are the involvement of the laryngeal cartilages, the absence of pain in the articulations most extensively diseased, and the great resemblance which the joints bear in their appearance to the arthropathies of spinal diseases. It is worthy of note, too, that the arthritis began during pregnancy.

Rheumatoid arthritis, like diabetes mellitus, appears to be more baneful the younger the patient attacked. In adolescence and early adult life recoveries are rare. The following case illustrates the possibility of arrest and partial cure of the disease:

Case 2.—Miss Martha M., a milliner, 23 years of age, was always healthy, fond of society, and a passionate dancer. Constipation and occasional headaches were her only ailments. The family history is of interest, as the mother is a sufferer from a rather severe form of rheumatoid arthritis—the disease came on at middle life and began with the formation of Heberden's nodes. The father is afflicted with chronic bronchitis and emphysema, and is subject to digestive disturbances, probably lithemic in nature. In the summer of 1893 Miss M. visited the World's Fair, and very injudiciously wandered about the grounds every day until almost exhausted. On her return she went to Atlantic City, and one day, September 4, while bathing had a chill, but recovered quickly and walked with friends until very tired. On the following morning she had a peculiar pricking feeling in the bottom of both heels, which abated somewhat the next day, but did not entirely disappear. Very soon it spread to the balls of the toes on the right foot and later also to those of the left. On Sept. 25, 1893, having stood at the ironing-board for two hours, the pain in the feet became excruciating, and she felt as if she were "walking on hair-brushes." She also experienced acute darting pains in the region of the heart, which somewhat hampered breathing. She was compelled to remain in bed for some time, but had no fever. The metacarpophalangeal joint of the right thumb and the right wrist now became diseased, and were swollen and stiff on motion. She had to be carried down stairs, but was for some time able to walk up stairs unaided. When lying down or sitting with the feet elevated she had no pains. From October 14 she was in bed three weeks, but without any benefit, and at the beginning of 1894 the great-toe joints, the ankles, and the knees became swollen and stiff. She was unable to stand on her feet; it seemed to her as if they were terribly bruised and unable to bear the weight of her body. Her appetite was good and apart from the joint trouble she had no complaint except transitory precordial pains.

I saw the patient at her home March 6, 1894. She was a tall, pale, blonde young woman, fairly well nourished and refined. The left ankle was swollen, but there was no pitting, tenderness or redness of the skin. Both feet seemed to be unnaturally thick, yet were well arched; severe pain was caused by compressing the toes at the heads of the metatarsal bones. The metacarpal joint of the right thumb was greatly enlarged, through an increase in size of the head of the metacarpal bone. Abduction of the thumb was restricted. There was neither tenderness nor spontaneous pain; considerable atrophy of the first dorsal interosseous muscle existed. The grasp of the right hand was almost *nil.* The right wrist was enlarged but not painful or tender; pronation and supination as well as flexion of the right forearm were greatly limited. A soft blowing systolic murmur was audible at the apex of the heart. The bowels were so constipated as to yield only to enemata.

The treatment first employed consisted in alternate hot and cold douches; they were of no benefit. Counter-irritation was also fruitless. On March 14 she had a febrile attack, during which the heart murmur grew louder, gallop-rhythm was superadded, and a soft systolic murmur became audible at the aortic cartilage. Dr. S. Solis-Cohen saw her with me at this time. Under the use of ammonium salicylate the acute symptoms rapidly vanished, but despite various forms of local and internal medication the joint disease progressed, spreading from the ankles, which were both involved, to the knees. The latter became irregularly enlarged and painful, and assumed a state of flexion, but were neither red nor tender to the touch. By May the flexion was very pronounced, the patient being unable to stretch the legs. I then applied an extension apparatus, such as is used for fractured thigh, to both legs, and was able to secure complete extension in about six weeks.

The patient's temperature was as a rule normal or but slightly elevated; the pulse was rapid, 96 to 100; the extremities, particularly the hands and feet, cold and clammy. At long intervals slight febrile movements occurred, rarely lasting more than twenty-four to forty-eight hours. The tongue was nearly always coated, but the appetite and the digestion were usually good. The knee jerks were exaggerated, and there was ankle-clonus; the plantar reflex was present. Sensibility to touch, heat, and cold was not disturbed. The atrophy of the first dorsal interosseus of the right hand grew perceptibly greater; gradually, too, the power of movement in the hand and arm became so restricted that the patient could not comb her hair, and had to feed herself entirely with the left hand. The urine was variable, but usually had a high specific gravity, 1028–1036; once it was only 1011; on one occasion it reduced bismuth subnitrate and turned Fehling's solution green without precipitation; it was free from albumin, and often alkaline in reaction.

Toward the end of June a marked but transitory improvement occurred. In July the dorsal portion of the spine became stiff and painful and the trunk movements restricted. A blister was applied and proved very efficacious; the disease did not spread and perfect suppleness gradually returned. In August the patient's condition was very bad; all the affected joints, feet, ankles, knees, right wrist and hand, were stiff; the skin over the small joints was cyanotic; and she complained of shooting pains in the joints and stiffness of the neck. The right index and right thumb were preternaturally movable, and distinct grating could be heard and felt. In September the darting pains attacked the left thumb and an enlargement of the metacarpophalangeal joint followed. About this time Dr. Pepper saw her with me and agreed as to the nature of the case. At his suggestion, hypodermic injections of the double chlorid of gold and sodium were given twice daily. Later on I placed the patient on thyroid extract, but almost immediately alarming toxic symptoms, those of thyroidism, developed, and the remedy had to be abandoned. Throughout these months she was taking tonics, cod liver oil, arsenic, syrup of the iodid of iron, etc., and also received inunctions of cod liver oil; occasionally salicylates were given; faradic electricity was also tried. By November the legs had again become flexed and extension was reapplied and kept on for two and a half months. Bone-marrow was administered for a few weeks in 1895, but without practical result. The disease continued to advance—the right shoulder became involved, and atrophy of the shoulder and scapular muscles occurred. The circumference of the right arm at the axilla was 3 cm. less than that of the left. At no time was the patient's condition influenced in the slightest degree by change in the weather.

The use of strontium bromid was now begun and, whether *propter hoc* or *post hoc*, the patient began to improve; in April, 1895, she was able to walk around the bed by holding on to the railing; on July 1 she walked out into the yard, but the following day had a relapse and was again confined to bed, internal treatment being continued and systematic massage being given. Improvement now became continuous and progressive, and in November she ventured out and walked eight city squares the first day. Last year and this spring she again worked at her trade, and recently consulted me as to the advisability of getting a bicycle. She tells me she has almost forgotten her long illness, the vestiges of which are, however, unmistakable, though they do not trouble her any. The heart murmur has entirely disappeared; there is now only slight accentuation of the second aortic sound; the pulse is regular but a little rapid. Motion in the shoulder, knee, and ankle joints is perfect; the deformity of the right wrist has nearly disappeared, and that of the right thumb is greatly lessened. Abduction of the thumb is, however, still restricted, and there is occasional crackling in the knee joints when she rises from the sitting posture. The ankle clonus can no longer be elicited.

To recapitulate: A young, healthy woman, with a family history of rheumatoid arthritis and lithemia, was taken ill after a sea bath with peculiar pains, soon followed by joint enlargement, destruction of cartilage, atrophy of the muscles, and contraction of the joints, all fairly symmetric. A heart murmur was present; the knee jerks were exaggerated, and there was ankle clonus. After continuous confinement to bed for seventeen months, improvement set in and was followed by a practical recovery.

The treatment was so varied and manifold that definite conclusions can not be drawn from it, but I beg to call attention to the following points: 1. The importance of preventing contractures and the efficient value for this purpose of the extension apparatus. I am convinced that had it not been applied the patient, although the disease is arrested, would now be unable to stand or walk. It has also occurred to me that an analogous device for the arms in certain cases might be of great service. 2. From the apparent effects of strontium bromid in this and other cases I am led to the view, still tentative however, that it has: *a*, an influence over the pains; *b*, perhaps a power to limit the progress of the disease.

A Characteristic Symptom of Lesions in the Posterior Cranial Fossa is the peculiar dyspnea whenever seated upright, relieved by resuming the reclining position. The breathing becomes very slow, deep, snoring, and interrupted by frequent pauses half a minute long. Two new observations are described in the *Deutsche Med. Woch.*, of June 10. One was caused by a tumor in the fossa, left of the basis cerebri, the other by thrombosis arteriæ basilaris, both fatal.

THE CARDIO-VASCULAR AND RENAL RELATIONS AND MANIFESTATIONS OF GOUT.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY N. S. DAVIS, JR., M.D.

CHICAGO.

That gout and its varied complications are due to toxemia, possibly to uric acid or to other substances which vary in the blood as it does, is generally admitted. Interstitial nephritis, the common renal complication of gout, is so well understood that I need not dwell upon it in this discussion. There are a few points, however, in the course of development of the lesion to which I wish to call attention, for in most text-books and monographs sufficient emphasis is not placed upon them.

It is, of all renal diseases, the most insidious in onset, and it is intermittent in progress. The kidneys are attacked now and again by uric acid or the toxic agent of gout in microscopic areas, which produce active lesions of almost microscopic size. It is true when we examine a kidney which illustrates interstitial nephritis that we find almost the whole parenchyma involved to a greater or less extent, but this extensive lesion has been slowly developed and is due to the confluence of minute changes which have been wrought intermittently. I have spoken of active lesions of microscopic size. These result in a destruction of glomeruli, tubules and arterioles, and when this destruction has been wrought the scar tissue which is left is inert and represents only a loss of renal function.

If the renal changes of gout are looked at in this way they will explain in part the symptomatology of the affection. As the glomeruli are attacked one after the other, not all of them or most of them simultaneously, and as those attacked today may atrophy and become useless before others are involved, the filtration of water from the blood will be modified only by the very few Malpighian bodies actively affected at the time. Therefore only traces of albumin appear in the urine, in marked contrast to the large quantities which appear when the kidneys are involved in parenchymatous inflammation. The atrophic and destructive changes which involve the renal epithelium cause a degree of renal insufficiency to slowly develop. The endarteritis which often obliterates the caliber of the arterioles and the destruction of capillaries in the diseased areas increases blood pressure. This causes the elimination of abnormally large amounts of urine by those glomeruli and renal tubules which are as yet unaffected and healthy.

The insidious and intermittent development of these lesions explains fully the pathognomonic symptoms; polyuria, with traces of albumin, few renal casts, diminished elimination of urinary solids and high arterial tension.

High arterial tension in gout is due in part to uric acid or other toxic substances in the blood which increase the tonus of the arterioles. The destructive agent, whatever it is, that attacks the kidneys produces also arterio-sclerosis or atheroma in the arteries of other tissues. The thickened and rigid walls of the arteries impede circulation, which stimulates the heart to contract more forcefully. This is a second factor producing increased blood pressure. Arterio-sclerosis in the kidneys, in the central nervous system, in the various tissues of the body, often produces serious or fatal complications in those who have a gouty diathesis. Because the walls of arteries are weakened by disease and stretched by blood under unusual pressure aneurysms sometimes develop in the smaller or larger arteries. The smaller ones are frequently the cause of apoplexy.

The commonest and most characteristic cardiac change associated with gout is hypertrophy. The left ventricle is chiefly thickened, although when the heart is hypertrophied both ventricles are affected more or less. The cardiac hypertrophy is, without doubt, due to increased work which the heart has to do because of the destruction of some arteries and capillaries and diminished caliber and rigidity of others. These changes in the arteries generally necessitate compensatory cardiac hypertrophy and as the arterial changes become more widely diffused, little by little and intermittently, the cardiac hypertrophy slowly increases so long as the nutrition of the individual is good. Ultimately cardiac compensation becomes impossible, cardiac fatigue, dilatation and exhaustion develop. Endocarditis and pericarditis almost never complicate gout. In this respect the contrast with articular rheumatism is striking. It is true that deposits of urates have been found on the valves in gout, but such cases are extremely rare and exceptional.

These various changes in the kidneys, arteries and heart may occur in podagra or characteristic gout, but are more frequently seen independent of it and often themselves constitute the most marked manifestations of a gouty diathesis.

Treatment, to be of value, must be hygienic. It will aim to prevent the accumulation in the blood of those substances, uric acid or whatever they may be, which produce the vascular, cardiac and renal changes. Necessarily treatment must be continued for a long time. By removing the cause of these complications of gout their progress may be brought to a halt and a patient may be made comparatively comfortable. It is impossible to restore renal tubules and glomeruli which have been destroyed. But it is rare that the renal changes are so extensive that they, of themselves, will prove destructive of life. In almost every instance, when the disease is recognized, enough healthy renal tissue exists so that if its cause is removed the kidneys will continue to do their work fairly well, and maintain a condition of physiologic health even though they are anatomically much deformed. The same can be said of the inhibition of the growing cardiac and vascular lesions by suitable treatment.

CHRONIC INFLAMMATION AND ULCERATION OF THE DUODENUM, WITH RESULTANT REFLEXES.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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The duodenum is abundantly supplied with arterial blood. Its veins empty into the portal vein, any obstruction of which, either from the lungs, liver or heart, produces passive congestion of this organ. Its nervous connection with the brain is by branches from the par vagum and with the spinal cord by branches from it, with the sympathetic system by branches from the solar plexus, and with the thoracic plexus by the splanchnic nerve. It has within its structure the plexus of Meisner and Auerbach. It is studded with the glands of Lieberkühn and Brunner, and with solitary glands as well as lymphatics. It is the physiologic receptacle of the chyme which is often perverted by functional disease of the stomach or overrepletion, either of which may be highly irritating to the duodenum. It also receives the secretion from the liver and pancreas and performs, possibly, as important a function in the digestive process as does the stomach, and is as frequently subject to physiologic hyperemia. Indeed, there is no structure in the human body which is so often exposed, both internally and externally, to as many varieties of disease-producing forces as the duodenum. It is directly connected with the brain, spinal cord and sympathetic system as no other portion of the alimentary canal is, which fact makes it the great reflex center of this canal.

Careful analysis of a large number of cases of reflex irritation supposed to have originated at other points of this canal, disclosed the fact they always originated in the duodenum. It is far more frequently diseased than one would infer from the scant literature on the subject.

In my clinic at the University Medical College of Kansas City, Mo , 10 per cent. of the cases had chronic inflammation and ulceration of the duodenum. In my private practice the percentage is about the same. As compared with chronic gastritis—or so-called catarrh of the stomach—it is far more frequent. In 17,000 clinical patients I found 666 of duodenal disease, and only one case of chronic gastritis and one of ulcer of the stomach. In fact, I never saw a case of chronic inflammation of the stomach, excluding chemic and other irritants as causative, that did not proceed by extension from inflammation of the duodenum. It is most often found between the ages of 20 and 40, but it frequently occurs in childhood, the result of enterocolitis or cholera infantum. It occurs in females more often than in males because of their more numerous reflexes.

Typhoid fever is the most frequent cause. Other causes are phthisis pulmonalis, functional disease of the stomach, croupous dysentery by extension, the exanthematous fevers, particularly rubeola, acute inflammation of the organ, passive congestion, burns, acute inflammation associated with pneumonia, which obstructs the bile ducts, producing what the older writers called bilious pneumonia, and reflex irritation, the result of disease of the uterus and appendages.

Brown-Séquard asserted years ago that reflex irritation was sufficient to arrest secretion and nutrition, and produce inflammation. This fact is beautifully illustrated in severe burns of the skin, which, by reflex irritation, result in acute inflammation of the duodenum, and *vice versa*, irritation of the duodenum will produce inflammation of the skin, as in urticaria and eczema. In childhood we have a clear example of the effect of irritation of the intestinal canal, producing reflex irritation of the nerve centers, attended with functionary changes in the blood of these centers, thereby producing convulsions.

Esquirol, Pinel, Cullen and others believed and taught that gastro-intestinal irritation was a frequent cause of insanity, yet they were not able to give a reason why this should be so. In the light of modern science and our knowledge of reflex irritation producing fluctionary changes in the blood, they were not far wrong, as is illustrated by the following case:

Case 1.—June 10, 1875, Mr. P., aged 35, no hereditary tendency to insanity, a well-to do farmer, had always enjoyed excellent health until three years before, when he had an attack of typhoid fever with serious bowel complications; during convalescence there was no restriction in his diet, which had much to do in leaving him with a chronic inflammation and ulceration of the duodenum. In 1877 he presented himself to me for treatment. I found him suffering with melancholia, with suicidal tendency, dependent upon reflex irritation caused by chronic inflammation of the duodenum. I placed him under treatment for this disease. As soon as the irritation was controlled he began to improve, and so continued steadily until restored to health.

In the last twenty years I have treated seven other cases of insanity, the causes of which could be clearly traced to reflex irritation produced by disease of the duodenum. Four of these cases were the after-effects of typhoid fever; two of them were from functional diseases of the stomach, and the remaining one was from acute duodenitis, associated with pneumonia, which became chronic.

Epilepsy as caused by reflex irritation.—Statistics show, excluding traumatism, heredity and alcoholism as causative forces in producing epilepsy, more than one half of the cases of this disease begin in childhood. It is my opinion that a very large percentage is the result of reflex irritation caused by chronic inflammation of the duodenum, as is illustrated by the following case:

Case 2.—May, 1870, I was called to see a child 2 years old. *History.*—The previous summer, while teething, he suffered for six or seven weeks with entero colitis; for five or six weeks before I saw him he had been suffering from unconscious spells of *petit mal*; the day before he had *petit gravior.* Diagnosing epilepsy dependent upon reflex irritation caused by chronic inflammation of the duodenum, I placed him under treatment for this disease and he eventually recovered.

Case 3.—In November, 1880, I was consulted in regard to a child 8 years old, who had begun to have *petit mal* in July, 1880. The disease was now *petit gravior.* There was not sufficient history of intestinal disease to point in that direction for cause, excepting malnutrition, nor was there any hereditary history of epilepsy or neuropathic diathesis. January, 1881, the child died of broncho-pneumonia. Postmortem examination revealed two ulcers in the upper portion of the duodenum surrounded by zones of inflammation.

I have treated seventeen other cases of epilepsy, between the ages of 2 and 17 years, caused by reflex irritation excited by duodenal disease. Those I have seen during the first six months of the existence of the disease have recovered; one at the end of the second year recovered; of those in whom the disease had existed over three years only one recovered, the others were not benefited. I think it is fair and logical to believe that if the cases are seen early a large percentage of them can be cured; but when the epilepsy has existed for more than two or three years, although you may relieve the cause of the irritation, the fluctionary changes in the blood become a fixed habit, and is more difficult to treat than the primary cause of duodenal irritation; add to this the strong possibility of changes in the structure of the nerve centers, caused by perverted nutrition, the result of the functionary changes in the blood plus habit, and the case then becomes hopeless. In a large majority of the cases of duodenal disease the patient suffers more or less from neurasthenia, but there are cases in which it is the prominent effect of reflex irritation.

Case 1.—Age 34, female, married, mother of four children. Family history perfect; said to have had lacerated cervix uteri, for which she was operated on with the assurance that a cure of this would relieve her neurasthenia. This was in 1881; she was not benefited by the operation; had had typhoid fever in 1880. I saw her in 1883, when she had suffered from neurasthenia since the middle of 1881. I diagnosed chronic inflammation and ulceration of the duodenum with resultant reflexes. I placed her under a course of treatment and at the end of four months she had entirely recovered.

Pharynx and nasal cavities.—It frequently happens that we find pharyngitis and rhinitis associated with chronic duoduenal diseases. I report the following case: Four years ago Prof. J. E. Logan of the University Medical College of Kansas City, Mo., referred a case to me for treatment, with the statement that the rhinitis, which was attended with distressing sneezing, was caused by reflex irritation. On examination of the patient I found her suffering from chronic inflammation and ulceration of the duodenum, caused by long continued functional indigestion of the stomach. I placed her under treatmant for duodenal disease only, giving no attention whatever to the nasal or pharyngeal inflammation. She rapidly improved, ceased sneezing within a week. and at the end of four months was perfectly well.

Diseases of the skin.—That urticaria is entirely dependent upon reflex irritation originating in the duodenum can not be doubted. The same is true of many of the forms of eczema, a fact which I have verified in a large number of cases by diagnosing the existence of duodenal disease, the successful treatment of which entirely relieved the skin disease.

Pruritus of the skin.—A case of this disease had been under the treatment of several distinguished dermatologists without relief. I diagnosed chronic duodenal disease following an attack of rubeola producing reflex irritation. The patient was placed under treatment, and as soon as the duodenal disease began to improve, thereby lessening the reflex irritation, the pruritus began to subside, and she was entirely relieved.

In duodenal disease the functional action of the heart is interfered with. It is either increased in frequency and decreased in force or merely decreased in frequency. I have seen it, in different cases, vary in number of strokes from 35 to 120 beats per minute. In many cases the reflex phenomena appear in the lungs, in which there is sighing respiration or asthma. Anemia of the brain is not uncommon. Local hyperemias of the brain with insomnia is also very common.

Over twenty-five years ago my attention was called to the character of food recommended for diabetic persons, which then had no better reason for its use than "that it was best," also to the exclusion of saccharin matter with no better explanation than the above. About that time I treated two cases of pachymeningitis, which were followed by diabetes mellitus caused clearly from irritation or pathologic changes near the fourth ventricle of the brain. I soon learned that opium had no controlling influence in the cases whatever over the amount of urine secreted, differing in this from any case in which I had used it before. Finding later that chronic inflammation and ulceration of the duodenum always preceded all the cases of diabetes mellitus which I treated, I concluded that the real benefit of opium was its controlling influence over peripheral irritation, thereby lessening the reflex influence. My attention was then called to the close relations between this disease and diabetes mellitus. Since that time I have carefully examined more than thirty cases of diabetes mellitus, and found that this disease of the duodenum had preceded every one of them. Seven of these cases I have verified by postmortem examinations. In each I found chronic inflammation and ulcerations of the duodenum. There was no other pathologic change of structure except in one where the liver was affected.

It may be a question whether the relation of these two diseases is the result of peripheral irritation producing reflex irritation, thereby affecting the nutrition of the nerve centers that preside over the conversion of starchy and other matters into saccharin matter, or whether it is the interruption of the function of the duodenum and its accessories which arrests or prevents normal metabolic and anabolic changes in our food, and by natural selection the defective products of saccharin matter (glucocids) are taken up by the absorbents and depurated by the kidneys.

The principles that should govern the treatment of this disease and its reflexes are as follows: 1. The organ should be given rest from physiologic hyperemias by excluding oleaginous, saccharin and starchy foods; the nutrition of the patient should be maintained by stomach digestion, rectal alimentation and absorption of the skin. The remedies indicated are those which control reflex irritation and intestinal germicids. If there exists anemia of the nerve centers of the brain, it should be relieved by such tonics as nux vomica, strychnia, arsenic; if general or local hyperemias, by bromids. If tonics are indicated, the hyposulphates of lime, soda and potassa, or the bitter tonics. The iron preparations are injurious. In cases of diabetes mellitus add to the general treatment from 15 to 20 grains of bicarb. of potassa after each meal. Purgatives should be avoided, except those that act on the large intestine. These should be alternated with enemas.

DISCUSSION.

Dr. BORDMAN REED of Atlantic City, N. J.—Up to this time I had not been led to believe that there were as many reflexes from the duodenum as my friend Dr. Allen has given us to understand he has found. I should be inclined to question whether all of his cases were true reflexes, and also whether they came from disease limited to the duodenum. I should be strongly inclined to think that most of the cases he has reported were cases of intestinal toxemia from inflammation of the small intestine. In fact, it is very difficult to differentiate disease limited to the duodenum. The duodenum is a very small portion of the intestine, and its structure is very similar to that of the small intestine below, so that I can not understand how Dr. Allen can be certain the disease was limited to that short distance. The great burthen of evidence from other sources would lead us to believe that the results were more from toxemia, the absorption of various toxins, than from reflexes. However, I am inclined to believe that there are also reflexes from that region. I think we are apt to take too narrow a view of disease. Haig, in his famous book on uric acid, attributes nervous diseases to uric acid causes. On the other hand, Bouchard attributes them to toxemias, and others to other things. I think it probable that all of these agents are concerned in the production of nervous diseases.

Other authorities have differed somewhat from Dr. Allen with regard to the relative frequency of diseases of the stomach and intestine, particularly with regard to ulcer. Andral reported the proportion of ulcers in the duodenum and stomach as 1 to 40. Another author gives 1 to 9. Ordinary round ulcer is much more frequent in the stomach than in the duodenum. The duodenum is also liable to the catarrhal type of ulcer, but the usual kind is the round ulcer due to an excess of acid passing down from the stomach. My own studies and experiments on the acidity of the gastric juice have shown me that a great deal of nervous disease is attributable to an excess of hydrochloric acid in the stomach. The excess of acid may pass into the duodenum and produce irritation, sometimes ulcer, and probably sometimes catarrhal disease. It is a large subject. We should welcome contributions from every quarter, but not be dogmatic in our conclusions.

Dr. ALLEN—The anatomic, physiologic and pathologic points made by me in my paper have not been objected to by my friend Dr. Reed. He objects to the relative frequency of gastric inflammatory processes and those of the duodenum. Answering, I would say that wherever there did exist a question of doubt requiring differential diagnosis between these diseases, the stomach in each case was washed out and its contents thoroughly examined, chemically and microscopically, for the débris of inflammatory processes, which protected me from any possible mistake. The same care was taken in the investigation of the possibilities of the existence of inflammatory diseases below the duodenum, and they were not found. The statement of Dr. Reed that I am not supported by the literature on the subject is true, but he must bear in mind that the literature on the subject is so very meager that I am justified in concluding that investigators have overlooked this very important portion of the alimentary canal. The Doctor attempts to explain some of the phenomena attending these cases by the absorption of toxins. As toxins are never absorbed by normal structure, but only where there are inflammatory processes, there might be a question of doubt as between the causes which produce the phenomena of the cases reported by me. The phenomena themselves can not be explained by the Doctor's theory, but can scientifically be explained by reflex irritation.

DIAGNOSIS OF ASCITES.

Presented to the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY JAMES TYSON, M.D.

PHILADEAPHIA, PA.

The object of this brief communication is to call attention to a symptom which I think has hardly received sufficient attention at the hands of clinicians and which I know to have been misinterpreted. I allude to tympany in the flanks and its significance in the diagnosis of ascites. It is generally taught that the *absence* of tympany in the flanks is characteristic of ascites; while its presence can not be regarded as consistent with any considerable degree of accumulation of liquid in this region. A case now in my wards at the Hospital of the University of Pennsylvania illustrates the possibility of error arising from a too strict adherence tothis guide. A woman, aged 37 years, was admitted with mitral stenosis and insufficiency, with passive congestion, enlargement and tenderness of the liver, ascites and general anasarca. When lying on her back the lower abdomen was somewhat bulging, and over this region and laterally on both sides as far as a vertical line drawn through the anterior superior spinous process of the ilium, distinct fluctuation and a succussion wave could be elicited. Behind this, distinct tympany could be brought out by percussion in both flanks. It was usually more marked on the right side. So marked was the tympany, and so much in contrast with what seemed usual that experienced men who saw her thought that the condition could not be ordinary ascites but must be a collection of fluid, circumscribed by adhesions. A trocar was introduced and seven pints of clear serum drawn off, such as constitutes an ordinary ascites, emptying the abdomen completely of fluid. As the fluid reaccumulated, the original signs appeared and were followed by another tapping, when an equal amount of fluid was drawn off. This was repeated several times.

Having had this experience with the patient referred to, I proceeded to examine carefully every case of ascites I met in the wards, and in quite a number I could bring out, by percussion, an area of tympany located as described. It varied in extent and distinctness, and in no case was it as marked as in the woman referred to. It was, however, easily recognizable, though not always in each flank, sometimes being more marked in one and sometimes in another, while it was sometimes present in one and absent in another.

I then proceeded to examine the text-books available and found more frequent allusion to it than I had expected. Thus, in Leube's "Specielle Diagnose der Inneren Krankheiten," vol. i, p. 381, 4th ed., occurs the following: "So kann man unter percutirend neben der Niere nach der Linea axillaris hin, einen schmalen Streifen tympanitischen Schalls finden. Es rührt dies davon her, dass das Colon ascendens und descendens in ihrem hinteren Umfang vom Peritoneum nicht überzogen sind, und deswegen hier kein Transudat liegen kann," *i.e.*, by percussing from the neighborhood of the kidney downward in the axillary line a narrow zone of tympany may be found. This is because the posterior portions of the ascending and descending colon are uncovered by peritoneum in this situation, and on this account no transudate can lie there).

Passing to Strümpell, second American edition 1893, p. 462, I find "the resonance on percussion of the deepest and most dependent portions of the abdomen may be misleading in this way, that *even in ascites* a narrow zone may be tympanitic. This should be remembered."

Turning to American text-books, Da Costa, eighth edition, p. 712, quotes Bacelli that "in ascites there is a deep tympanitic sound during percussion in the region of the intestines, while an ovarian cyst presents dulness on the side in which the cyst has its origin, and a tympanitic sound on percussion on the other." I can not discover that reference is intended to the point to which I allude. In John H. Musser's new work on "Medical Diagnosis," I find no allusion to it, nor in James T. Whittaker's recent "Theory and Practice of Medicine." I find in Osler, p. 508, second edition, the usual statement, viz.: "In the dorsal position, with a moderate quantity of fluid in the peritoneum, *the flanks are dull*, while the umbilical and epigastric regions into which the intestines float are tympanitic." No mention is made of occasional tympany in the flanks.

Wood and Fitz on page 969 of their recent text-book say, "if the intestines contain no gas, or are adherent to the abdominal wall or the mesentery is so short or the quantity of fluid so large that they are prevented from floating to the surface, the dulness is no longer characteristic; but the resonance of the intestines may be found in the lower abdomen *or in the flanks*, in either of which places it may remain even if the patient changes his position." The fact is here pointedly stated, but its connection by a semicolon, with what precedes, would seem to refer it to an unusual condition of the small intestine rather than with the constant situation of the ascending and descending colon. In his article on "Ascites," in Pepper's "American Text-book of Medicine," Dr. Fitz makes practically the same statement.

Dr. Henry M. Lyman expresses the fact much more directly than any other American author, for on page 411 of his recent text-book he says: "If the intestinal canal be free from fecal contents, the region of the cecum and the descending colon will emit a tympanitic sound on percussion, even though the adjacent regions are occupied by dropsical fluid." This is precisely correct.

Of the older but still comparatively recent authors of text-books, Austin Flint, Sr., Henry's edition 1894, p. 530, says: "The exceptional cases in which this test afforded by percussion is not available, are those in which the intestinal coils are fixed by morbid adhesions. This is rare in a case of purely dropsical effusion."

In neither Roberts Bartholow's, Alfred Loomis's or Frederick T. Roberts's text-books do I find the fact referred to. C. Hilton Fagge, on page 309, vol. ii, (American Ed., 1886), says: "Again, when in ascites the border of the dull region is percussed freely, the left hand finger being pressed backward as much as possible, one can often detect a resonant note from the presence of intestine beneath."

Niemeyer (Humphreys' and Hackley's Translation, N. Y., 1870, p. 623), has an interesting paragraph, as follows: "Bamberger advises us to pay particular attention to the spot between the crest of the ilium and the twelfth rib, for in ovarian tumors at that point we generally find the full sound of the larger intestine; in ascites we do not. *Still he acknowledges that this sign occasionally fails.*" Now this is precisely the situation in which the tympany in ascites is occasionally met.

My own book contains a somewhat bungling allusion to it, heightened by a typographical error. On page 386 will be found the following: "There are also two sites posteriorly where a tympanitic note may be produced by percussion, viz., upward (should be *downward*) from the neighborhood of the kidney on each side behind the mid-axillary line, because in this situation in the ascending and descending portions of the colon with the posterior portions uncovered by peritoneum, and therefore inaccessible to the fluid." Evidently in writing this I did not realize the actual facts or I would have made it clearer in the text, though the understanding is quite different if instead of the word "upward" we read "downward." I had evidently read the paragraph in v. Leube without having realized the condition itself. Since I have studied it my notions are clearer and more definite, and it seemed to me worth while to take an opportunity to call attention to the subject and impress it by the models of Steirges after sections of the frozen cadaver, here exhibited, in which the portions of the colon thus exposed are clearly seen. It is to be remembered that the condition is also influenced by various degrees of distension of the colon as well as by the quantity of ascitic liquid.

DISCUSSION.

Dr. Rochester of Buffalo—I was puzzled this winter by a case in the hospital. There was distinct tympany in the right, and slight tympany in the left flank. I tapped and removed fluid.

Dr. Herman B. Allyn of Philadelphia- -I have a case in the hospital now which presents this condition of tympany in the flank. I still thought fluid was present, and on tapping withdrew several pints, but, on reaccumulation of the fluid, tympany did not occur. It would seem that it may sometimes exist, while at other times it may not or that it may be a temporary condition.

Dr. Tyson—I rise to confirm what Dr. Allyn says. We found considerable variation in the amount of this tympany at different times and previous to successive tappings. One flank was almost always more tympanitic than the other. It goes without saying that the quantity of fluid makes some difference. You can understand that if there is a large quantity of fluid in the peritoneum pressing upon the colon, there will be less tympany from the colon than in cases in which there is less compression. But I have observed the tympany in large abdominal effusions.

A FURTHER REPORT ON ISCHOCHYMIA (DILATATION OF THE STOMACH).

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY MAX EINHORN, M.D.
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The President of our ASSOCIATION, Dr. Nicholas Senn, was the first in this country to direct the attention of the profession to the importance of surgical interference in cases of stenosis of the pylorus. In 1891 Senn published in the *Medical Record* (November 7 and 14) fifteen cases of pyloric stenosis, two of a benignant type and thirteen due to malignant disease (cancer), on which he had operated. In the two cases of benignant stricture the operation consisted in Heinecke-Mikulicz pyloroplasty. In the remaining thirteen, of cancer of the pylorus, gastro-enterostomy was established. In this paper Senn said: "Stricture of the pylorus is a surgical affection and should be treated as such with the same right and for the same reasons as a stricture of the esophagus, rectum or urethra. Reliance on medicine is as deceptive and useless in these cases as in the treatment of stricture of any other organ. Permanent relief can only be secured by prompt surgical interference."

In November, 1894, I[1] read a paper before the German Medical Society of New York on the "Diagnosis and Treatment of Stenosis of the Pylorus." In this address I gave my own experience regarding this condition and suggested the name of "ischochymia" in place of "gastrectasis," "dilatation of the stomach," or "gastric insufficiency of the second degree" (Boas), as being more suitable. This term was intended to convey the idea that stagnation of the food in the stomach is the principal symptom of this affection, and that the abnormal size of the organ is of secondary importance. In this paper I reported four cases of a benignant stricture of the pylorus, in which operations (either pyloroplasty, pylorectomy, or gastro-enterostomy) had been successfully performed, and several cases of malignant stenosis of the pylorus, in which gastro-enterostomy has also proved temporarily beneficial.

Among the more recent literature the paper of Pepper and Stengel[2] on "Dilatation of the Stomach," is noteworthy. These two authors describe all methods which serve to determine the size and capacity of the stomach, but sufficient weight is not placed on the most important symptom—the stagnation of food. This work contains an abundance of casuistic material and is highly meritorious.

Recently I read a paper embodying my additional observations on ischochymia, before the Society of Physicians of the German Dispensary of New York (April 22, 1897). As this affection is of quite frequent occurrence and of great importance to the clinician, as well as to the surgeon, I present a summary of my own experience.

The cases of ischochymia which have been under my treatment may advantageously be divided into the following groups:

1. Cases of ischochymia submitted to operation.
    a. Benign stenosis of the pylorus.
    b. Malignant stenosis of the pylorus.
2. Cases of ischochymia treated by palliative measures.
    a. Benign stenosis of the pylorus.
    b. Duodenal stenosis.
    c. Probably pure atony of the stomach.
    d. Malignant stenosis of the pylorus.

The cases of ischochymia from benign pyloric stenosis submitted to operation comprise ten, of which I shall describe one:

Case 1.—Nov. 29, 1896, A. L., 32 years old, manufacturer, has suffered more or less from pyrosis since his eighteenth year. The appetite was always poor, and the patient was regarded as a small eater; he was troubled with frequent eructations, and was always constipated. During the last two years he has complained constantly of a burning feeling in the epigastrium two hours after meals; the ingestion of food, as well as the administration of bicarbonate of soda, alleviated this symptom for a short time. Four months ago the patient began to experience colicky pains in his upper abdominal region; these usually appeared five to six hours after eating or later at night, especially when he had neglected to take anything for the burning. The appetite was not much changed, sometimes somewhat slighter than previously. Vomiting only occurred infrequently after gastric lavage had been undertaken. The patient stated that on one occasion after washing out the stomach a small quantity of blood was noticed.

Status praesens: Patient is fairly well nourished; color somewhat pale; tongue slightly coated. Thoracic organs normal. Palpation of the abdomen reveals no areas sensitive to pressure. Splashing sound present, and the stomach can be traced to a line one or two fingers' breadth beneath the umbilicus. Peristaltic contractions are not visible. The urine contains neither sugar nor albumin, and is secreted in sufficient quantity.

Nov. 29, 1896. Examination of the stomach in the fasting state reveals a considerable amount of chyme (200/c.c.), consisting chiefly of bread and starchy substances. HCl+, acidity = 48.

November 30. Examination of the stomach one hour after Ewald's test-breakfast: Quantity equals 300 c.c.; HCl+, acidity = 76; slight residue of food from the previous day can be recognized.

December 1. Examination in a fasting condition furnishes a greenish fluid containing a few fine particles of food and of strong HCl reaction.

Deccember 3. Contents obtained in a fasting condition consist of fluid mixed with bile and brownish masses containing only a few food particles. After lavage blackish masses finally appear. The slight stagnation of foods at once awakened the suspicion of a pyloric stenosis of moderate degree, and the brownish masses (altered blood) pointed to the existence of an ulcer in the vicinity of the pylorus. This suspicion was further confirmed by the circumstance that on December 18, 400 c.c. of fluid, containing numerous brownish masses, were obtained from the fasting stomach; at the same time an area of sensitiveness to pressure was present in the epigastrium, especially toward the right side. The patient was now put in bed and a strict cure initiated for the ulcer. From December 18 to 23 he was nourished per rectum, after which small quantities of milk were administered *per os.*

Jan. 2, 1897. Lavage in the fasting state showed the presence of a slight amount of food residue (100 c.c. of chyme mixed with bile); the same condition was noted on January 8.

The diagnosis previously made of a commencing benign pyloric stenosis complicated with ulcer in the vicinity of the pylorus, was now assumed, with greater certainty, in view of the futility of the treatment, and the patient was urgently advised to undergo an operation, the more so since all therapeutic measures had proved unavailable.

The operation was performed by Dr. F. Lange on Jan. 13, 1897. There was found an ulcer on the anterior side of the stomach, closely adjacent to the pylorus; the latter was markedly thickened (rigid) and its lumen narrowed. The ulcer was excised and the pyloroplastic operation of Heinecke-Mikulicz practiced. The mucous membrane of the stomach was markedly swollen and hypertrophied.

The patient rapidly recovered from the operation and has since completely recuperated; he is free from all disturbances and has gained *twenty-five pounds in weight.*

On reviewing my cases of benign stenosis, I find that the diagnosis of ischochymia and of the conditions which give rise to it (pyloric stenosis, ulcers in the immediate vicinity of, or in the pylorus) can be made with a fair approximation to certainty. In all the ten cases operated on, the diagnosis was completely confirmed by the conditions revealed at the operation.

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[1] Max Einhorn: Medical Record, Jan. 19, 1895.

[2] Pepper and Stengel: The American Journal of Medical Sciences, Jan., 1897, p. 34.

Of these ten cases, eight were cured and two terminated fatally in consequence of shock and cardiac failure shortly after the operation. The latter, however, sought surgical intervention at too late a period, and there can be no doubt but that this was the sole cause of the fatal termination. Of the remaining eight, seven have been completely cured, that is, the patients are able to eat everything without any disturbances and are completely well. One of the patients has been improved, but not completely cured, that is, she continues to suffer now and then from pains which result from cicatrices at the lesser curvature, yet she is able to partake of a more varied diet without the occurrence of a stagnation of gastric contents.

In some of the cases of malignant stenosis of the pylorus I was able to make the diagnosis even in the absence of tumor and also of lactic acid in the stomach, and my experience leads me to conclude that gastro-enterostomy exerts a beneficial, although temporary, effect in this condition. The majority of these patients who have survived this operation gain in weight and pass a much more comfortable existence than could be afforded them by any other measures.

In the cases of ischochymia dependent upon a benign stenosis of the pylorus, or upon a relaxation of the muscular layer of the stomach, improvement could quite frequently be obtained by palliative measures (group 2). This change for the better means that in relaxation of the gastric muscularis, the latter, under appropriate treatment, recuperates and becomes more vigorous, while in stenosis of the pylorus a kind of compensation of the stomach occurs, that is, the organ acts with greater energy, so as to be able to perform its functions notwithstanding the obstruction existing at the pylorus. It can therefore be readily seen that an improvement as a result of palliative treatment can be expected only in cases in which the pyloric stenosis is not very marked; moreover, it is also clear that in the event of improvement from palliative measures we must always be prepared for a return of the ischochymia.

If the symptoms of ischochymia do not yield to medical treatment, surgical intervention is urgently called for, because otherwise a fatal outcome may readily take place. Thus I have observed two instances in which death occurred from starvation.

I will now discuss the chief points relating to the diagnosis and therapeutics of ischochymia.

Diagnosis.—The salient points in the diagnosis of ischochymia is the presence of food residue in the stomach in the morning in the fasting condition, the patient having taken a substantial meal on the previous evening. If this symptom is found to persist for a long time, we have to deal with a serious affection, and it will now be necessary to determine whether this consists in a relaxation of the gastric muscular coat or a narrowing of the pylorus; in the latter case it is further requisite to decide whether a benign or malignant process be present.

The differential diagnostic points which demand consideration are well known to you. It appears to me of importance to analyze the diagnostic significance of some of the symptoms, which, when present, are very valuable, but whose absence does not militate against the existence of pyloric stenosis. These symptoms are:

1. The dilated or abnormally large stomach.
2. The thickened and readily palpable pylorus.
3. The peristaltic restlessness of the stomach.
4. The fermentation products.

1. The abnormal size of the stomach is pathognomonic only if the organ occupies nearly the entire lower section of the abdomen and contains over three to four liters of fluid. Such stomachs are frequently met with in old cases of stenosis of the pylorus and their presence at once awakens the suspicion of a narrowing of the pylorus; before this diagnosis can be made, however, the presence of ischochymia must be determined. In this country considerable weight has been placed on this symptom, as we find in the above-cited article of Pepper-Stengel; yet the absence of this diagnostic sign should not lead us astray. For it is our aim to make the diagnosis of pyloric stenosis as early as possible, while the pronounced, at once perceptible dilatation of the stomach requires some time for its development. Hence, it is not advantageous to apply the old name of "gastrectasia" to designate the entire condition, but to employ instead the term "ischochymia," because this is the most important and at the same time the earliest symptom.

2. If it is possible by means of palpation to map out the pylorus as a smooth oval tumor, and if ischochymia be present and the disease has lasted over one and a half to two years, we can with certainty make a diagnosis of benign pyloric stenosis. Among the cases of this affection observed by me, this symptom was found quite often.

3. Peristaltic restlessness of the stomach was found in two of the operated cases of benign stenosis of the pylorus, and in nearly all of the non-operated cases of this disease. Inasmuch as peristaltic restlessness of the stomach but very rarely occurs as a pure neurosis, this symptom is of great significance for the recognition of stricture of the pylorus, the more so as an examination for this purpose (simple inspection of the abdomen in the recumbent position) is unattended with any difficulty.

The presence of this symptom in connection with the existence of ischochymia, speaks in favor of narrowing of the pylorus, and against simple relaxation of the gastric muscular coat; the absence of this sympton is of no consequence.

4. Fermentation products (formation of lactic acid or gases in the stomach) are observed almost constantly in all cases of ischochymia. Commonly, one or the other kind of fermentation is present, that is, either formation of lactic acid or formation of gases. The lactic acid is found in the stomach in cases where the secretion of hydrochloric acid is considerably diminished, while the development of gas is encountered in cases in which there is an abundant secretion of gastric juice. These points, which have been especially emphasized by H. Strauss[3], I can completely confirm on the ground of my own experience. These fermentation products may be absent, however, notwithstanding the presence of pyloric stenosis, if the proper treatment has been adopted, that is, if the stomach has been washed out several times.

The constant or frequent occurrence of small quantities of bile in the stomach does not in my experience militate against the existence of a narrowing of the pylorus; on the other hand, it appears to me to point to a firm rigidity of this orifice, in consequence of which the latter is never completely closed.

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[3] H. Strauss: Zeitschr. f. klin. Medecin.

Among the more recent auxiliary measures which are available in arriving at a diagnosis, the gastroscope has been recently employed by Rosenheim and Kelling. In my opinion, there is no doubt but that this instrument has a promising future, although at present it has not as yet been generally utilized.

Treatment.—In the treatment of ischochymia it is necessary first of all to ascertain the cause of the stagnation of food in the stomach. If this be due to a far advanced benign stenosis of the pylorus, or to a commencing occlusion of this opening of malignant nature, surgical interference (pyloroplastic operation, pylorectomy, or gastro-enterostomy) is indicated. If we have to deal, however, with commencing benign stenosis of the pylorus, or a genuine relaxation of the muscular coat of the stomach, palliative treatment should first be given a trial, while in the event of its failure an operation is demanded.

The palliative treatment in the milder cases consists in the employment of a fluid or semi-fluid diet (milk, soups with finely ground farina, meat broths with egg, egg and milk), lavage of the stomach in the fasting condition, followed by spraying with a one per mille solution of nitrate of silver, and in the administration of medicaments which prevent fermentation. Among these may be used benzonaphthol, salol, bismuth and resorcin. 1 frequently give

Resorcin.	4.0
Bismuth, subnitr	20.0
Aq. dest.	200.0

S. One tablespoonful in a wineglassful of water, three times daily, half an hour before meals.

In severe cases (frequent vomiting, frequent pains, intense burning sensations) it is advisable to keep the patients in bed for about three weeks and to nourish them for five days exclusively per rectum, and then slowly and gradually adopt a milk diet, as in ulcer of the stomach—in this condition, however, much more cautiously and slowly.

Thus, for example, on the sixth day I give only two tablespoonfuls of milk every hour, on the seventh day three tablespoonfuls, on the eighth day four tablespoonfuls, etc., until I have reached 100 c.c. every hour; then I give 200 c.c. every two hours, and increase to 300 c.c. On every other morning I determine by washing out the stomach, in the fasting condition, whether it is empty.

In this manner it is quite frequently possible to adapt the stomach, first to a light and later to a heavier diet. The patients then increase gradually in weight and appear completely well. Yet they can not be regarded as entirely healthy, because we must be constantly prepared for a recurrence of the old affection.

Moreover, in cases where it is not possible to remove the ischochymia by palliative measures, the patient may sometimes maintain a comfortable existence under the sytematic use of washings out of the stomach and the maintenance of a light and rather fluid diet. Such patients, however, are menaced by many dangers and can enjoy but few of the luxuries of life, and for this reason the clinician should insist that an operation is to be regarded as the only correct procedure.

In summarizing this article the following conclusions can be formulated:

1. In the vast majority of cases of prolonged disturbances in the transportation of chyme from the stomach into the intestine, a narrowing of the pylorus exists.

2. The earliest, and at the same time most important, sign of pyloric stenosis is ischochymia; the dilatation of the stomach which is met with here, and which is often so considerable, does not develop until later, and besides, may in exceptional cases occur in the presence of an adequate prochoresis.

3. Ischochymia produced by a malignant neoplasm at the pylorus always demands an operative treatment (gastro-enterostomy, eventually pylorectomy).

4. In cases of ischochymia dependent upon a commencing benignant pyloric stenosis (or ulcer in the vicinity of this orifice) or a relaxation of the muscular coat of the stomach, an effort should first be made to afford relief by palliative measures; if this is not successful, then a pyloroplastic operation or gastro-enterostomy should be performed.

5. Ischochymia due to a benign markedly developed narrowing of the pylorus (in these cases the pylorus can usually be felt as a small tumor) demands early resort to operation (pyloroplastic procedures, if the stricture is not too small and if the adhesions are not too numerous, otherwise gastro-enterostomy).

DISCUSSION.

Dr. BOARDMAN REED of Atlantic City, N. J.—I would ask the author with regard to diet, whether he recommended milk? I had been led to believe that milk is unsuitable in dilatation of the stomach, on account of the difficulty of giving enough without distending the stomach. Most German authorities take that view. I would also ask whether he means that milk should be the sole diet.

Dr. EINHORN—Of late it has been found that a liquid or a semi-liquid diet is suitable for this condition, especially in those cases in which there is suspected stenosis of the pylorus, for thicker substances do not pass through. In dilatation of the stomach, with weakness of the muscle of the stomach, not due to stenosis of the pylorus, there may be a question whether to nourish the patient by liquid or by more consistent food. But even there, if we give small quantities of liquid at a time, I think we can achieve more than by suddenly cutting them off.

A BRIEF CONTRIBUTION TO THE BIOLOGY OF THE MALARIAL PARASITE.

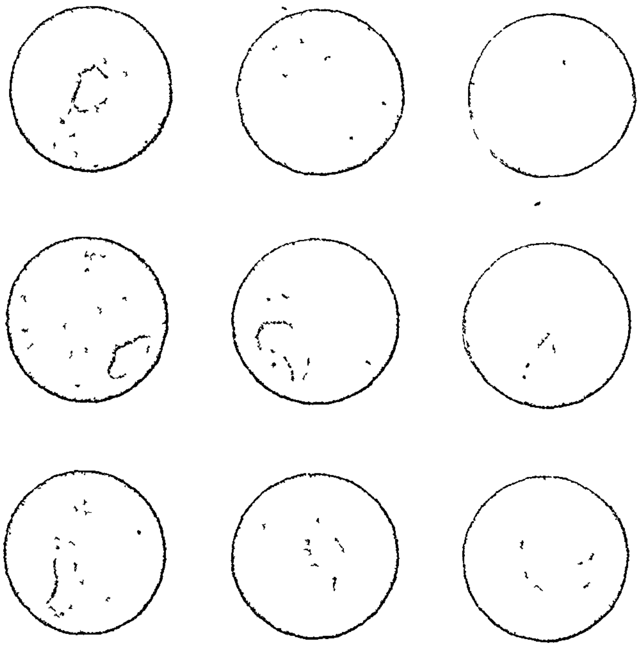
BY R. S. WOODSON, M.D., U. S. ARMY.
NEW ORLEANS, LA.

The biology of the malarial parasite is one of the most interesting subjects in modern medicine, the accurate understanding of which is rendered exceedingly difficult to the average practitioner by reason of the conflicting opinions of competent observers as to its life cycle, the function of its various forms and their pathogenic relationship to the various clinical malarial manifestations. The segmentation of the intra-corpuscular parasites, their escape into the plasma of the blood and their reappearance as fresh hyaline bodies in the red corpuscles as described by Golgi, is believed to be the method of reproduction. The evidence that this is the method of reproduction rests upon the very great resemblance between the antecedent and resultant hyaline bodies, and further upon their identity with the fresh hyaline forms that make their appearance just at this time in other red blood corpuscles.

This theory of reproduction is rendered somewhat hypothetic by the absence of visual confirmation. The fact that free hyaline bodies are rarely seen in the peripheral blood and reproductive changes probably take place exclusively in internal organs, would account for the failure on the part of the various investigators to observe the entrance of the hyaline form into the normal red corpuscle.

By fortuitous accident rather than systematic observation in the routine examination of malarial blood of patients admitted to the Post Hospital, Jackson Barracks, the writer believes he has observed this missing link in the life cycle of the malarial parasite.

Upon examining a specimen of blood, taken with aseptic precautions from lobe of left ear of Private G. F., U. S. Army, who was suffering from malarial fever, intermittent, tertian (time of examination being several hours before paroxysm), the following phenomenon was observed: Field moderately filled with red blood corpuscles, a clear space in center, across this space a round hyaline body, one-fifth size red corpuscle, was seen moving; whether by reason of its own inherent motility or in obedience to the laws of gravitation was not determined. It was seen to attach itself to a perfectly normal red blood corpuscle and appeared to enter the same, for its outline became less distinct. Further, it acquired ameboid movement and was seen to move about in the protoplasm of the cell, as well as to assume alterations of outline and slight increase in growth, as shown in the accompanying drawings. The parasite after its entrance into the corpuscle was observed by my assistant, Hospital Steward Cleaver, and myself, for two hours, and from its behavior and appearance during this time I feel convinced that we were observing an ameboid hyaline intracellular form of the malarial plasmodium.



Jackson Barracks.

RELATION OF FAT NECROSIS TO THE PANCREAS.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY HERBERT U. WILLIAMS, M.D.
PATHOLOGICAL LABORATORY OF THE UNIVERSITY OF BUFFALO, BUFFALO, N. Y.

As pancreatitis with fat necrosis is not a very common disease I give in the first place an outline of our knowledge concerning it.

The patients are almost exclusively adults. A history of gastro-intestinal disorder dating back for a considerable period is frequently given. Fitz describes the *symptoms* of acute pancreatitis as follows: "Sudden, severe, often intense epigastric pain, without obvious cause, in most cases followed by nausea, vomiting, sensitiveness and tympanitic swelling of the epigastrium. There is prostration, often extreme, frequent collapse, low fever, with a feeble pulse. Obstinate constipation for several days is the rule, but diarrhea sometimes occurs." The affection is usually fatal.

The symptoms therefore are vague and not very characteristic. The disease has been mistaken for intestinal obstruction, and has been confused with appendicitis. However, a correct antemortem diagnosis has been made more than once. The nature of the affection is not generally revealed until the autopsy is performed.

Autopsies on these cases have shown a remarkable uniformity in their findings. The pancreas is either swollen and infiltrated with blood which may have escaped into the adjacent tissue; or it is dark and necrotic. It is frequently separated from its connections by softening of the neighboring necrotic tissue; such a condition of necrosis is generally called sequestration of the pancreas. Accompanying the lesion of the pancreas in a large proportion of cases one finds a striking alteration of the adipose tissues, which is termed fat necrosis. Opaque, white or gray nodules of a soft chalky consistency, reaching the size of a pea or even larger, are seen scattered through the otherwise yellow and translucent fat. They appear in the adipose tissue on the surface of the pancreas and in its vicinity. Confluence and softening of the nodules probably assist in producing sequestration of the pancreas. Similar nodules may be met with in the adipose tissue about the peritoneal cavity at points remote from the pancreas, as in the omentum and mesentery. This condition is termed disseminated or multiple fat necrosis. They are rarely seen in parts not in contact with the peritoneum, but have been observed in the pericardial and subcutaneous fat. Peritonitis is not usually present. Among forty-seven reports of cases of disseminated fat necrosis, in which I could find that the general condition of the body was specified, thirty-five (about 75 per cent.) were described as being fat, frequently as very fat indeed. Among fifty-three cases of disseminated fat necrosis of which I have collected descriptions there were six in which no pancreatic disease was demonstrated.

Pancreatic hemorrhage. .	6
Hemorrhagic pancreatitis. .	18
Gangrenous pancreatitis	15
Suppurative pancreatitis	6
Chronic pancreatic disease	2
No pancreatic disease.	6
Total.	53

Fat necrosis occurs also in connection with suppurative pancreatitis, but less frequently than with the hemorrhagic and gangrenous forms. Curiously enough, it seems only occasionally to have been observed accompanying carcinoma of the pancreas or the conditions leading to obstruction of its duct.

The nodules mentioned appear, under the microscope, to be surrounded by a zone of inflammatory reaction, sometimes with hemorrhages. They are made up of needle-shaped crystals, opaque bodies which may be as large as fat cells, oil globules and amorphous material. The outline of fat cells, but not their nuclei, can generally be detected within them, indicating that the change consists in an alteration of these cells and their contents. This justifies the name fat necrosis. Chemical analyses show that the change depends upon a decomposition of the neutral oils, which are the normal contents of the fat cells, liberating fatty acids and glycerin. The fatty acids may combine with some of the bases present in the lymph, generally calcium, to form soaps.

As an additional proof of the intimate relation between the alteration of the fat cells and some function of the pancreas, it has been asserted that subjects dying of affections having nothing to do with the pancreas, often exhibit a few small areas of fat necrosis in the adipose tissue about the pancreas or between its lobules. Balser found such areas in 20 per cent. of twenty-five cases examined by him. R. Langerhans recorded a similar observation for 14 per cent. of twenty-eight cases. From paragraphs in the text-books of Ziegler and Weichselbaum, and from remarks of Fitz, Thayer and others, one is led to infer that experiences of this sort are matters of common occurrence. On the other hand, Kasahara encountered fat necrosis in but one of eighty-three pancreases studied by him. I have inspected the pancreas carefully and cut it in thin slices in seventy-four subjects free from pancreatic disease, and have met with but two examples of fat necrosis. In each there was a single small nodule. R. Langerhans has suggested that the alteration may be a postmortem phenomenon, due to the action of the pancreatic juice. In one of my two cases I believe that to have been probable. In the other the change must have occurred before death, as a distinct inflammatory reaction was visible about the nodule.

Furthermore, Balser has described fat necrosis as being often present in the adipose tissue of the hog's pancreas. He found it in this situation in nearly all Hungarian and many Algerian hogs; but less frequently in German hogs. Never having seen any observations in this direction recorded concerning American swine and having been informed by Dr. Salmon of the Bureau of Animal Industry that he knew of none, I examined the pancreases of a hundred hogs. They were studied while they were fresh and were cut in thin slices with a razor. Among these hundred specimens two were found that exhibited fat necrosis in the interlobular fat. In one there were many areas; in the other only a few. These observations may be interesting on account of establishing still more closely the connection between the process in question and the pancreas.

Occasionally fat necrosis has been observed, as for instance in lipomata, in situations where no suspicion of any relation with the pancreas could be entertained. I have several times met with what appears to be the same change in the adipose tissues of the cat in trifling degrees, but not near the pancreas.

Numerous cases of pancreatitis and disseminated fat necrosis have been studied from the standpoint of bacteriology and several varieties of bacteria have been isolated from them. The bacillus *coli communis* has been found much more frequently than any other form. Its claims to being an important etiologic factor have been seriously considered by some writers. However, nothing has been definitely proven in this direction. In some instances, where the necrotic nodules have been examined, they have been found to be sterile. Hlava injected various bacteria into the pancreas of a number of cats, dogs and rabbits after laparotomy. With the diphtheria bacillus he succeeded in exciting a hemorrhagic pancreatitis with fat necrosis in the cat. His experiment would seem to render doubtful a specific action on the part of any particular organism. This view seems to me to receive confirmation from an observation of mine upon a cat in which a peritonitis due to a micrococcus infection was accidentally produced. The infection spread to the pancreas, leading to pancreatitis and fat necrosis.

An interesting theory to explain the causation of fat necrosis was proposed by Rolleston. This theory refers it to a disturbance of innervation arising in the solar plexus. I am not aware of any work based on pathologic anatomy or experiment in support of it.

Several years ago R. Langerhans suggested that, as the pancreas elaborated a ferment capable of decomposing neutral fats, liberating their fatty acids, this ferment might be responsible for the peculiar change that takes place in fat necrosis. His theory seems plausible, remembering the constant association of that condition with the pancreas that has been mentioned. Langerhans succeeded in producing an area of fat necrosis in a rabbit by injecting an extract of the pancreas of another rabbit into the adipose tissue. This was the only successful one among twelve experiments. His work, furthermore, is open to the objection that bacterial contamination was not with certainty excluded.

Dr. Whitney of the Harvard Medical School placed a ligature about the pancreas in a number of dogs and obtained fat necrosis in one of them. His results have never been published.

Hildebrand and his student, Dettmar, placed a ligature about the gastro-splenic portion of the pancreas in two cats to prevent the discharge of its secretion through the duct; and in six others they performed the same operation and also ligated the veins leaving the organ. In all cases fat necrosis was found about the pancreas. They were also successful in producing it three times by introducing portions of the pancreas of one cat into the abdominal cavity of another. In one instance they obtained it after removing a piece from the organ and leaving the distal portion without ligature. Hildebrand, furthermore, injected pure trypsin into the abdominal cavity and found that hemorrhages into the peritoneum resulted. He suggested that the hemorrhages so frequent in pancreatic affections might be due to trypsin while the fat-splitting ferment was responsible for the change in the adipose tissues.

Rosenbach and his pupil, Jung, with a similar object in view, introduced trypsin and at other times portions of pancreas into the abdominal cavities of rabbits. Out of four trials with pieces of pancreas, they obtained fat necrosis once, using dog's pancreas. On the other hand, Senn, in a series of experiments reported some years ago, found the pancreatic juice innocuous when it came in contact with the peritoneal tissues.

As the results of Hildebrand's work seemed of great importance, I attempted to verify them. Two dogs, one rabbit and seventeen cats were operated on. The cat is particularly suitable for the experiment on account of the abundant omental and retroperitoneal adipose tissue, and because of the accessibility of its pancreas. The pancreas of the cat consists of a duodenal portion, and a gastro-splenic portion, which corresponds to the principal part of the human pancreas. The gastro-splenic portion is covered throughout by peritoneum, and is easily reached. In all these animals it was surrounded, as close to the duodenum as was feasible, by a silk ligature tied tightly enough to insure closure of the duct. In about half of the cases as many as possible of the veins leaving this part of the pancreas, were also tied, and the gland was lacerated with a sharp hook passed into it beneath the peritoneum. The condition of the adipose tissues was noted to prevent mistakes occurring on account of the trifling fat necroses occasionally appearing spontaneously in the cat. The anesthetic employed was ether.

Five cats exhibited fat necrosis of a marked type. The change in the fat was characterized by a slight hardening, a dead white or a pale brown tinge, and an opacity, which was easily distinguished when the tissues were fresh and warm. The normal adipose tissue, under these circumstances, is soft, colorless, glistening, and nearly transparent. However, inflammatory collections may look extremely like fat necroses, and an examination with the microscope is always necessary. The areas of altered fat occurred, exclusively, close to the peritoneal surfaces. Sometimes they appeared at points some distance from the pancreas, as in the perirenal adipose tissue and in the mesorectum. But in all of the five cats, the same change was also present in the fat immediately about the pancreas; and in two of them it was much more intense there than elsewhere. It seemed to proceed from the pancreas as from a focal point. In one of the cats, nodules and flat areas of fat necrosis were present in large numbers in the fat about the pancreas, in the omentum, in the mesentery and mesorectum, and on the surface of the kidney. In this instance the picture was strikingly like the disseminated fat necrosis seen in man. In three of the five successful cases, an accidental infection of the peritoneum with diplococci was also discovered. The microscopic study of the nodules produced experimentally, gave the same results in the main as are found in fat necroses in man, except that the disorganization of the adipose tissues was not so far advanced. The fat cells, instead of being filled with transparent oil as in normal cells, contained fine linear crystals which produced the opacity already described. Frequently these crystals were arranged in a radial manner around the outer part of the cell, leaving a hollow in the middle. They reminded one of the hollow concretions of stone, lined by crystals, called geodes by geologists. Calcium salts were usually detected in abundance in the nodules, which suggested that the precipitated fatty acids might have combined with calcium to form soaps.

In addition to the work described, which was reported in detail in the *Boston Medical and Surgical Journal* for April 15, 1897, a new series of somewhat different operations has been begun. It may be interesting to note here, however, that in one instance a marked development of fat necrosis in the cat has been secured within twenty-four hours after the operation.

It would be premature to conclude from these experiments alone, that the fat-splitting ferment of the pancreas produces fat necrosis. However, they must be suggestive, considered in connection with the association of disseminated fat necrosis with pancreatitis, the occurrence of single fat necroses in the normal pancreas, and the finding of fat necroses about the pancreas of the hog. It is easy to watch the action of the fresh cat's pancreas upon neutral oil, which is quickly rendered acid. It requires no great stretch of the imagination to conceive of this change happening within the living body, if conditions are produced that bring the ferment in contact with adipose tissue. One may suppose the ferment to reach the tissues by way of the blood or lymph currents, or through the peritoneal cavity. It is noteworthy that the disseminated fat necroses found in man seldom appear except close to the peritoneum. In the cases reported where fat necroses were found in the subcutaneous tissues, even of the extremities, we are obliged to imagine some morbid agent working through the blood stream or by way of the nervous system. In the examples produced in the cat, none were seen in localities that could not have been reached by way of the peritoneal cavity.

In any case it is difficult to account for the peculiar nodular character of the necrotic areas seen in man, and often experimentally made in the cat. In this respect they resemble the focal necroses produced by the toxins of infectious diseases, like diphtheria and certain vegetable poisons, as was pointed out by Dr. Whitney several years ago.

If eventually proven that a pancreatic ferment produces fat necrosis it will be interesting to add another to the list of pathologic processes resulting from the action of the digestive ferments. From this point of view there would be an analogy between fat necrosis and peptic ulcer of the stomach. As peptic ulcer results from the digestion of a spot of mucous membrane whose vitality has been lowered by some preexisting morbid agency, we may find ourselves unable to account for fat necrosis by the action of the fat-splitting ferment alone.

DISCUSSION.

Dr. Dougall, Illinois—I would ask the author whether he has made an examination of the parotid gland in connection with the study of the pancreas in fat necrosis.

Dr. Blaisbrook, Washington, D. C.—I have been interested in this subject, having read a paper on it, and having examined one hundred cases postmortem with regard to this condition. I have not, however, met with any case of fat necrosis. The only cases in which I have met with disease of the pancreas have all been cases of carcinoma. One or two resembled very closely descriptions of fat necrosis, but under the microscope they were shown conclusively to be cases of carcinoma of the pancreas.

Dr. H. U. Williams—I have not paid any attention to the parotid gland in this work.

PNEUMONIA IN CHILDHOOD.

BY AUGUSTUS A. ESHNER, M.D.
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While the symptomatology of pneumonia has been thoroughly worked out, and the disease is viewed as infectious by those most competent to judge, there remains yet some diversity of opinion as to the relations between the varieties designated respectively croupous or lobar and catarrhal or lobular. Pneumonia is no longer considered the pulmonary localization of a constitutional disorder, but rather a true inflammation of the lung, dependent, as experience has shown, upon a variety of causes. While the essential and the final cause is some low form of vegetal life, we have learned that the active bacterium is not always the same and that its mere presence is not sufficient to constitute or initiate the disease-process. On the contrary, certain conditions must have been previously fulfilled in order that the activity of the microorganism shall be expended in a specific direction.

Pneumonia in adult life differs from the same disease in childhood only by reason of physical and physiologic differences, but a comparative study of the affection as it appears at these two periods of life is not without interest and importance. Discussion of this subject is rendered especially opportune by reason of the publication recently of two valuable contributions dealing with different phases of it, the one by Schlesinger (*Archiv für Kinderheilkunde*, B. XXII, H. 3–6, p. 266), who reports in detail the results of a careful clinical analysis of 173 cases of croupous pneumonia in children observed at the Kaiser und Kaiserin Friedrich Kinderkrankenhaus at Berlin, and the other by Duerck (*Deutsches Archiv für klinische Medicin*, B. LVIII, H. 4, 5, p. 368), who deals at length with the etiology and histology of pneumonia in childhood based upon observations in forty-one cases studied in the Pathologic Institute of the University of Munich.

The 173 cases of Schlesinger occurred among a total of 10,487 under observation during a period of five and a half years, making the morbidity 1.65 per cent. (as compared with from 2 to 4 per cent. in adults). It is well known that croupous pneumonia is far less common in children than broncho-pneumonia. The former may, however, occur in earliest infancy, even the newborn not being exempt, although the disease is relatively uncommon in the first year of life. The period of greatest prevalence falls between the second and the fourth year, the frequency subsequently diminishing until the age of puberty. Boys suffer in larger number than girls (in the proportion of 110 to 63—with a morbidity of 2.2 per cent. to 1.5 per cent), as men are more commonly attacked than women. The disease selects by preference those of robust constitution, the well developed and the well nourished. In contrast with broncho-pneumonia, only a small proportion of the cases have been debilitated by previous disease, although a considerable number have already suffered from attacks of croupous pneumonia and a still larger number from measles. In adults also it has been found that an attack of croupous pneumonia appears to predispose to subsequent attacks.

The period of maximum prevalence for croupous pneumonia is almost invariably given as between March and May and that of minimum prevalence between September and November. The same relation was in a general way found to exist in the series of cases under consideration, although the largest number occurred in May and the next largest in June. No correspondence was observed between the prevalence of croupous pneumonia and that of diseases ordinarily supposed to depend upon the influence of cold, such as bronchitis and broncho-pneumonia, and no special relation was noted with regard to various meteorologic conditions.

Two types of initial fever were observed, the one being unattended with prodromes and the temperature rising to its acme within ten hours; and the other being characterized by prodromal manifestations for a day or two, the temperature then rising in two or three hours. The younger the child the higher in general was the fever and the more likely was it to be remittent or intermittent, in contrast with the continued fever of later years. Involvement of the upper l ttended with a higher temperature and ntly with continued fever than involve- e lower lobes, and involvement of the han that of the left. Gradual reduction of the temperature by lysis proved to be less common in children than it is in adults, occurring in 19 of 151 cases—12.6 per cent., as compared with from 20 to 30 per cent. Defervescence by crisis occurred in 132 cases—87.4 per cent.—oftenest on the sixth day, next in frequency on the seventh day, then on the fifth day. In more than two-thirds of the cases the crisis occurred during the night, continuing on an average from ten to sixteen hours. The reduction in temperature was often considerable—as much as from 3.1 to 3.5 degrees C.—and it was especially pronounced in the youngest children and in association with involvement of the upper lobes. In three-quarters of the cases the temperature fell on the day preceding the crisis to the neighborhood of normal, constituting a procrisis, in contradistinction to a pseudo-crisis. This occurred especially in the middle period of childhood and in association with involvement of the upper lobes and of the right lung. Following the crisis the temperature fell in a considerable proportion of cases below normal, sometimes very considerably, and continued at this level for many days. At times there occurred a secondary rise of temperature of brief duration, apart from any complication.

At the height of the disease, pulse, temperature and respiration pursued parallel curves. With the occurrence of the crisis, however, pulse and temperature declined as a rule notably, the latter in greater degree than the former, while the respiration frequently diminished gradually. Not rarely frequency of pulse and of respiration declined gradually, while uncommonly the respiratory frequency diminished suddenly, together with the temperature and pulse. After the crisis the pulse-respiration ratio was mostly 2.5 or 3 to 1, although exceptionally it reached 1.8 to 1. Excessive frequency of pulse (above 170) or of respiration (above 75), as well as marked infrequency of pulse (below 80), was rare.

The respiration in children suffering from croupous pneumonia assumes a peculiar type, being made up of a short rapid inspiration, a pause in the inspiratory position (absent only during rapid breathing) and a jerky, noisy expiration. At times the action of the heart is arrhythmic, especially during convalescence or following the crisis, though it is occasionally so also at the height of the disease and at this time is of unfavorable omen. Sometimes the heart-sounds are dull and impure and suggestive of the existence of a murmur; rarely the area of cardiac percussion-dulness is increased.

In determining the seat and extent of the morbid process it must be borne in mind that bronchial breathing may be transmitted to the ear from the diseased to the healthy side. In children the infiltration does not remain so strictly limited to the boundaries of the lobes of the lungs as in adults. Not uncommonly it invades adjacent portions of the neighboring lobe or less commonly the lung on the opposite side. More characteristic of pneumonia in childhood, however, is the limitation of the infiltration to a small portion of a single lobe. This localization occurs especially in the axillary region.

Of the 173 cases the right lung was involved alone in 96 (56 per cent.), the left lung in 66 (39 per cent.), and both together in 9 (5 per cent.); as compared with the following distribution in adults: the right lung in from 44 to 57 per cent., the left in from 28 to 43 per cent., both lungs in from 9 to 22 per cent. The left lower lobe was involved alone in 47 cases, the right lower lobe in 44, the right upper lobe in 37, the left upper lobe in 11. Isolated involvement of the upper lobes (and especially of the right upper lobe), although absolutely less common was *relatively* more common than similar involvement of the lower lobes. When more lobes than one were attacked the invasion was generally consecutive and not simultaneous and it pursued in general an ascending direction. The maximum degree of infiltration was generally reached on the fifth day and persisted for a day or two. Resolution is, as a rule, more rapid in children than in adults, taking place generally at about the time of the crisis. Complications are uncommon and such sequelæ as tuberculosis and pulmonary gangrene are rare.

The course of croupous pneumonia is quite as severe in children as in adults. The severity is most pronounced in those between the first and second years and also in those between the sixth and eighth years. Involvement of the right lung is attended with graver manifestations than involvement of the left lung, while there is little difference as related to involvement of the upper as compared with that of the lower lobes.

When a prodromal stage of two or three days precedes the onset of the disease proper this is ordinarily not marked by any special feature, but when the attack sets in abruptly it may be attended with vomiting (which occurred in 83 of 120 cases—69.1 per cent.), headache (in 26 cases—21.7 per cent.), pain in the side (in 22 cases—18.3 per cent.), delirium or diarrhea (each in 16 cases—13.3 per cent.), abdominal pain (in 13 cases—10.8 per cent.), chilliness (in 12 cases—10 per cent.), rigor (in 10 cases—8.3 per cent., as compared with from 80 to 92 per cent. in adults). Convulsions are relatively uncommon (in 5 cases—2.5 per cent.), occurring only in very young children, especially with involvement of the right lung.

Immediately preceding the crisis the condition of the little patient appears especially grave, even worse than it had been previously, so that the improvement that follows seems all the more pronounced. Nevertheless in not a small proportion of the cases improvement does not immediately succeed the crisis. In especially severe cases symptoms of exhaustion may be present for a day or two after this event.

The course of croupous pneumonia in children is noteworthy for its variability. Some cases pursue an abortive course, the infiltration, though marked, being circumscribed and undergoing rapid resolution. Less commonly the morbid process stops at the stage of congestion. Wandering pneumonia is the most dangerous clinical anomaly in childhood. As in adults, so in children, relapses are rare. In the cases of so-called gastric pneumonia, gastro-intestinal symptoms predominate, while the physical signs are not pronounced and appear late, so that the diagnosis may be attended with great difficulty. One of the most common atypical forms of pneumonia is attended with cerebral symptoms, which may be of convulsive, comatose or delirious character. This is usually associated with infiltration of the right lung and appears not more common in association with involvement of the apex than with that of the base. In many cases albumin is present in the urine and often acute otitis media occurs as a complication. The cerebral manifestations may be attributed to the pyrexia, to individual predisposition, to the intensity of the infection and to disease of the middle ear. When meningitis is present as a complication it usually pursues a latent course.

Examination of the blood discloses a variable increase in the number of leukocytes, which bears no apparent relation to the extent of the exudate and but little to the temperature, although it seems to depend in degree upon the intensity of the infection. The number undergoes diminution in association with the crisis, in the sequence of which it becomes normal. The number of erythrocytes is at this time also diminished. Before the crisis the hemoglobin is generally increased, but subsequently its percentage slowly declines.

Pleurisy was present in 51 of the 173 cases, especially with involvement of the lower lobes, in the largest number merely as an epiphenomenon, but in 16 as a distinct complication. Empyema was encountered in seven cases. In addition to seven fatal cases, heart-failure occurred in twenty cases and collapse in five. Albuminuria is less common in children than in adults, occurring in 28 per cent. of the cases, as compared with from 42 to 68 per cent. in adults. Usually it was slight in degree and corresponded with the severity of the attack. Rarely were tube-casts present. One case was complicated by acute hemorrhagic nephritis; and in two others there was nephritis following measles. Herpes was present in thirty-one cases—18 per cent. All of these recovered and the larger number pursued a mild course. In eighteen cases acute otitis media occurred as a complication, pursuing a relatively benign course. There was moderate loss of weight during the attack, which was, however, made good in a short time. The mortality was 4 per cent., as compared with from 10 to 20 per cent. in adults, and with 65 per cent. in cases of broncho-pneumonia. In the seven fatal cases death was due respectively to meningitis (associated with purulent pericarditis and broncho-pneumonia), intensity of the infection (associated with nephritis and enteritis), pericarditis and empyema (associated with enteritis), pulmonary insufficiency (associated with empyema, purulent pericarditis and nephritis in one case, and with empyema, purulent pericarditis, broncho-pneumonia and nephritis in a second case), cardiac insufficiency (associated with empyema, nephritis and broncho-pneumonia) and cerebral thrombosis (associated with anemia and nephritis).

The diagnosis is not based upon any one single symptom or phenomenon, but upon the general impression made by the sum of all of the symptoms. The therapeutic indication in a self-limited disease like croupous pneumonia is to sustain life till recovery takes place. To this end the temperature should be kept within control and heart-failure prevented. High temperature is best reduced under these circumstances by means of the wet pack, especially when restlessness is marked and delirium active. The water used should have a temperature of from 13 to 15 to 18 degrees C.

The investigations of Duerck showed that the lungs of children suffering from the various forms of pneumonia of both primary and secondary origin contain more or less complex mixtures of microörganisms, among which the diplococcus pneumoniæ preponderates in frequency, both alone and in association with other bacteria. In other respects the constituency of this bacterial mixture bears no relation to the primary disease, except that the diphtheria bacilli were found only in cases of pneumonia complicating or following diphtheria. It was not possible to differentiate histologically lobular from lobar pneumonia. The designation broncho-pneumonia is considered permissible only when extension of the disease from the bronchial terminations to the peribronchial tissues can be demonstrated. It was found that the lungs of persons dead of other diseases and not suffering from pneumonia contained bacterial mixtures similar to those found in cases of pneumonia, and in these also the diplococcus pneumoniæ preponderated. Further, bacteria, some pathogenic, were found in the lungs of domestic animals, such as pigs, oxen, horses, calves, not suffering from pneumonia.

From these observations it seems fair to infer that the normal lungs of healthy individuals always contain pathogenic bacteria, whose mere presence is not sufficient to set up disease. In addition there must be some traumatic or other disturbing influence. It was found experimentally that simple injection into the trachea of animals of the bacteria found in pneumonic lungs is not alone sufficient to induce pneumonia. When, however, irritating substances were injected, either previously or simultaneously or subsequently, pneumonia resulted. Injection of the latter alone also proved capable of causing pneumonia, and exposure to cold likewise was followed by the development of pneumonia of lobar, fibrinous and mycotic type. These two forms of pneumonia owe their origin to injury of the pulmonary structure, in consequence of which the microörganisms already present undergo multiplication and acquire pathogenic properties. The harmful influence of cold depends in all probability upon the induction of an acute intense hyperemia of the lungs. The presence of pathogenic bacteria in the normal lungs of healthy persons helps to make clear the occurrence of the so-called mixed or secondary infection of tuberculosis.

ON THE TREATMENT OF TYPHOID FEVER.

BY E. VIKO, M.A., M.D.

PARK CITY, UTAH.

In 1870 Selmi discovered the ptomains, and later Bouchard pointed out the rôle the ptomains play in infectious diseases; knowing the lesions of typhoid fever and its cause many physicians then came to the conclusion that intestinal antiseptics should be employed in this disease. Silver nitrate was employed in 1860 by Joseph Bell of Glasgow, and later by William Pepper of Philadelphia, who treated 100 consecutive cases without a death. As early as 1883, Da Costa employed thymol with good success; ever since thymol has gained in favor. Naphthalin was praised by Rosbach as an abortive in typhoid fever; Kraemer in 1886, Wilcox in 1887, Sehwald in 1889 and Wolff of Philadelphia in 1891 confirmed Rosbach's observations. Mules (*British Medical Journal*, Feb. 27, 1892) reported that many cases of typhoid could be aborted with naphthol. Salol, calomel, beta-naphthol, turpentine, and mineral acids have received their share of praise.

According to my experience, under proper diet and by the use of intestinal antiseptics, the death rate in typhoid fever ought to be almost *nil*. I have treated several thousand cases and have tried thymol, salol, beta-naphthol, calomel, copper arsenite, guaiacol and mineral acids, either combined or separate. My preference is for thymol, salol, beta-naphthol and calomel. Under their administration the attack can be aborted or shortened, or it will run a mild course. Relapses are apt to occur if the medicine is stopped too soon. I order the medicine used for at least two weeks after the fever has abated. The patient is ordered to drink all the water desired. The water is boiled, cooled and aërated; ice is allowed; milk, if it agrees, is ordered; beef tea and soft-boiled eggs, mild stimulation during convalescence. If the stomach is irritable, rectal feeding of milk and beef tea is resorted to when necessary. My prescriptions generally read:

(For an adult.)

℞	Salol	℈ ij	2	60
	Thymol	℈ ij	2	60
	Tablets cupri arsenitis (āā gr. .01) No. xx			
	Papoid	℈ ij	2	60
	Guaiacol carbonatis	ʒ ss	2	00
	Pulv. saponis	gr. v		33
	M. Ft. caps. No. xx			

Sig.—One every four hours with milk.

(For children.)

℞	Beta-naphthol, dissolved in heated oil	gr. xxiv	1	56
	Ol. amygdal. dulcis, dis. in heated oil	℥ ss	16	00
	Ol. cassiæ	m. j		06
	Pulv. acaciæ	q.s.		
	Glycerini	℥ ss	16	00
	Aq., q.s ad	℥ iij	96	00
	M. Ft. emulsio.			

Sig.—One teaspoonful every four hours with milk for 3-year-old child.

The bowels are moved once or twice a day with calomel and soda. At this place, I desire to express my opinion as regards acetanilid. Most authorities condemn it; in large doses it will certainly do harm. In small doses (4 grs. every three or four hours) I have found it very beneficial; it keeps the temperature inside safe limits and lessens tissue oxidation. It produces sweat, which is certainly desirable. The pulse becomes slower and stronger (action analogous to digitalis). My prescription reads:

℞	Salol, acetanilid	āā ʒ j
	M. Ft. pulv. No. xv.	

Sig.—One every three or four hours when fever goes above 102 degrees F.

Under the above detailed treatment sordes on the tongue never appear, and seldom delirium; hemorrhage from the bowels is rare; death rate is almost *nil*.

A word as to the Woodbridge method. On reading his article in the JOURNAL for July 10, 1897, one is left with the impression that Woodbridge has made a new discovery. His treatment is not new (see short historic sketch at the beginning of this article). The only new and novel thing about it is a variety of tablets and capsules. As to novelty they are certainly admirable; as to practicability they are a nuisance. The drugs used are all good and I do not doubt but that he will have good success with them, but the doses are too small and the intervals between doses are too short, thereby unnecessarily disturbing the patient too often; the purging is also excessive. Larger doses, longer intervals between doses and less purging will produce just as good results if not better. The sentence: "The declaration that typhoid is a curable malady has been for years and is yet nearly always greeted with such 'acrimonious and vituperative dissent,'" etc., is unwarranted, as the writings on intestinal antisepsis are quite extensive and date back to 1870 (see authorities mentioned and also Hare's "System of Practical Therapeutics," 1892).

Permit me to report a curious instance with reference to the cause of an outbreak of typhoid last fall in four families who live outside of town near the mines at a place called the Alliance tunnel. They receive their water supply from a small creek. The water is conducted first through two barrels as a reservoir and thence to their houses. Eleven became sick with typhoid; the youngest was 11 months old, the oldest about 35 years; in some the temperature was normal at from eleven to fifteen days, in others about twenty-one days; in one in thirty-six days and in another about forty days, counting the relapses. All got well. The average duration of the disease was fourteen or fifteen days. Undoubtedly several more cases would have occurred in those families had they not been instructed to boil their drinking water. Later the barrels used as reservoirs were cleaned out and three more or less decomposed squirrels were found in the barrels.

Some two or three years ago this town used to be a regular hotbed for typhoid fever. The cause was in the water supply. The fever would be most severe in December and January; at that time the usual water supply was insufficient and water from a stream polluted with human excrement was turned into the city reservoirs.

THE USE AND THE ABUSE OF THE BICYCLE.

Read before the Central Wisconsin Medical Society, at Evansville, Wis., June 29, 1897.

BY JAMES MILLS, M.S., M.D.

JANESVILLE, WIS.

The world is on wheels; doctors and ministers, lawyers and teachers, husbands and wives, kings and queens, old and young, rich and poor, are all equal in cycling; and all must pedal, sweat and breathe dust alike. In this they share the same joys and sorrows. Cars and steamboats are wholesome affairs, so far as equalizing our outward conditions is concerned; but your true leveler in locomotion is the bicycle.

In this " age of inventions," what the telegraph and the telephone do for thought and voice, the bicycle does for the body. It is a machine with the power of impulsion induced by the muscular motion of the rider's limbs; it is a horse and buggy combined; costs less than either and fattens on air. It enables the doctor to outride microbes, and catch ozone on the wing. It puts him in prime condition for visiting his patients, and is an amazing economizer of his time and energy. It suggests to him the importance of caution, courage, courtesy and self-reliance; and particularly of " looking before leaping." Like the moth that circles about the flame, he will find the danger of " scorching"; and possibly like it, take warning from the sad mishaps of others who often outride him.

It is for the general public interest, that legitimate and orderly cycling should be encouraged. The use of the bicycle for traveling, especially in the country, has in it the germ of the solution of the improvement of public highways. When wheelmen have become sufficiently banded together to compel the maintenance of well-paved streets and good roads and the safe use thereof by them, there will be a heavy falling off in the tribute paid by the people to elevated-track magnates and traction barons, who now control our street and railway conveyances, and tax the people for the proud privilege of getting to and from their daily labors.

Beyond all these, there is the certainty of a higher physical standard for the race in the universal employment of a vehicle which insures to its users fresh air and healthful bodily exercise. I believe that the bicycle, properly used, is of very great value to a large number of people who would not otherwise indulge in sufficient outdoor activity.

The majority of accidents to cyclers in the cities are the results of inexperience in riding and the carelessness of the drivers of horses. In Germany and some other European countries, this fact is recognized; and before a novice is allowed to go out upon the public highways, he or she is required to give an exhibition of proficiency before duly appointed examiners. We venture to assert that this would obviate many of the present dangers which are universally admitted to need attention, and would thereby appreciably reduce the number of street accidents.

The subject of bicycling for women is beginning to attract the notice of medical writers. Dr. Robert L. Dickinson of Brooklyn, N. Y., is among the foremost who have given the subject attention. Some French, English, German and American gynecologists have given their opinions upon the subject, and the greater number of them agree that, as a rule, where this exercise is not carried to excess, it is a beneficial one.

In it we seem to have found, at last, a form of an open air muscular work, which induces women to spend many hours away from close rooms and indoor tasks. It exercises and strengthens a large number of muscles of the body, far more than is generally supposed. Ask the beginner or the expert, how much bodily balance is required. Ask the woman who sits upright, holding tightly to the handle bars as she works up a grade, how much arm-and-shoulder pull there is in it.

Since bicycling is one of the few popular physical exercises that attract women, it will, under properly prescribed conditions undoubtedly show itself capable of large results as an agent in curing pelvic disorders. There is no problem that troubles the physician more than the prescription for proper physical exercise by women in view of her disabilities and the disadvantages under which she has suffered in attempts to obtain pleasurable and beneficial muscular action. It seems hardly too much to say that the promises from the bicycle are far-reaching. Through it and the habits it will engender, we look for better and freer dress; for rounder limbs, fuller lung cavities, steadier nerves, and better developed muscles.

There are four demands before which the costume of the wheelwoman must pass in review: health, fitness, fashion and artistic beauty.

The third of these is ever at odds with the others. As for art in personal adornment, it can not be said to exist among people who tolerate a combination of sweaters, bloomers and leggings, or the deformed wheelwoman of alleged fashion journals. Yet the principle at the foundation of the dress question seems exceedingly simple. For play of the muscles, freedom is the first requisite, whether in cycling or scrubbing; and we must therefore instruct our patients to make certain modifications of their dress as necessary.

One has but to glance at ten riders of the hampered sex, to see nine who, ignorant of some of the rules of good riding, misapply force, waste effort, and run a certain risk of harm to themselves. The trouble is due chiefly to the lack of training, since the pupil in bicycling is turned adrift on the road as soon as she can balance a wheel or can mount and dismount one. Instruction should be insisted upon to obviate bad habits of riding; and unmerited criticism will thus be avoided.

It would be superfluous before an audience of physicians to do more than to name the ordinary precautions necessary for women who take up wheeling.

We lay stress on carefully increasing the length of the ride, and on strict attention to the difficulties thus experienced; on heeding the warning given by palpitation of the heart and by labored breathing; on signs of strain of the right heart, which is robust only in laborers and athletes; on frequent rests; on giving heed to chilling and over fatigue; on light food during exercise; on relaxation of the muscles after riding; and on entire abstinence from such riding during the menstrual period.

I have the report of the wife of a physician, who, after riding her wheel for half an hour against a hard wind, had sudden cardiac dilatation, which gave rise to very serious symptoms, and which it required eight months to reduce.

No physical exercise has proved to be more beneficial in many insane hospitals than the riding of the wheel. It is attractive, novel and interesting to the patients, and brings excellent curative results.

Bicycle riding has certain advantages over the present style of horseback riding. The fashionable contorted seat on a saddle horse does not develop the body symmetrically, and the awkwardness, due to the fact that the transverse diameter of the pelvis and the transverse diameter of the upper trunk do not correspond, means strain, to say nothing of the useless effort that a trotting gait entails.

When women get into the habit of riding on horseback, part of the time with the stirrup on the right side, and part of the time with the stirrup on the left, one objection to the spinal rotation and the unsymmetrical development will be overcome; and it is to be presumed that eventually all women will ride astride, as their great-grandmothers did before the days of Elizabeth. Expense precludes this form of exercise for most women. Cheapness, safety, accessibility, and the small amount of preparation required, are all on the side of the wheel, and hold good even to a greater degree for women than for men.

The question is often asked, how is it that we advise women to ride a wheel, while a strong protest has been entered against her running the sewing machine, on account of the harm it may do to her pelvic organs. It seems to me that the conditions under which the two forms of leg exercise are taken, are radically different. A woman at the sewing machine must focus her eyes accurately on the point at which the needle is at work, and must drive the material along in even lines under the rapidly moving needle and within the margin of one-sixteenth of an inch. Such a position to a corseted woman brings a strong pressure on the the pelvic contents and prevents free circulation.

A word of warning is needed as to the undue pressure that the bicycle seat is liable to make upon the parts of the body in contact with it.

The seat of the bicycle for men seems to have been modeled after the saddle that was found suitable in riding horseback.

Women have generally found great difficulty in having the seat so adjusted as to be comfortable to them.

To relieve them in this respect, several alterations become necessary. In the first place, a woman's pelvis is broader than a man's; and the tuberosities of the ischia are farther apart in woman than in man; consequently, the width of the rear portion of the seat needs to be greater. Secondly, the anterior projection of the seat must be tilted downward. This, however, requires the most delicate adjustment; for if the seat is tilted too far, its slope will cause the rider to slide forward, so as to rest almost entirely upon its anterior projection, and so defeat the object of the tilting.

There are two possible objections to bicycling by women. The one, over exertion, should be and is easily controlled; the other may be entirely eliminated by the use of the proper seat. Bicycle riding can do no possible harm to a healthy woman, any more than it can to a man, unless it is abused. And for neurasthenics it is an excellent remedy, probably the most valuable we have.

The principal points connected with the proper construction of the machine itself are those relative to a proper fitting seat and an arrangement of its parts enabling the rider to assume a reasonably erect position, so that the weight of the body is in part upon the pelvic bone, and the rest of it is borne by the feet upon the pedals and the hands upon the bars.

Physicians ought to have personal knowledge of this exercise. It is our duty to so advise wheel-women that they may be carefully trained by competent instructors as to the right methods of pedaling, the correct position of the body, and the height of the seat.

It is plain that the wheel is destined to make a place for itself in the world, not only as a luxury and source of pleasure, but as a positive necessity for health and physical development to hundreds of thousands.

FRACTURES OF THE SKULL AND INJURIES TO THE BRAIN.

Read before the Milwaukee Medical Society, May 25, 1897.

BY F. SHIMONEK, M.D.

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MILWAUKEE, WIS.

Case 1.—B. F., German, age 35 years,, book agent; was brought into the Emergency May 1, 1897, about midnight: unconscious, right motor hemiplegia, respiration labored and irregular and of Cheyne-Stokes character, hemorrhage from right ear. Pulse 70, full and stong, indicating cerebral compression; temperature, 97 degrees; by next morning it had arisen to 100.2 degrees and pulse to 98; respirations, 26.

History: About 10 P.M., while intoxicated, fell down stairs and was not found until about midnight. I saw him the following morning in the above-stated condition.

Examination: The scalp was very greatly swollen, so much so that it was impossible to make out the condition of the skull underlying this tumefaction. There were no marks of injury upon the scalp. An oblong edema extended from a little distance behind the bregma on the right side of the head downward and backward to the apex of the mastoid process. May 2, pulse, 84; temperature, 99.2; respirations, 20; temperature rose to 101 degrees. Ice was applied immediately and this application kept up until May 3, when examination revealed a little motion in the right arm and leg and not quite such profound unconsciousness. The edema having somewhat subsided we were able to feel a short ridge, which we decided to be a fracture.

It is a known fact that a simple exudate in the scalp, or rather in the pericranium, is frequently mistaken for a fracture; but it is quite easy to differentiate an exudate from a ridge of a fractured bone by simply taking into consideration the fact that an exudate being a displaceable material, can by pressure applied firmly and steadily for a few seconds be indented and made to yield before the finger, while a ridge due to a fracture will not yield to pressure and is more likely to make a dent in the finger. It will be noticed that the injury on the head, the bleeding from the right ear and the paralysis were on the right side; according to cerebral localization it follows, therefore, that the lesion causing the paralysis was an injury, through *contré coup*, of the opposite motor center, and that part of it which controls the leg and arm.

Operation: Assisted by Drs. Chandler and Hanson, May 3, 12:45 P.M., a large U-shaped incision was made over the right parietal bone, just posterior and inferior to the eminence, surrounding the supposed fracture. A piece of loose bone, about an inch square, directed vertically inward, was found. It was necessary to remove a button of bone before this could be removed. The dura mater was uninjured. After extraction of the bone the compressed brain very slowly filled the space, but was perfectly pulseless. From this piece another fissure extended in the direction of the sagittal suture, thence downward and outward, describing almost a perfect circle, and having a diameter of two and one-half inches. This area was also loose so far as bony connections were concerned, but was still attached to the pericranium; one edge of it was so firmly fixed beneath the skull that all our efforts to bring it into contact with the skull and retain it were without avail, so its removal was deemed the lesser evil. Still another fissure, running downward in the direction of the petrous portion was found, and this explained the hemorrhage from the ear.

The night following the operation some signs of improvement appeared, such as continuous talking and diminishing paralysis. Temperature, 99.2 to 101, axilla; pulse, 92 to 99.

May 5, 9:30 A.M. The wound was dressed and union found perfect, with no cerebral pulsation. The patient asked for water, complaining of headache. Temperature. 98.6 to 100, axilla; pulse, 78 to 88; respirations, 21. He was perfectly conscious; talked rationally about his affairs and relatives; moved arm and leg quite easily.

The unconsciousness was due to the depressed fragment of bone; the motor paralysis to an injury of the opposite motor center, the pulselessness to an hemorrhagic exudate, probably into the lateral ventricles. The improvement after the operation simply followed the relief of pressure.

May 8. Temperature, 99.4 to 98.4; pulse, 80 to 78; 3:20 P.M., he became again unconscious and could not be aroused.

May 9, 6:30, regained consciousness, complained of headache and again became profoundly comatose with complete motor paralysis of right side.

May 10. Temperature, 98 to 100, axilla; pulse, 68 to 82, full; respirations, 22; completely unconscious all day.

May 11. Temperature, 98.4 degrees; pulse, 76; still profound coma. At 5:45 it was decided to open the skull upon the opposite side, *i. e.*, over the middle meningeal artery, because it was suspected that a fresh hemorrhage was causing the unconsciousness and paralysis. With the assistance of Drs. Chandler and Hanson I trephined on the left side. A small clot with quite a quantity of venous blood escaped. I believe that an accidental injury to a vein caused the venous hemorrhage; the brain upon that side, also, was perfectly pulseless, demonstrating the fact that there was intracerebral pressure. The patient was so profoundly comatose that the operation was done without an anesthetic and he did not manifest any sign of sensation. Respiration was decidedly Cheyne-Stokes.

May 12. Temperature, 98 to 100; pulse, 78 to 124; respiration stertorous; complete unconsciousness.

May 13. Temperature, 99.4 to 98.4 degrees; pulse, 102 to 108. The patient was still unconscious and right motor paralysis still existed. The wound was dressed and found aseptic.

May 13, 10:20 A.M. He became conscious and asked for lemonade The paralysis was somewhat improved.

May 14. Temperature, 98.8 degrees; pulse 101 to 77; respiration, normal. Patient was perfectly conscious and paralysis vanishing and absolute asepsis continued. The patient returned home May 22, weak but perfectly well and after twenty days of pulselessness his brain is again normally pulsating.

Case 2.—S. D., injured by a falling scantling which struck him on the temporal region. He died on the way to the hospital. There were no external marks, but brain and blood were exuding from the meatus auditorius externus in considerable quantities.

Case 3.—M. K., injured by falling from a building. He struck on the right temple and when picked up was completely unconscious and had a left spastic paralysis, with an occasional tremor of the paralyzed side. It is not known whether he was immediately comatose as he was not missed until several hours had elapsed. Two buttons of bone were removed from over the middle meningeal artery of the right side. No hemorrhage was found but a large quantity of very clear serum escaped. No benefit followed the trephining and the patient died the next morning. I believe that the lesion in this case was a cerebral laceration extending into the lateral ventricles and permitting the escape of the cerebro-spinal fluid through the Sylvian fissure and out through the trephining opening.

ON A CASE OF THE PARTIAL REMOVAL OF THE SPLEEN.

BY HORACE M. DEEBLE, M.D.
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WASHINGTON, D. C.

One evening in May, 1889, about 7 o'clock, and while stationed at Fort Yates, North Dakota, I was summoned to the Indian hospital, three miles south of the post, to examine a 12-year-old Indian boy that had met with an accident. A short time before, the patient had been leading a pony to which was attached the usual lariat and picket-pin. From some cause or another the animal became frightened, and in its alarm violently jerked the lariat rope, which had the effect of sending the iron pin at its free end flying through the air and this struck the boy in the left side between the fifth and sixth ribs, inflicting an incised wound some fifteen centimeters in length. Through this opening protruded a tumor, which was dark in color, and measured in diameter about seven centimeters. Upon examining this it was seen that it could be nothing more nor less than the boy's spleen. The organ was, moreover, in the most unsatisfactory condition, owing to the fact that the parents of the child had made numerous and violents attempts to squeeze the mass back into their son's body through the lips of the wound. This undue handling had gotten the organ into the most filthy condition imaginable and, of course, in the very worst state for the interference of the surgeon. To make matters still more serious, I had come to the hospital armed only with my pocket-case and no antiseptics. To replace this bruised and lacerated spleen within the abdomen of the patient would, I was certain, prove to be a fatal procedure, as profound suppuration together with infection of neighboring structures would quickly follow beyond all peradventure of a doubt.

Under these circumstances there was but one thing left for me to do, which was to remove the organ. This was promptly done, having first encircled the mass at its base with a ligature. Then cleansing the stump as thoroughly as possible with hot water, I returned the former into the abdominal cavity and closed the external wound. There was a lady physician in charge of this hospital and to her I turned over the case, hearing nothing further from it until about 6 P.M. on the third day after the operation, when I was sent for in great haste. Carrying with me the proper antiseptics and dressings I was soon at the patient's bedside, where the preliminary examination revealed the fact that the temperature had arisen to 104.4 degrees; the patient was, moreover, extremely restless and the margins of the wound were greatly swollen and bulged outward. Upon removing the stitches there immediately escaped 60 c.c. of very offensive pus, and in this floated the ligature, which had come away. Washing out the cavity with a solution of hydrogen peroxid (1 part to 4 of water) until all foaming had ceased, I next inserted a rubber drainage tube and dressed the wound with bichlorid of mercury gauze, placing the whole in as favorable a condition as possible. Good effects immediately followed, for the child's temperature at the conclusion of the toilet of the wound fell from 104.4 to 100.4 F. At my first visit I had instructed the attendants to allow their patient only liquid food, but these instructions had not been carried out; for the parents had succeeded in smuggling in a quantity of dried peaches, which he had consumed; fortunately, however, without any deleterious effects. From this time on, the patient made an uninterrupted recovery, and after the second dressing no pus accumulated in the wound.

Prior to his injury this young Indian was but a light eater, while in temperament he was mild and docile. A marked change in both these respects took place, however, after I had relieved him of at least three-fourths of his spleen. Almost immediately his appetite became ravenous and the amount of food it took to appease it was quite incredible. *Pari passu*, with the development of this enormous appetite the boy's temperament underwent a complete change, and instead of being gentle and good-natured, he gradually, though rapidly, became exceedingly irritable and querulous. Two years subsequently, when the opportunity was again afforded to examine this patient, I found that no change had taken place either in his appetite or nature. After his recovery, I regret to say that I made no examination of the blood of this boy, although I was enabled to observe that he was lacking neither in the matter of growth nor development. He was likewise well nourished.

There have been very few traumatic injuries of the spleen reported, and one authority consulted by me, makes the statement, that out of twenty-nine cases of gunshot wound of this organ, there were but two recoveries. The present case confirms much that has been written in reference to the effect upon the appetite, following extirpation of the spleen, while upon the other hand little has been said in literature touching the effect the removal of this organ has upon the disposition of the patient.

In Flint's "Text-book of Human Physiology," he sums up with more or less thoroughness the effect which eradication has upon most dogs and other animals below man. This eminent authority makes full reference to the changes which take place in the appetite, such as marked increase in the voracity as well as depravity, the subject sometimes not being averse to the eating of feces and flesh of its own kind. He also quite fully refers to the changes in the disposition of the animal.

Nevertheless, there is a great deal yet to be known in regard to the physiology of this peculiar ductless gland, and upon this occasion I can only say that I feel a deep sense of regret that I did not bring this boy under a closer examination the entire time it was within my power to do so. The opportunity may at least have afforded confirmation of doubtful points which now stand in need of additional material to clear them up.

602 M Street N.W.

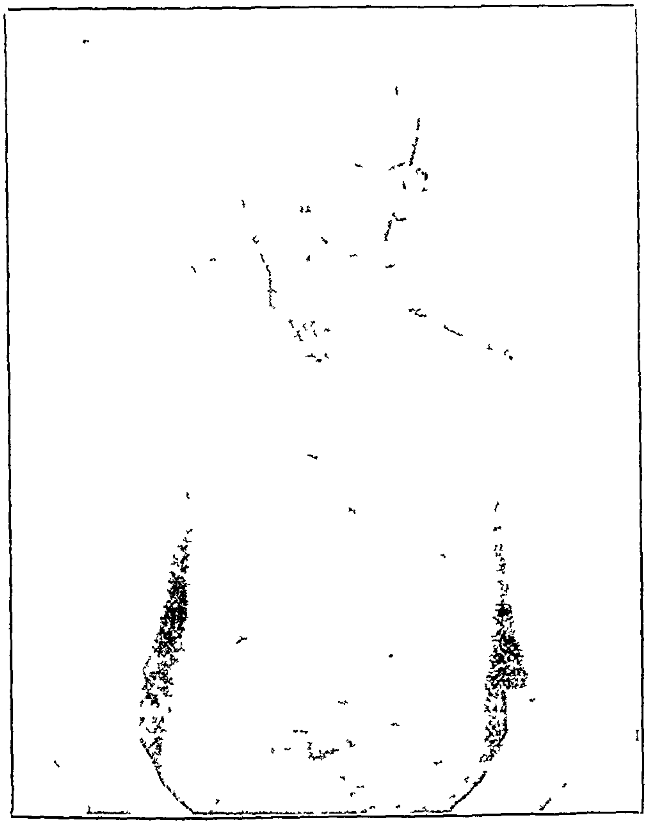
AN UNUSUAL CASE OF VARICOSE VEINS.

BY B. J. WETHERBY, M.D.
WILKESBARRE, PA

I wish to report what has been to me an unusual and interesting case of varicose veins. The patient, Carl Mitchell of Arlington, Kansas, has been under my observation more or less constantly, on account of an intimate friendship, and near residence, during the past ten years, until I removed from the State, six months ago. He is now about twenty-six years of age, married, and by occupation a farmer. Until three years ago he was in perfect health, with the exception of a very obstinate acne vulgaris of the face, shoulders and breast, which still persists, although in a much modified form. His parents are both living and in good health. He has two sisters, living and healthy. He has never had gonorrhea or syphilis. Three years ago he was rather suddenly seized with pain in Scarpa's triangle, over the femoral vein of the left side, which was followed by the development of a sausage-shaped tumor about six inches long, in the same region. There was no history of traumatism, exposure or undue fatigue. The pain was aggravated when he attempted to walk or assumed the upright position. There was fever, anorexia, furred tongue, constipation and all the symptoms of acute inflammation. The leg on the affected side became edematous, and albumin occurred in the urine. A diagnosis of phlebitis of the femoral vein was made, and the patient confined to bed. The abdomen became very tender and the constipation more obstinate. In about ten days a tumor developed over the femoral vein in the triangle on the right side, followed by edema of the right foot and leg. The acute symptoms lasted about five weeks. Convalescence was very slow, extending over a period of several months.

Following the subsidence of the acute symptoms the superficial epigastric and superficial circumflex iliac veins on both sides began to enlarge, which they continued to do until all the superficial veins of the abdomen were of sizes varying from that of the little finger to that of a goose quill. They can be traced with the eye to the level of the fourth rib. I succeeded in getting a rather poor photograph, which is here presented.

My theory was that a phlebitis began in the left femoral vein, traveled up the external and common iliac of the left side to the bifurcation of the inferior vena cava, then traveled down the right common and external iliac veins to the right femoral. The inflammation almost or entirely obliterated the veins involved causing almost if not the entire return circulation from the lower limbs to be carried on by the superficial epigastrics and superficial circumflex iliacs through their anastomoses with the mammary and intercostals. I presented the case before the Kansas City Academy of Medicine and nearly all the members agreed with this theory. Dr. Cordier and Dr. Binnie of Kansas City examined the case in private and endorsed my views. No one with whom I have talked regarding the case has ever seen a similar one, hence my desire to report it.



At present he is feeling fairly well and doing work on his farm. Both legs are somewhat edematous, and at times his abdomen contains considerable fluid.

An occasional hydragogue cathartic and a constant use of laxatives keeps the edema from giving much trouble. He has an ulcer on each leg which is alternately healing and discharging. There are no varicose veins in the legs. I have advised elastic stockings extending to the groins, to be worn on both legs, and a change to a lighter occupation.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

(Continued from page 237.)

X.—ENGLISH SURGERY. JOHN HUNTER.

Bacon von Verulam; Maxims of English Surgery; The English: Cheselden, Sharp, Bromfield, White, Gooch, Alanson, Warner, Wilmer, Hill; Pott; 4 Scotch families: Alex. Munro with his sons Donald and Alexander; Benjamin, John and Charles Bell; Allan and John Burns; William and John Hunter. Surgeons in the remaining foreign countries.

A nation which was in possession of the commerce of the world, and ruled the sea, hardened by an inhospitable climate and given to the dangers of the open sea; a people with strong practical sense, mightily stimulated to the study of nature by continuous traveling, rich in material wealth, having built in their own home a number of most excellent hospitals, whose physicians had practiced in the most remote regions of the earth, and had there learned the diversity of prevailing diseases—In what spirit must this people pursue its sciences? Those very qualities make it probable, that the English, instead of clinging to speculations and hypotheses in their researches, would much rather hold to simple observation and experience.

In its lord chancellor and keeper of the great seal, *Francis Bacon*, Lord Verulam (born 1560), England produced a great genius whose philosophy, through the application of the inductive method, brought about a complete revolution in all experimental sciences, and especially in medicine. It was the method of arriving at general principles from isolated experiences, in contrast to the deductive method of descending from general principles to particular cases. One should pass cautiously and slowly from the particular observations, accurately weighing the circumstances and modifications, to the general propositions; for only in this way and with much difficulty will progress be made. Experience alone will be of little use, if one does not know how to deduce causes from it, and it is just as harmful to portray nature according to preconceived opinions and favorite theories. Bacon demanded an accurate history of a case which must be neither so verbose as to include the most commonplace trifles, nor so meager as to relate only the miraculous. Good observers might find in the most ordinary things much that was noteworthy. Departures from a normal structure of parts and also comparative anatomy, had been too much neglected, while advancement in medicine had been especially retarded by a too great veneration for antiquity. It was foolish to perpetually quote the authorities; man must study nature, for as a rule there was not much wisdom in books, since they continually contradicted each other. These empirical views of Bacon which opposed all useless substitutes, were carried still farther by Locke and Sydenham. The latter laid clear before the eyes of his contemporaries, the great mischief of the mania for hypotheses, and led them back to the observation of nature. After Bacon's idea, the architect Wren founded in 1657 the Royal Society, whose object was the study of all nature. In the beginning of the eighteenth century, Locke (1704) and Newton (1724) died and England lacked for half a century, until John Hunter came, great thinkers who advanced comprehensive views of natural phenomena. But the British still valued sensual perception as the only source of knowledge. Proud of their healthy human understanding and practical insight, the British nation was an enemy to all general hypotheses, declaring openly that their business was with facts, and despising every theory from which a direct use could not be expected. The discovery of a new salt or the invention of a new machine, meant to them far more than the deepest speculation. The study of nature was everywhere insisted on, even though it sometimes went astray. This explains the voluminousness with which every natural product was described and catalogued. For instance, the frog hopping about in every conceivable aspect, occupied a whole volume; and also the immoderate partiality for the miraculous filled their medical literature with curiosities. Indeed, the practitioners complained that in all the investigations and classifications of worms, they forgot to study the symptoms of worms in the human body and the means of eradicating them, and never thought of the great profit which the science won from the enthusiastic study of nature. For the first time Newton, discarding all hypotheses, taught students to base conclusions on observation, and with mathematical exactness, to build one proposition upon another, assuming nothing without proof. The English nation assented to this, for they were more empirical than any other nation in Europe.

A reaction in English surgery was not lacking; here also empiricism carried the banner. "A grain of experience to a practical surgeon is worth a pound of reasoning;" with this maxim Kirkland criticised the views of his countrymen. (In Germany A. G. Richter and Schmucker adopted these winged words, except that the latter changed the grain to a drachm.) The love of the natural and unartificial, a national characteristic of the English, gave to surgery a different direction to what it took in France. The animated and fervid power of the French, which, with real zeal multiplied useless instruments and increased superfluous methods of operation, was observed by the Englishman quietly and thoughtfully, while he followed nature and sought to make his surgery as simple as possible. They operated with the greatest complacency. They took pride in performing almost all operations with the surgical knife alone, and simplified many instruments; indeed, as simplicity in instruments is almost always the measure of this perfection, and nothing shows better the poverty of our art than the multiplicity of instruments and bandages. They cast a great many of the latter into the lumber-room and looked upon bandaging as a very subordinate branch of surgery. The surgeons industriously cultivated anatomy, in spite of the fact that this study was made difficult by prejudice and other hindrances, and gave to their surgery a new impetus such as the French had given to theirs. Accordingly, their best surgeons were at the same time the best anatomists (Cheselden, the Hunters, Monro and Bell). They did not stand second to the grand nation in operative skill, and found rich opportunity for training in the wars and in the many hospitals. It was not long before English surgery excited public attention, in spite of the brilliancy of their French rivals. It was seen that in the English hospitals the mortality after operations was much less than in the French, and it was realized that the better hospital equipment contributed to this result, as did also the great simplicity on the part of the surgeons, who also had more thorough medical knowledge than their neighbors and a greater appreciation of after-treatment and diet. The English followed a strictly conservative policy. They tested the new, but with discretion. Indeed, it was difficult for an innovation to find acceptance, but when proven successful it was introduced and strenuously maintained. They had a high reverence for what had been once tested, and for the traditional; their retention of tried principles and faithfulness in their application, were the chief qualities of English surgeons. Their great harmony in respect to the most important questions of practice, soon gave to their surgery a definite national aspect. It was a great merit in certain eminent men as Percival Pott and Benjamin Bell, that they although themselves highly esteemed as operators of the first rank, by no means placed the chief value of surgery in operating, and sought to check the undue zeal of the young men of that day for operating and to impress upon them the value of pathologic surgery. For with a little anatomic knowledge, coolness and a firm hand, any one could perform the most difficult operations with tolerable success, but for the proper diagnosis and treatment of a wound, knowledge was demanded which but few surgeons possessed. Of no less importance was the growing union of the study of medicine and surgery, for which Kirkland, among others, zealously contended (1783).

Although, not until the year 1800, did the state separate the college of surgeons from the guild of the barbers, yet surgery in Great Britain was considered one of the free professions, and, chiefly through John Hunter, had as a science been elevated to the level of medicine. In contrast to other nations of Europe, where it was despised, surgery was valued and honored. Frequently youths of the best families devoted themselves to its study; men of high rank attended surgical and anatomic lectures and had their allotted place in the ampitheaters. In general, the whole nation showed more sense and confidence in surgery than was shown elsewhere. This has continued to our own day. Even yet the success of herniotomy is greater in England than in other countries, because the sufferer notifies the physician earlier, and the operation is therefore earlier undertaken, a circumstance which also favors the prognosis of stone in the bladder, as the patients seek medical aid earlier than is the case in our own country. The English showed a high degree of enthusiasm for their profession, and in spite of the large number of skilled surgeons, four to six of whom frequently served in the same hospital in London, they were very friendly with each other and exchanged their opinions in mutual consultations. free from jealousy and prejudice. A great impetus was also given by the various societies. London had a college of surgeons, of physicians, the Royal Society, the Society of Physicians and several private societies; Edinburgh and Dublin likewise had their colleges of surgeons. These published their journals. The "Edinburgh Medical Essays" (1732) and the "Medical Observations and Enquiries," were followed by the "Medical Transactions" published by the College of Physicians in London, (1768), and the "Memoirs of the Medical Society of London" (1787), which was published by physicians, surgeons and apothecaries. How high a standard was maintained by the latter society, which consisted of thirty members, is shown by the fact that no one who possessed a secret remedy was admitted to its membership. In the year 1805, the Medico-Surgical Society was founded; its published proceedings ("Med. Chir. Transactions") have become of the utmost importance. The surgeons and apothecaries were really the family physicians, while the physicians were only called in difficult cases. In 1797 it was suggested that all medical persons be given the common name of doctor of health, analogous to the French officiers de santé, but in vain. The surgeons remained in the guilds until very recently; a sharp distinction was made between surgeons, physicians and general practitioners. The latter were the so-called apothecaries who practiced medicine, surgery and obstetrics, and prepared in their own houses the medicines for their patients.

The excellent hospitals laid the foundation, in the beginning of the 18th century, for the great medical and surgical schools. *Cheselden*, of St. Thomas Hospital in London, body-surgeon to the queen of England, introduced this period. He wrote little but accomplished all the more. We have him to thank for ingenious descriptions of the eye, which he first undertook in 1718, but described very briefly and vaguely in his anatomy, which later, Blumenbach had translated. Then he introduced a method of lateral incision for lithotomy (1730), which gained him the greatest applause. He had at first many failures in lithotomy, through the frequent injury of the rectum, which he honestly acknowledged, until his method, by which Morand saw him complete an operation in fifty-four seconds, gave him better results. From him we get the first description of neuroma. His best pupil was *Sharp*, of Guy's Hospital, who as a young man wrote a work on operation (1740), characteristic for clearness, brevity and simplicity, which England lacked at that time. An enemy to the mania for authorities, and the customary routine, endowed with great mechanical talent, he improved many operations and instruments, but carried it so far, that he looked with contempt on all directions for the adjustment of bandages. Whatever good French surgery accomplished, he brought to England, after his studies in Paris, in his "Critical Inquiry" (1750). *Bromfield*, at St. Luke's Hospital, was the champion of the isolated ligature of the arteries, for the drawing out of which he invented his hook. His successful exarticulations of the humerus are well known, as well as his successful extractions of foreign bodies from the knee-joint, his zeal against the abuse of amputation and bleeding, and against the debilitating treatment for erysipelas ("Chir. observ. and cases," 1773). *Charles White* of Manchester, as the father of joint resection became immortal. We owe to him the method of setting the dislocated upper arm by extension upward, and the recommendation of the amputation of the lower part of the femur, above the condyles ("Cases in surgery," 1770). *Benjamin Gooch*, in Shottisham, a bold operater, wrote much on wounds and stones, first observed a caput obstipum through shortening of the platysma myoides (1759), and invented a bandage for concrement of the knee-joint that the operation might be avoided ("Chir. works," 3 vols. 1792). *Alanson* in Liverpool, introduced a new flap in amputations (1779), and recommended thereby prima intentio. *Warner*, the successor of Sharp in Guy's Hospital, described fine operations in empyema, and specialized in diseases of the eyes, and of the testicles. His "Cases in Surgery" (1754) as well as those of *Wilmer* (1779) and Hill (1772) are rich in peculiar observations.

Percival Pott (1713–1788) was more eminent than these contemporaries. He had pursued his studies in Bartholomew's Hospital in London, had become assistant there and, soon afterward (1749), first surgeon. He held this position for thirty-eight years, then retired, and died a year later. Pott was considered the best practitical surgeon, the best teacher, the best writer, and the best operator of his time in London. However, had a few of his country-men inaugurated with him a new epoch in English surgery, the history of this verdict would have been changed. Pott may have surpassed his colleagues in scientific accomplishment and rich experience so far as actually to have commanded the most varied departments of practical surgery; the great honor of bringing about many reforms in English surgery remains to him; he did not make a new epoch, as did John Hunter. That time alone could alter that judgment, was due to the fact, that Potts's improvements were recognized by everyone, while John Hunter's higher intellectual attainment and the influence of his pioneer work were only fully appreciated by posterity.

A certain clumsiness and crudeness clung to many surgeons until within the eighteenth century. They gloried in a kind of cruelty and overlooked the feelings of the patients so far that the ordinary man must believe that the patient was not given proper care unless he was heard to groan. They did not understand the first principles of surgery; the after-treatment was tedious and painful, the bandage a heap of irritants, the instruments endless and awkward, the red-hot iron an attribute of every hospital visit. Pott opposed all this and showed that all we need to do is to observe the working of natural forces in the process of healing, not retard their operation but help them. Sometimes nature overcomes the worst art. Pott endeavored to make surgery less painful and operations simpler, to almost completely abolish the hot-iron, to use corrosives more sparingly, and especially to use fewer external remedies and fewer but more serviceable instruments. An instrument could not be too simple nor too sharp for him, and a bandage could never be light and soft enough. Pott considered the art of avoiding an operation and curing an injury without it, higher than that of operating cleverly, since it often required more skill and judgment to preserve a member than to operate on it. He noticed that his hearers, more than half of whom were apothecaries who when they came to London had seen little or nothing of surgery, as well as the many foreigners in his hospital, turned their attention almost wholly to operations. They judged the surgeon only by his quickness, and watch in hand timed him. Then he reminded them that while a certain celerity pertained to a good operation, the safety of it always stood first, but while he urged them to a diligent study of pathologic surgery, and influenced them against operations, he took care to train up good operators; this, however, was not to be the main object. For a long time his pupils were to see and think for themselves, since neither through the brief instruction of a few months' course in the hospital, nor through the study of books alone, could one acquire judgment and skill. The rules of writers are always but the outlines of a drawing which the surgeon has to fill in and complete. Pott insisted strenuously upon accurate sections and anatomic studies as the basis of surgery. A wide experience confirmed him in an aversion to all useless theories. He knew the old writers and sometimes quoted them, always quoting the Greeks in the Latin language (for at that time no one thought of reading Hippocrates and Galen in the original); but there was no trace of undue faith in authorities in him. One must accept the truths of the ancients, but one man can never demand blind faith of another, and regard for our forefathers must not restrain us from using our own reason. The honor of art suffers thereby as much as does our own moral characters. If our minds, as Locke said, are possessed of the opinions of other people, even though they be true, we can not go a hair's breadth further in our own knowledge. On the other hand he perceived that the progress of a science is always due to the insight of a few preeminent men, and that their findings must almost of necessity be reduced to practical rules for the great mass of men, who think very little concerning what they see and read. In the belief that surgery would stand still if one were too vain to recognize, as an old man, the error of much that he had learned as a youth, he was honest enough to admit his changes of opinion, to which even the most clear-sighted and experienced men most often see forced upon them. It was even a greater mistake of that time to exaggerate the profession at the expense of truth, and to blindly believe whatever was maintained. If his opinion differed from that of other surgeons he contradicted them without injuring their reputation and standing. Mindful of the words of Seneca, that there is always something left to do, and that even after a thousand centuries no one will lack the opportunity to discover more. Pott was modest in differences of opinion and never forgot that those who come after us will always find plenty of occasion to wonder at the ignorance of their forefathers. He opposed quackery, which boasted especially in the treatment of hernia and fractures, and endeavored to enlighten the sick concerning their ills and the deceptions to which they were exposed.

Pott took single chapters of surgery and developed them into monographs in order to gain proficiency through detailed investigations. His style was masterly. He began with two excellent works on hernia (1756–57), in which he described inherent ruptures in which intestine and epiploön lay in the same sack with the testes, the various kinds of incarceration and the operation. Then followed investigations of the lachrymal fistula, in which the carious lachrymal bone was bored through with a curved trocar, and of rectal fistula (1761), for which he devised the so-called Pott's bistoury. His essay on fractures and luxations (1765), rich in new ideas, exercised the greatest influence in England; in it he discarded the too short splints and pointed out the advantages of a half curved position for the broken thigh. In his "Injuries of the Head" (1760–68) Pott showed an excessive preference for trepanation. He took up the diseases of the testes (1762–67) hitherto little known, distinguished the various kinds of hydrocele, and recommended the seton with the rejection of corrosives; he first described the chimney-sweeper's cancer (1775). In the operation for cataract he tried to again bring depression to its former importance (1775). Opposed to Bilguer, he upheld the necessity of amputations and set forth clearly the definite indications, as well as the most favorable time for operating. At the same time Pott published his most ingenious work, the discovery of caries of the spinal column, which received from him the name Malum Pottii ("Remarks on that kind of palsy of the lower limbs, which is frequently found accompanying a curvature of the spine," 1779). Pott's collected works were published by his son-in-law, Earle, in a complete edition (3 vols. 1790).

About this time Scottish surgery made a very marked advance, and this extraordinary impetus was due to certain entire families. There were four, the Monros, the Bells, the Burnses and the Hunters. The oldest, *Alexander Monro* (father), a pupil of Cheselden and Boerhaave, was professor of anatomy and of the surgical clinic in Edinburgh. He effected the establishment of the academic hospital there, and contributed much by his discourses, which were the first lectures of merit, much to the renown of the medical school established in the year 1720. A man of excellent character, full of ardent patriotism, he showed the warmest interest in the welfare of his city, became justice of the peace, director of the bank, and warden of the highways. He was the first to give lectures on comparative anatomy (1744). Besides many anatomic works in association with his sons, he declared himself with great vigor against the extraction of cancerous breasts, defended Petit's not opening the hernial sac and first suggested injections of wine in hydrocele. He insisted upon ligature of the arteries in amputation, and wrote a good book on caries. His surgical observations were collected in the "Medical Essays" of the college of Edinburgh physicians, as secretary of which body he published the first six volumes. His merit as a physician was not less eminent. The oldest son *Donald Monro*, as chief field physician in the Seven Years' War, reported upon camp fevers in the English military hospitals, and first recommended cooling remedies (poultices of ice, vinegar) in the treatment of aneurysms. He also prepared a complete edition of his father's works. To the youngest son *Alexander Monro*, professor in Edinburgh, we owe the first description of the bursa mucosa (1788), and the observation that the art. obturatoria sometimes encircles the neck of a crural rupture like a crown (1803); he made many anatomic investigations concerning the nervous system, the lymph glands and the testes.

Benjamin Bell, hospital surgeon in Edinburgh, established with his system of surgery (16 vols. 1783–88), the reputation of the second Scottish family. This compendium received the greatest applause at home and abroad, as there for the first time since Heister's book, was surgery treated in its entirety with the latest advancements. When A. G. Richter took the first volume in his hands he exclaimed "excellent! clean, instructive, practical, without hypotheses, and a man who has seen that whereof he speaks, and reflected upon that which he has seen." Benjamin Bell has the merit of the introduction of hollow splints (so-called English splints) in the treatment of fractures. His nephew *John Bell*, wrote on the nature and healing of wounds, and on the principles of surgery, portraying among other things the false traumatic aneurysm and the aneurysm per anastomosin very strikingly. His celebrated brother *Charles Bell*, in London, belonging rather to our century, besides producing many excellent observations and a work on operations, has reared an enduring monument to himself in the distinction of the posterior and anterior fibres of the spinal cord, and of the motor and sensory nerves.

In the Burns family, *Allan Burns* made himself known through a surgical anatomy of the neck, and the more illustrious *John Burns*. through a surgery and an anatomy of the pregnant uterus.

Among all the Scottish stars, the double-star of the Hunters shone the most brilliantly. The elder *William Hunter*, had studied theology five years when Cullen infused him with an interest in medicine and took him into his own house. After he had studied anatomy and obstetrics under Alexander Monro and Douglas, and had published his excellent researches on cartilages, he became the successor to Sharp in the anatomic amphitheater in London. He began with lectures in anatomy, which at that time no one else in London taught, but he always had a severe oppression of the heart when he spoke in public. He sojourned several months in Paris and Leyden, where Albin's injections made a great impression upon him. Hunter then instituted the most minute anatomic investigations, injected the veins of the testicle with quicksilver, concerning which there is a conflict of priority with the younger Alexander Monro, and later published an anatomy of the pregnant uterus with thirty-four magnificent plates, in which he for the first time described the membrana decidua (1774). He became surgeon in the Middlesex Hospital, then director of the lying-in house. Soon he was named among the best obstetricians in London at a time when Smellie, in spite of his European reputation, was very unpopular on account of his coarseness. In 1750 Hunter gave up surgical practice and became a doctor of medicine. For his natural history specimens which he had collected from his youth up, he built at an enormous expense a large museum, to which he annexed a private anatomic amphitheater where he delivered his lectures. It was possible for him to do this on account of the great wealth which he had accumulated through a wide practice among the nobility, and as obstetrician to the Queen of England. Hunter had a violent disposition, severe with himself and without consideration for others, therefore he was more honored than beloved by his colleagues. Unable to bear contradiction, he involved himself in many quarrels and even became estranged from his brother. Full of courage and strength of character he did not understand the art of pleasing, and brought even into the salon of the queen a candor very rare at court. Much afflicted with gout, he was overcome with pain in the midst of a lecture and fainted. During his illness his spirit was strong and he said to a friend shortly before his death, "If I could only hold a pen I would write down how easy and pleasant it is to die." In later years, rather a physician and obstetrician than a surgeon, he made himself a name in surgery by a distinction of true, false and mixed aneurysms, by the first description of aneur. varicosum, and by researches in the dilatation of the pr. vaginalis and the nature of congenital hernia. Charles Bell and Brodie worked under him, and as his most illustrious pupil, his brother John.

A *turning point in surgery begins with John Hunter*. However great is the progress of surgery in the nineteenth century, yet, without belittling the merits of our contemporaries, we must assert that in surgery so great and all-embracing a genius has been born to no other people, even to our own day. John Hunter belonged to the extremely rare phenomena which appear only at long intervals, and he was equally great as a surgeon, anatomist, physiologist, pathologist and naturalist. The power of his intellect was so extraordinary that he ranks with Aristotle, Harvey and Bichat. If one would draw a comparison between English and French contemporaries, he would place Desault along with Pott, and Bichat with John Hunter. But the former limited himself to mankind, while Hunter extended his researches not only to the laws of disease among men and animals, but over the entire realm of nature, organic and inorganic, and sought to fathom all forms of life to the farthest depth. The object which he had always before his eyes was the discovery of the laws of life; for only an intimate acquaintance with them can elucidate the causes of disease, without the knowledge of which no one can be a surgeon. His mind moved so freely that the greatest projects could not overpower him. "Thinking gave him pleasure," as he himself declared.

Born in 1728, at Long Calderwood, the youngest of ten children, John was lazy at school, often played truant and wandered about the country. At 20, when it is said he could scarcely read and write (?), he went to his brother William in London, to devote himself to anatomy. His progress was so great that in the following year he took pupils for instruction. After his surgical studies with Cheselden, he became an assistant in Bartholomew's Hospital, and then house surgeon in St. George's Hospital (1756). William placed great confidence in his brother's talent and made him an assistant in his lectures. Although in many things they were but little in harmony, yet the enthusiasm for anatomy was for a long time the means of keeping a certain concord between the two hot-heads. Later they were estranged, when William, full of passion, assumed the priority in their work on the structure and veins of the placenta and their connection with the uterus, and John would not publish a preparation pertaining to it. Their skill in the art of preparing specimens soon commanded general admiration. For ten years John dissected only human cadavers, and then he perceived that in many complicated relations only comparative anatomy could give satisfactory information. But in his animal dissections he never lost sight of the anatomy of man, but sought for general principles. Cadavers from menageries, and as many rare animals as possible, were bought. The consequence of his undue exertions was an illness which, after an attack of inflammation of the lungs, obliged him in 1760 to undertake a journey and go into the army. For three years he served as a military surgeon, in Jamaica and Portugal and in the Seven Years' War, and there gathered experience in gunshot wounds. Then he settled in London and began his instruction in anatomy, giving attention to practical medicine and surgery. In order to pursue anatomy undisturbed, he set up in Earlscourt, two English miles from London, a menagerie with many strange animals, a part of which he tamed and observed their habits. Once two leopards broke out of their cage and went into the court of the house, where the dogs immediately fell upon them. Hunter hastened to the spot, and saw that one leopard was about to climb directly over the court wall, while the other bit at the dogs. He managed to catch and lock up both in their cages again. His fondness for his menagerie remained with him even when he was an old man. The mildest animals were always his favorites, and he had many kinds of oxen brought from all parts of the world. Even in his sixty-fourth year (the year before his death) he often fought with a small ox, a present from the queen; once the animal overpowered him, until a servant sprang to his aid. While he came away from his sports with wild beasts with a whole skin, he wrenched his tendon of Achilles in dancing. Upon the recommendation of his brother, Hunter became directing surgeon in St. George's Hospital (1769), by which his private practice was greatly increased. He then began to lecture on theoretic and practical surgery (1773). Whatever he could spare of time and money was consumed in collections, for which he kept a designer in his house.

From sunrise till 8 in the morning he was an anatomist. A severe illness made it necessary that his brother-in-law, Everard Home, whom he had taken as a partner, should prepare a catalog of his specimens, as he feared for the existence of his family. But soon afterward he bought two houses in Leicester Square, and had a large building erected near by for his collections, at a cost of £3,000. It contained special halls for specimens, lectures, meetings of physicians and surgeons, rooms for anatomic works, printing and the sale of works. After the collections were put in perfect order in the beginning of 1780, he showed it twice a year, from that time till his death, to his colleagues, the nobility and other favorites. In this cabinet, which with the help of his friends, whom he had explore for him, had increased to about one hundred thousand specimens, he had endeavored to present nature in gradations from the simplest to the most complex organisms, so that the form and structure of parts could be compared in the specimens of the most widely differing animal species placed side by side. Everything was included in four main divisions (for the organs of preservation, motion, perception and reproduction). Besides dried specimens and specimens preserved in alcohol, the cabinet contained a large number of drawings, many rare stuffed animals, skulls, skeletons, pathologic specimens, abortions, bladder, kidney and intestinal calculi, insects, shells and a well chosen collection of minerals. After Hunter's death, the cabinet was bought by the state and turned over to the College of London Surgeons. His library was comparatively small and consisted chiefly of natural history works; one might have heard him say that he read no medical and surgical books (?); at all events he opposed much reading.

(To be continued.)

SELECTIONS.

Seasonal Influences upon the Infectious Diseases.—Dr. Andrew Davidson, at the last meeting of the London Epidemiological Society, read a paper on fluctuations in epidemic affections by seasonal influences, noting the variations in different countries and regions. Seasonal differences are frequently supplemented by parallel conditions of temperature and moisture of the soil, as was seen by the curves representing the single wave of cholera in the temperate climates and the single or double curves observed in India, where it was endemic, depending on the period of the rainy season or monsoons. In seeking the causes of these seasonal variations the diseases due to facultative saprophytes existing in the soil, such as cholera, enteric fever, malarial fevers, must be considered separately from smallpox and measles (obligatory parasites), which could be influenced by meteorologic conditions indirectly only, through the action of these on the resisting power or the habits and surroundings of the individual. Smallpox and measles had similar autumn, winter, spring and summer curves; and when introduced into a highly susceptible community spread irrespectively of season until the susceptible material was exhausted. The heights of the spring and autumn curves of measles were reversed in the English and Scotch towns, as well as in other countries. But comparing compound curves of series of years with single ones, it was seen that in most years only one was strongly marked.

"Habits of life, over-crowding in cold or wet weather, and the aggregation of children in schools, were factors not to be ignored, and as regards the latter it was a common occurrence in Germany and Poland for an epidemic of measles to be restricted either to the Christian or to the Jewish population. Smallpox and measles had one or two annual curves in Bagdad, but were wholly absent during the absolutely rainless summer months. In London the death rate from measles was highest in the second quarter in epidemic and in the fourth in non epidemic years; but Dr. Davidson could not say whether the prevalence or the case mortality corresponded to the number of deaths, though the Hamburg returns showed such to be the case in that town. He would suggest in explanation of many of these phenomena that in non-epidemic periods only the more susceptible were attacked, and that the virus passing through such individuals gained in intensity and the disease spread further; but that when, as in epidemics the more resistent were attacked it became alternated in them until it died out. Why epidemics should usually occur in winter and spring it was not easy to say. In Europe, India and America smallpox followed approximately the temperature curve, though it began to rise in winter when the temperature fell, but attained its maximum with the spring. The regular appearance of smallpox in the winter was ascribed by Flügge to the aggregation of persons indoors, the less frequent change of clothing, and the neglect of ablutions in cold weather; but this would not account for its maximum prevalence in early summer, and the conditions of domestic life in Europe did not apply to India where the same general curve was followed by the disease. It was easy to understand that facultative saprophytes multiplying in the soil were dependent on temperature and moisture, but these conditions could not directly affect those obligatory parasites whose soil was the living body; and these diseases followed their usual course irrespectively of climate and temperature. He had seen smallpox raging in Madagascar in 1868 when the temperature ranged between 90 and 100 F., and in 1870 it prevailed in the Hudson's Bay Territory with the thermometer at 4 degrees F. below zero. All alleged relations between the prevalence of measles and the temperature were true of particular countries only, and therefore could only be accidental. Weather conditions tending to induce catarrhs of the pharyngeal and the respiratory mucous membranes could not fail to render the individual more susceptible to infection from diseases, such as scarlet fever, diphtheria and measles, which were known to enter the body by these surfaces, and in like manner catarrh of the gastro intestinal canal favored the development of cholera and typhoid fever.—London *Lancet.*

Fallacies as to Birth Rate Statistics.—The latest compilation made of birth rate figures shows the rate in Nevada to be 16.30 per 1,000, so that its population would die out completely in less than one hundred years. Maine follows with a birth rate of 17.99 per 1,000, which gives its population about a century longer to exist. New Hampshire is third with 18 per 1,000, Vermont fourth with 18, and California fifth with 19 per 1,000, or nearly 12 per cent. less than the rate in France. This fact the alarmist statistician finds to be most striking, in view of the favorable climate, ample area and diversity of interests in the State. Following California is Connecticut, which has a birth rate of 21.3 per 1,000. Massachusetts has 21.5. Rhode Island has 22.5, a somewhat higher rate than the French, but still insufficient to prevent the extinction of the population within two or three centuries. Wyoming, with its 21.8, comes between Massachusetts and Rhode Island, while Oregon has a rate of 22.5. The conclusion drawn from these statistics is that within a period varying from sixty to two hundred years, according to circumstances, the population of New England and the Pacific coast will be replaced. This gives a good chance for the alarmist to arise and bemoan the condition of the Gaelic and Anglo-Saxon peoples, but the total extinction of these races in any given locality is not to be expected, the statisticians to the contrary notwithstanding. A low birth rate is not a mark of decadence or degeneracy anywhere; it is a mark of the disparity between the sexes in the population of any State or country. Statisticians make usually the mistake of estimating the growth of population not by the actual number of births, but by the relation which the number of these births bears to the total population. It is from this that they get their elusive "birth rate," and a little examination of the facts on which their last alarming bulletin is based will show this conclusively. In Nevada, by the last Federal census, the number of males in the State was 30,000; the number of females was 16,000. Thee were nearly twice as many males as females, but the statisticians, taking no regard of this disparity, based their estimates on the number of births to the total population, and thus arrived at the conclusion that the population of this State, as of other States on the Pacific, was dying out. In Oregon, by the last census taken by Federal authority, there were 180,000 males and 130,000 females, and in this State, for the same reason as in Nevada, the birth rate appears to be small. California is another State which the statisticians aver will at the present rate soon become depopulated. Theoretically, so to speak, it may; actually the population has increased from 380,000 in 1860 to 560,000 in 1870, 865,000 in 1880 and 1,210,000 in 1890—quite a rapid increase for a State which, according to the statisticians, is becoming depopulated. The reason of their error is the same in California as in Oregon and Nevada. By the last census the number of male residents of that State was 700,000 and of female residents 500,000.

For a similar reason, the New England States on the Atlantic seaboard have a low birth rate. The only difference is that in these States the disparity is on the other side of the column; there is an excess of female residents. In Rhode Island, for instance, by the last Federal census, there were 10,000 more female than male inhabitants in a State the total male population of which was 158,000. In New Hampshire the excess was 3,000, in Connecticut it was 7,000 and in Massachusetts it was 64,000. There is no danger of the depopulation of any American State. In some rural localities, it is true, population has fallen off, due to emigration to more fertile and productive regions, but if there be any pessimist about who is expecting the depopulation of any American State "within a period varying from sixty to two hundred years," he may better abandon his fears.—*New York Sun.*

PRACTICAL NOTES.

Radical Cure of Alopecia Areata.—Lorot proposes to remove the part affected, if of small extent, an insignificant operation, the scar being concealed by the hair. It is efficient in preventing contagion, especially in the army where the disease often assumes the proportions of an epidemic.—*Gaz. M. de Liège*, June 24, *Ind. Méd.*

Success of Methyl Blue in Albuminuria.—Lemoine describes the remarkable benefit he derived from methyl blue in seven cases of albuminuria in Bright's disease (*Nord. Med.*, July 1). It is soon eliminated through the kindeys without inconvenience, except possibly in some cases a slight smarting during miction, which can be prevented by adding a little nutmeg; 0.20 to 0.50 centigrams in twenty-four hours are sufficient.

Traumatic Endocarditis.—Litten asserts that traumatisms of the trunk may occasion grave endocarditis, even in the absence of any lesion of the skeleton or of the skin. There is an acute or subacute endocarditis of this nature which usually terminates in a chronic cardiac lesion (mitral or aortic insufficiency or stenosis). Recovery from this endocarditis is very rare. It sometimes assumes an infective character. The traumatism may lacerate the valves, especially the semilunar valves of the aorta, more rarely the mitral valve.—*Deutsche Med. Woch.*, June 10.

Functional Insufficiency of the Pylorus.—Zavadsky has recently treated three patients whose food passed into the intestine without remaining in the stomach at all. There was no gastro-intestinal disturbances, the appetite was good, but each meal was followed by a diarrheic evacuation, and bile seemed to be constantly present in the stomach. He secured prompt cure by administering nux vomica and iron, rinsing the stomach with water at 15 degrees C. every second day, hydrotherapy (river baths), and ordering that a belt be worn.—*Sem. Méd.*, June 9.

Results of More or Less Complete Obstruction of the Nose.—It has been suggested that many anemic conditions, etc., are to a more or less degree due to obstruction of the nose, producing numerous derangements, both in respiration, mastication and anatomic development, far more than has been hitherto realized. The organism does not obtain the requisite amount of oxygen, the secretion of saliva is affected, sleep disturbed, and the necessity of securing free nasal respiration is shown to be imperative, in an article in the *Presse Med.* of June 16, which describes the numerous evils of buccal respiration.

To Prevent Absorption of Perspiration in Orthopedic Corsets.—Vulpius has a tricot stuff made with a coating of the best rubber on one side. He applies this to the skin, or plaster cast, with the rubber side in smoothing out all wrinkles. It is perforated to allow for circulation of air. The corset is never worn next to the skin nor over the shirt, but over rather fine-meshed tricot underclothes which cling to the body without a wrinkle, and allow the air to circulate between it and the apparatus, which remains unaffected by the perspiration for two or three years.—*Cbl. f. Chir.*, June 26.

Adjustable Crutches.—Many persons temporarily lame do without crutches on account of the expense and trouble of procuring them, which much retards their complete recovery. To remedy this, Dr. O. Thilo has invented an adjustable, folding crutch which he keeps on hand and lends to such patients, and also recommends for hospital use and for growing children. The crutch is shortened or lengthened by moving the foot piece up or down in a metal shell that holds it; the cross pieces are secured with an iron rod, fastened with a copper nut at each end. The shoulder rest is a piece of webbing. The foot piece is made in three lengths for children, medium-sized and tall persons.—*St. Petersb. Med. Woch.*, No. 25, 1897.

Citric Acid in the Treatment of Wounds.—G. Müller had been treating a wound for four months that absolutely refused to heal in spite of massage, hydrotherapy, and the most approved methods of treatment, ancient and modern, when he casually applied the juice of a lemon to the wound and was surprised to note that it at once commenced to heal and complete recovery soon followed. He applied the juice of a lemon twice a day, with compresses of the same. The effect on other cases since has been equally favorable.—*Wien. Klin. Woch.*, June 10, from *Therap. Mon.*, No. 4.

Preventive Temporary Tampon in Operations on the Hollow Abdominal Organs.—C. Lauenstein has for years been using a simple process to prevent infection in his abdominal operations, which, as he has never seen it mentioned, he describes in the *Cbl. f. Chir.*, June 19. In a gastric fistula, for instance, from perforation of an ulcus ventriculi through the anterior abdominal wall below the left costal arch, after the contents of the stomach have been withdrawn, he packs the stomach with one very long strip of gauze, leaving the end hanging out. The suturing is done with the gauze still in the stomach, which prevents anything escaping from the stomach; as the suture progresses the gauze is gradually withdrawn until it is all out before the final stiches are taken.

Fractures of the Spine.—Poller's article on this subject is being copied extensively by the foreign exchanges, appearing originally in the *Arch. f. klin. Chir.*, Vol. liv, p. 289. He advocates forcible reduction under chloroform the moment the patient has recovered from the shock of the traumatism. He has thus cured six very serious cases. In twenty-two cases there have been no accidents; partial paralysis has never been transformed into total, and there have been no subsequent lesions of the spine. He agrees with Küster that it should be attempted even in old cases, resorting later to surgical intervention, if it fails. After reduction the patient is placed in bed and undergoes extension and counter-extension for several weeks. During this period he must be carefully watched to see that the bladder and rectum perform their functions properly, with massage, passive movements and electricity to combat paralysis and paresis. The mouth and skin should be carefully attended to, and before leaving the bed, at the end of a month or two, the patient should be suspended in a Sayre apparatus several times a day for fifteen or twenty minutes. He should then wear a Sayre corset and walk with a cane for a few days.

A New Throat Spray.—Dr. H. L. Armstrong, surgeon to the Manhattan Hospital, recommends the following prescription as almost a specific in acute inflammation of the upper air passages, both of the traumatic and nervous varieties:

Eucain	10 grains
Cocain, mur.	10 grains
Aq	6 ounces

Misce. Sig.—Spray every hour in the nose sufficient to be felt in the throat.

If the patient is taught to inhale while using this spray, so that the solution may be carried well within the larynx, it is far more beneficial than it otherwise would be. The advantage of this combination is that while cocain is a valuable remedy of itself the danger has been the liability of the patient to become addicted to its use. By the combination of eucain, which is a thorough local anesthetic in the nose, the nervous excitability produced by cocain will not be developed, thereby making the prescription perfectly safe, as nobody will contract the cocain habit by using this combination.—*New York Medical Journal.*

How to Apply the Tampon.—Dr. J. R. Dodge in *Annals of Gynecology and Pediatry*, article "Embryonic Miscarriage" gives advice as follows: "An ordinary bivalve speculum will answer every purpose; some prefer Sims' and the lateral position. In placing the tampon much care should be exercised in laying the foundation. The lint or cotton should be firmly packed around the cervix including the posterior cul-de-sac, and pledget after pledget should be laid on until the vagina is firmly and solidly filled. After removing the speculum several large pledgets of cotton placed over the external end and firmly held in position by a T-bandage secured by a strap around the body above the hips will complete the operation. Whatever is used in the formation of the tampon, whether it be cotton batting, lint, or strips of cloth, should be aseptic as far as possible, and the pledgets should be secured to a string with the end left protruding for its better removal." Remove tampon in six or eight hours if needed, but sooner if by cessation of pains it is evident the uterine contents have been expelled. "There need be no fear of internal hemorrhage," continued the writer, "for the uterine cavity is quickly filled and further oozing an impossibility. If the fetus has been expelled and the afterbirth still retained and not easily reached, the tampon may be replaced for a time. No physician should consider his patient safe until he has secured the removal of the secundines in any case of miscarriage which has advanced beyond the second month of pregnancy."

Comparative Diagnosis in Pulmonary Tuberculosis by the Roentgen Rays.—Stubert (*Medical Record*, May 22, 1897, p. 733) reports a series of seventy-three cases of pulmonary tuberculosis studied by means of the Roentgen rays and the fluoroscope. He found that in cases of slight infiltration of one or both apices there is a haziness or fog between the light and the observer, the clavicle in other instances appearing to have a gauzy veil thrown over it. When there is marked consolidation the transmitted light is relatively less, the edges of the clavicle are indistinct, or the bone may be invisible. When there is present the same pathologic condition at both apices it is an easy matter by comparing the two sides to decide at once on which the disease has made the most progress. Comparative shadows at the apices are generally seen more distinctly from behind than from in front, by directing the patient to bring his shoulders forward so as to separate as widely as possible the scapulæ and then placing the fluoroscope directly over the spinal column. Ordinarily a practiced eye can, by these methods alone, clearly distinguish areas of the most incipient infiltration, but if it is desired to be more accurate in defining their limits a metal rod may be placed evenly against the chest walls in front or behind and move up and down with the fluoroscope until its outline becomes more distinct, which will indicate that the upper and the lower borders of the consolidation have been reached. If a pencil mark be now made along the edge of the rod and subsequently percussion be practiced, the area of dulness will be found between these lines. In cases of complete dulness, say to the second interspace, with relatively less dulness for one or two interspaces below, a dark shadow will be seen over the first-named region, which will gradually shade off consecutively into haziness and normal reflex of light below, the area of haziness corresponding to the limits of relative dulness. In one or two instances slight haziness was observed in spots that at the time showed no other physical sign of disease, but where later disease developed. The results of the studies thus made may be summarized as follows: 1. Slight haziness indicates the beginning of tuberculous infiltration and may or may not be accompanied by dulness on percussion. 2. Decided shadows indicate consolidation, the extent of which is in direct relation to the comparative density of the shadows thrown on the fluoroscope. 3. Circumscribed spots of bright reflex, surrounded by narrow dark shadow rings, or located in the midst of an area of dense shadow, indicate cavities. 4. Intense darkness, especially at the lower portion of the lung, indicates old pleuritic thickening over consolidated lung tissue.

Treatment of Habitual Constipation in Women.—The constipation that results from lack of tone in the muscles concerned in defecation may have been caused by some lesion in child-bearing, or it may be nervous in its origin, which occurs also in men. The treatment of both is the same to bring these muscles up to tone. Pincus, the German gynecologist, accomplishes this by his "abstinence cure," which he claims will absolutely cure the most obstinate and inveterate cases of constipation from this cause. He first prepares the patient by a preliminary course: examining for uterine or adnexal troubles for which he orders vaginal injections at 38 to 40 degrees C., every day for a week, taking the temperature carefully and accepting the slightest rise in the temperature during this period as a contra-indication for the "abstinence cure." If the patient is nervous, he orders 1 to 3 grams of bromid a day, for a fortnight, with an enema of 2 grams of asafetida, and the yolk of an egg in 75 grams of water, or instead of an enema, a belladonna suppository (2 to 3 centigrams). If there are spasmodic contractions of the abdominal muscles a bag of sand is laid on the region for one to three hours a day or, better still, a kneaded mass of clay weighing from 500 grams to a kilogram. The continuous pressure of this fresh moist clay cures the spasms completely in three to eight days. In case of stercoral infection, the bowels are evacuated with injections of 7 per cent. salted water, or of pure oil, with a few doses of castor oil, avoiding all other purgatives. When all these precautions have been taken, he commences his cure immediately after a menstrual period. Every purgative or injection is forbidden, but there should be systematic massage of the abdomen, with Swedish gymnastics, and faradization of the intestines may be useful. The patient should be instructed to go to stool every day at a certain time, whether she feels any desire or not, and contract the levator ani morning and night thirty times, as if striving to restrain an imminent defecation. She should also roll around upon her abdomen before rising and retiring, for five to ten minutes, a bag filled with angular pebbles or scraps of iron. If the abdomen is flabby it should be frictioned with a brush, a wet compress applied at night, under an impermeable covering, and a belt worn. The treatment requires a month or two, including the preliminaries. The first spontaneous evacuation occurs in from three to ten days.—*Sem. Méd.*, June 9.

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THE DIETETICS OF GLYCOSURIA.

In the treatment of diabetes mellitus the diet has been almost universally considered to be the one all-important matter. The disease, probably as little understood heretofore in its intimate nature as any one in our nosology, has been held to consist mainly in an abnormal excretion of sugar, and all other symptoms have been generally held to be dependent upon this. Just how excessive sugar excretion could produce the whole series of morbid phenomena no one has successfully endeavored to explain; the fact has been accepted and has been made the basis of the treatment. It has been practically assumed that the excess of sugar in the urine must be due, chiefly at least, to an inability of the system to dispose of sugar-producing foods, which normally constitute the larger bulk of our diet, and that the waste thus brought about was, if not the direct cause of all the morbid symptoms, at any rate an index to the gravity of the condition of the sufferer. The carbohydrates were therefore considered his greatest enemy and naturally to prevent their entering the system was the first indication for the treatment. It can not be claimed, however, that the prognosis of the disorder has been decidedly improved, in spite of the elaborate dietetic tables that have been contrived, or even that life has been materially prolonged by their means in the more advanced stages of the disease. It certainly is not made more endurable, even in the milder forms, where dieting does limit the sugar excretion. In the severer types where sugar continues to be excreted in spite of an exclusively proteid diet, the latter is certainly ineffective enough to have its usefulness questioned, and that being the case it may be asked if the stereotyped diabetic diet lists, impracticable as they are in some cases, and uncomfortable enough in all, should be adhered to. In fact, have we not followed a *post hoc, ergo propter hoc* reasoning too blindly in taking the excretion of sugar as the one important clinical symptom of the disease? The relation of sugar in the urine to the other symptoms is not so clear that we must necessarily assume it as causal and believe that with its reduction everything else in the morbid syndrome will mend. It may be, and probably is, only one incident of the general vice of nutrition that constitutes the disease and which in all probability depends primarily upon some serious disturbance of the central nervous system. PAVY has thought that this must be sought for in the vasomotor centers causing capillary dilatation and hyperoxidation of the blood, but, however it may be brought about, the probability of the original lesion of diabetes being in the nerve centers is one that should be recognized. How this is to be reached by treating the one symptom of glycosuria is not altogether demonstrable.

In the very thorough study of this subject by Dr. MUNSON, published in the JOURNAL a few weeks ago, he states "that there has apparently been of late an undercurrent of thought to the effect that possibly the complete exclusion of carbohydrates from the diet might not be an unalloyed blessing to the diabetic." His papers, however, form it is believed one of the most complete and thorough discussions of the subject and its literature in our language, and his conclusions, illustrated as they are by a case in his own actual experience, are certainly worthy of careful consideration. The facts that sugar is produced in the system by the splitting up of proteids, and that the most rigid exclusion of carbohydrates does not suppress its production or its excretion in extreme cases, that even the diabetic requires a certain proportion of sugar in his blood and possesses still a power of consuming it, and that this, if not supplied by carbohydrates, must be furnished by the albumins, are all very significant, and it is remarkable that more attention has not been given them before. In fact, aside from possible local effects upon the urinary passages, we know of no certain reason why a certain excess of sugar ingested should not be normally excreted without serious systemic disturbance, as is the case with many other substances: and this is the fact in ordinary dietetic glycosuria, which, considering the ordinary unlimited ingestion of saccharine substances, must be more frequent than is commonly supposed. In diabetes, however, this single symptom has masked the whole pathology of the disease, has become the disease itself in the mind of physicians generally, and therefore the sole object of the treatment. There is hardly another so striking example of this error of taking a part for the whole in all medicine—assuming these views to be correct.

Dr. Munson is of course not the first to except to the accepted views of the treatment of diabetes; there has been, as he says, an undercurrent of opposition to them for some time past. For example Saundby, at the International Medical Congress of 1894, read a paper favoring a change in the general practice of withdrawal of all carbohydrates from the diet of diabetics, and for allowing them so much of such substances as did not materially increase the urinary sugar, and others have published cases showing, like the one given by Dr. Munson, that the patient's general condition improves under such allowance. If this instead of the quantity of sugar excreted were generally taken as a guide, it is probable that there would be some change in the common views as to the therapeutics of diabetes. There would at any rate be probably less complications from the production of auto-intoxications by a diet that is abnormal in health, and that can hardly be expected to be all that is demanded by the disordered organism.

Even if Dr. Munson's opinion, that the sufferer from diabetes requires sugar in his diet even more than a person in perfect health, be not accepted as too extreme, there is still evidence enough to warrant a very material alteration in the hitherto accepted views of the necessary dietetic treatment of the disease. If possible, we should aim to meet the neurosis itself, and not be led aside by a single predominant symptom, and this can not well be done by still further crippling an already depleted system.

THE GENERAL PRACTITIONER HIS OWN HEMATOLOGIST.

In these busy days, a period which in the history of medicine, will be known as "The Age of the Specialist," the general practitioner must hail with delight a branch of the science so rapidly opening up before him. Let us see what can be done with only a microscope, the possession of which instrument should be the first aim of every physician.

A drop of blood from the lobe of the ear, hastily touched by the center of a clean cover-glass, is deposited on a warm, highly-polished slide and a single layer of corpuscles thus spread. With a little experience one can readily tell if the drop is more concentrated than normal or is hydremic. Examination with a one-twelfth inch oil immersion will determine the relative size of the red corpuscles, their shape, the approximate number of white to red, and detect the presence of parasites; a few minutes' search may clear up a case of malaria which has been puzzling the diagnostician many weeks. To a favored few will it be fated to study the filaria sanguinis hominis or the spirochæte of relapsing fever. Should our patient live at a distance, that need not deter one from an examination of his blood; a drop of blood drawn between two cover-glasses and allowed to dry can be "fixed" and kept in equal parts of absolute alcohol and ether until ready for examination. These specimens are first stained. Staining three to five minutes in a ½ per cent. alcoholic solution of eosin, washing off excess and counter-staining a few seconds (10 to 15). in a weak aqueous solution of methyl blue will be adequate for almost every case. Under this process the red cells are stained red and the white blue, the nuclei of the white cells (also of the red if nucleated reds are present), being especially prominent.

Eosinophilic and neutrophilic granules are also stained a red color, the shades depending on affinity for eosin and the length of time the various stains have been used. The Ehrlich "triple stain" is most suitable for staining leukemic blood.

In the stained specimens another factor may be taken into consideration, the "differential count." A ratio of the varieties of white corpuscles having been fixed upon as normal, it was thought that a considerable variation from this standard might point to some pathologic condition, and such has been found to be the case in tuberculosis and other wasting diseases, where the lymphocytes are greatly increased in percentage. The method is to count 1,000 white cells, noting in the appropriate column whether lymphocyte, large mononuclear leucocyte, polynuclear neutrophile or eosinophile. These terms will become perfectly familiar after a few hours' hard study of a well-stained specimen.

In addition to the above, the presence of bacilli, cocci, myelocytes, nucleated red corpuscles, and other pathologic products may be determined by careful search.

So much then of blood-work can be done by every physician or one familiar with the microscope; no other instrument is necessary. How much more might be accomplished by the judicious expenditure of a little time and money in the Thoma-Zeiss "counter," the Fleischl hemometer and other so-called instruments of precision. An exact knowledge of the number of white and red corpuscles per c.c., the percentage of hemoglobin, the specific gravity of the blood, is of paramount importance in the diagnosis of leukemia, pernicious anemia and chlorosis, while the treatment of these diseases follows the diagnosis as but one of its corollaries. A favorable prognosis can often be made in pneumonia by the presence of a considerable leucocytosis, while the latest achievement in hematology, the blood-serum method of diagnosis of typhoid fever as introduced by Pfeiffer and Widal, will give an impetus to this infant science along a new line that will soon cause an examination of the blood to become as routine a procedure as an examination of the urine.

SWIMMING AS AN AGENCY IN HYGIENE AND THALASSO-THERAPEUTICS.

The late Sir Henry Holland, who died at an advanced age, declared in his memoirs that his life had been exceptionally happy, and that he attributed much of this to the two months' holiday that he took every year. Although we can not all be court physicians, yet most of us acknowledge the wisdom and propriety in the suggestion as to holiday diversion. Sitting in stuffy offices during sweltering weather, waiting for patients who perhaps never come, or traversing sun-baked streets in his daily rounds, the fancy of a weary physician, like that of a starving man at a barmecidal feast, turns to the fresh blue sea with its foaming rollers tossing upon the beach, and his mind teems with recollections of Newport, Narragansett or some less favored places, that since the time Chryses wandered disconsolate and silent by the sounding main, the sea and its shores have been resorted to for health and recreation, while numerous writers of more recent date have extolled the ocean as a health resort, and have sung the praises of sea bathing.

Nearly every one knows the rejuvenating effect of a trip across the Atlantic, and the new lease of life imparted to many by a short sojourn at the seaside can not be over-estimated. All things considered, no form of outing is superior to a course of thalasso-therapeutics, and of all the great adjuvant means or agencies that may serve alone or collectively to this medication none surpasses swimming. If the individual who goes in for this sort of thing does not swim; he should learn and be made to recognize the necessity of an easily acquired art, the educational, hygienic and therapeutic value of which is beyond question.

In the British Isles enthusiasm for this delightful amusement and useful accomplishment grows each successive year, and it is taught and practiced to an extent little realized by Americans. Indeed it is generally agreed among populace, educators and physicians, that the advantages of learning to swim when young are incontestable. Dr. Clement Dukes, physician to Rugby school, in "Health at School," says, "I lay special stress upon the value of swimming, baths and bathing. Every school that can possibly manage it should have a place in which the boys can learn and practice swimming."

At many of the large schools in England lads are obliged to pass in swimming before they are allowed to go out in boats. This rule, established at Eton in 1840, has been effectual there in the prevention of drowning, only one case having occurred since that time, although the swamping of boats has been frequent. A yearly average of 150 boys learn to swim and pass the test.

At Harrow, where Lord Byron of Hellespontine renown and Sir Robert Peel learned to swim, the well-known "Duck Puddle" is the favorite place for learning and practicing the natatory art. The knowledge here acquired has served many in good stead in after life, a notable instance being the son of Sir Robert Peel when shipwrecked by night in the Mediterranean.

At Rossall, every boy, unless specially exempted on medical grounds, must practice swimming.

At Uppingham, one of the largest schools, swimming is considered of the highest importance.

Swimming is also recognized officially as a subject of instruction in the elementary board schools of England, and the London School Board recognizes swimming as a subject under their code.

Numerous swimming clubs exist all over Great Britain, among them clubs for women The Woman's Union Swimming Club was highly commended by a woman physician a few years ago in one of the medical journals, and at least one English girl holds a record for a ten-mile swimming event.

This aquatic zeal, like the morning drum beat of the race who are its chief exponents, appears to have encircled the earth, for in distant Australia and far-away New South Wales, similar enthusiasm prevails as in the mother country. The records of the swimming associations in these colonies are among the most creditable. In New Zealand the swimming clubs as a body are endeavoring to bring about provision by education boards for organized instruction in swimming, to classify swimmers uniformly, to induce the State to issue certificates of proficiency, to promote a more general acquaintance with the steps taken to restore animation and effect rescues, and to that end give greater encouragement to long distance events and to life-saving competitions.

Great loss of life from drowning is one of the strongest arguments in favor of swimming. In the Journal, June 27, 1889, under the head of "Bathing and Boating Accidents," attention was called to the frequency of drowning, and in treating the medicolegal relation of death from submersion, the chapter in Witthaus and Becker's "Medical Jurisprudence," refers to modern statistics, which show the great development of this class of emergency. We need, moreover, only take up our morning paper at this season to see frequent accounts of drowning, which are all the more sad for the reason that most of them arise from inability to swim in circumstances where only a moderate knowledge of the art or even a few strokes would have sufficed to save life. To be sure, good swimmers are sometimes drowned, but exceptional occurrences of the kind in no way invalidate the benefits of swimming. in view of the multitudinous number who are saved through knowing how to swim. Ample proof of this statement is within the knowledge and experience of nearly every one who has lived near the water. We know personally some very poor swimmers who have thereby saved their lives, and of some very valiant ones, distinguished for saving the lives of others. A few years ago an English ship off the Newfoundland Bank was run down at night by a steamer and almost instantly sunk, when the thirteen men of the crew jumped overboard. Of this number the only one drowned was a Russian who could not swim. The others were rescued through ability to swim until picked up. At Montreal in 1893 several yachts carrying thirty-five people were capsized by a sudden squall and sunk. Every one on board, including one woman, could swim. All were rescued after the accident.

Similar instances, citable to indefinite extent, are as numerous as the works on balneology and hydrotherapeutics, subjects that in late years have been studied with such profundity as to give rise to the brief and precise term, "medical thalassology." Questions of the kind have been discussed at two congresses of thalasso-therapeutics within the last four years, one at Brussels and the other at Boulogne-sur-Mer. The discussions at these meetings show pronounced unanimity as to the action of swimming and sea bathing upon the organism, the consecutive effects leading to decongestive action of the internal organs, tonification of the skin and muscles, and in general to a tonic and vivifying action.

Briefly speaking the hygienic indications are that children profit more from thalasso-therapeutics and support it best. Young girls at puberty with retarded menstruation from atony of the genital organs, overworked school boys, young women suffering from atonic sterility and people suffering from general fatigue or languishing health are greatly benefited, but the very old profit less.

As a curative means it is incontestable that the methods of thalasso-therapeutics are in the first line as regards lymphatism and scrofulo-tuberculosis with all its manifestations, and in rachitism it is the preferable mode of treatment. Other therapeutic indications are found in the seminal losses dependent upon genital abuse, in the menstrual troubles of young girls at the epoch of puberty, leucorrhea, chlorosis, metrorrhagia; in the diseases of women, as dysmenorrhea, amenorrhea, different lesions of the uterus, uterine neuralgia, sterility, gastralgia and dyspepsia connected with menstruation. It is, moreover, indicated in convalescence and in chronic maladies, as diabetes, obesity, impaludism, provided that the patients have enough reactive force.

The marine cure is also beneficial in chronic respiratory ailments, as bronchitis, asthma, whooping-cough, emphysema and even in pulmonary tuberculosis of torpid form if treated at a Southern resort. Chronic indigestion, neuralgia, dry skin diseases and chronic rheumatism likewise may be added to the list.

The exercise of swimming besides acts as a counterpoise to the more sedentary employments and physically less active life of women, and if nothing more could be said in its favor, it is of inestimable value in banishing permanently the "backache" and migraine so prevalent in the sex. Increased activity of the heart and lungs, the action of muscles not ordinarily used, the tonic effect of cold immersion, exposure of the naked body to actinism of the sunlight and an exhilaration akin to flying are conditions that conduce to the elimination of urea and the abolition of dyspepsia and insomnia, and are superior to the tent-cure, to massage, electricity or drugs. From the less stable equilibrium of the nervous system, women are, as a rule, extremely sensitive to the tonic influence of cool or cold water, and any thing which promotes this habit in them should be specially encouraged. It is authoritatively stated that there is no class of diseases in which the effects of thalasso-therapeutics are more conspicuously beneficial than in that termed nervous from whatever cause proceeding. Hence neurologists recommend swimming or sea bathing as one of the best adjuvants in the treatment of functional nervous diseases and have the satisfaction to get most encouraging results in hypochondria, hysteria, chorea and in sexual neurasthenia.

A therapeutic agency so potent for good is not without its dangers and contraindications. If used indiscriminately it may become a species of quackery which destroys life. There are, of course, many weak people whose chest organs are in such a condition that they should not venture to swim. Heart disease, aneurysm, Bright's disease, organic disease of the central nervous system and advanced tuberculosis are contraindicated, nor should the subjects of gout or eczema with secretion be advised to take the cure.

Knowing the reconstructive power of the agencies of which we write to be undisputed, and being aware of the fact that it is easier to increase health than to diminish sickness, these remarks were meant to apply in a hygienic rather than a therapeutic sense.

The neglect to learn swimming in childhood is responsible for many flabby hearts, weak lungs and torpid minds. From the view-point of physical education it is clearly of the highest importance that all young persons, especially girls, be taught swimming, since we are dependent upon them for the make-up of the next generation. The smattering of physiology with other things of doubtful utility now taught girls at school is absolutely worthless, and according to high medical authority, even hurtful. A prominent New York physician on a late visit to a well-known girls' college was invited to attend the class of physiology. The instructress, proceeding to demonstrate the uterus and ovaries, used a cat for the purpose. The class dismissed, the doctor happened to look at the cadaver, which, to his utter astonishment, proved to be a "tomcat."

Less physiology of this kind, less piano, less algebra and other inanities that go to make up the curriculum of a girls' school, may well be put aside for more wholesome and useful instruction that shall contribute to domestic and family happiness by returning to more rational conditions. Then half the chronic diseases resulting from or aggravated by artificial habits of civilized life will disappear; domestic infidelity and divorce proceedings will be less frequent, and the increased prevalence of sexual perversion, existing at present as the disturbance of a badly balanced nervous system, will be among the diminished things of the past.

THE REPORT OF THE BRITISH VACCINATION COMMISSION.

We are glad to have at last the actual report of the British Vaccination Commission before us, more or less imperfect abstracts of which have been published.

After seven years work, during which time the Commission held 136 meetings, examined 187 witnesses, and investigated six epidemics, a voluminous report is offered. The Commission was appointed in May, 1889, and among its members are some of the most prominent physicians of Great Britain. The objects of the Commission were to investigate:

1. The effect of vaccination in reducing the prevalence of and mortality from smallpox.
2. What means other than vaccination can be used for diminishing the prevalence of smallpox, and how far such means could be relied on in place of vaccination.
3. The objections made to vaccination on the ground of injurious effects alleged to result therefrom, and the nature and extent of any injurious effect which do in fact result.
4. Whether any, if so what means should be adopted for preventing the ill effects, if any, resulting from vaccination; and whether, and if so by what means, vaccination with animal vaccine should be further facilitated as a part of public vaccination.
5. Whether any alterations should be made in the arrangements and proceedings for securing the performance of vaccination, and in particular, in the provisions of the Vaccination Acts with respect to prosecutions for non-compliance with the law.

The report first reviews the subject of smallpox historically, and reiterates the accounts of the horrible devastations of this scourge. It is recalled that in Europe in the last century, smallpox killed 500,000 people annually; that it caused half the deaths of children under 10 years; that to it was attributed one-half to two-thirds of the blindness; and that it was severely epidemic about once in three years. No class of people was exempt. Six members of the family of WILLIAM III. died from smallpox, and the monarch himself was permanently marked. Illustrative of its great prevalence in England, it is stated that in the town of Chester, in 1774, with a population of nearly 15,000, and without any exceptional sanitary disadvantages as such affairs stood in those days, 93 per cent. of the inhabitants had had smallpox.

The practice of inoculation until its prohibition in 1840, and the gradual popularity of vaccination until the principle of compulsion, first introduced in the Act of 1850, are reviewed. Further legislation founded on the assumption of the efficacy of vaccination was instituted in 1867, 1871, 1874 and 1879. Arguments are advanced that conclusively show the enormous decrease of the disease after the acceptance of vaccination, and that also prove that the decrease was not due to the great decline in the practice of inoculation, nor to improved sanitary conditions. There is no evidence of a noticeable decline of smallpox in the unvaccinated countries during the same periods; and there was no lessening of the mortality from other infectious diseases such as measles, scarlatina and whooping-cough.

Inquiry into recent epidemics in England definitely proves the protective influence of vaccination, and the greater the number of vaccination marks the greater the protection. After reviewing the evidence the Commission find:

1. That vaccination diminishes the liability to be attacked by the disease.
2. That it modifies the character of the disease, and renders it less fatal and of a milder type.
3. That the protection it affords against attacks of the disease is greatest during the years immediately succeeding the operation of vaccination. It is impossible to fix with precision the length of this period of highest protection. Though not in all cases the same if a period is to be fixed, it might fairly be said to cover in general a space of nine or ten years.
4. That after a lapse of the period of highest protective potency, the efficacy of vaccination to protect against attack rapidly diminishes, but that it is still considerable in the next quinquennium, and possibly never altogether ceases.
5. That power to modify the character of the disease is also greatest in the period in which its power to protect is greatest, but that its power thus to modify the disease does not diminish as rapidly as its protective influence against attacks, and its efficacy during the later periods of life to modify the disease is still considerable.
6. That re-vaccination restores the protection which lapse of time has diminished, but the evidence shows that this protection again diminishes, and that to ensure the highest degree of protection which vaccination can give, the operation should be at intervals repeated.
7. That the beneficial effects of vaccination are most experienced by those in whose case it has been most thorough. It may be fairly concluded that where the

vaccine matter is inserted in three or four places it is more effectual than when inserted in one or two places only, and that if vaccination marks are of an area of half a square inch, they indicate a better state of protection than if their area be all considerably below this.

The Commission believes that there is no evidence to substantiate the statement that vaccination has increased the mortality from tabes mesenterica, scrofula, pyemia, bronchitis, diarrhea and skin diseases. The possibility of infection with syphilis and erysipelas is acknowledged, but the sum total of the real dangers of vaccination is insignificant when compared to the enormous good of vaccination.

To afford absolute security against the communication of syphilis, calf-lymph is recommended; and the Commission advise that so long as vaccination is compulsory, the patient or the parent should be allowed the choice of calf-lymph or humanized lymph. To further diminish hostility to vaccination, it is recommended that there should be an extension of age within which vaccination is required, and that vaccination vesicles should not be opened without adequate reason.

Immediate notification of the disease, and hospital isolation of the patients and isolation for sixteen days of all those who had been in immediate contact with them, offers the only substitute for vaccination; and in reviewing this subject the Commission can see nothing to warrant the conclusion that in Great Britain vaccination might be safely abandoned and replaced by a system of isolation.

Further recommendations are:

That power should be given to the sanitary authorities to give compensation for loss of wages occasioned by isolation; that notification of smallpox should everywhere be made compulsory; that increased powers should be given to local authorities with regard to common lodging-houses; that re-vaccination should be encouraged without being made compulsory; and that persons committed to prison by reason of non-payment of penalties under the vaccination laws should no longer be treated as criminals.

The Commission offers no satisfactory substitutes for the Compulsory Acts. Any half-way measures seem to allow so many avenues of avoiding compliance with the Acts that they would soon become virtually inoperative.

The report of the majority is signed by eleven of the thirteen members of the Commission. Mr. JONATHAN HUTCHINSON and Sir WILLIAM HUNTER, possibly the most prominent and influential members, do not sanction any relaxation of the existing compulsory laws, and even recommend compulsory re-vaccination. Four members dissent from any form of compulsion, believing that the offer with appropriate arguments should be made to the patients and parents, leaving them free to accept or reject. Two alone of the Commission, Dr. COLLINS and Mr. PICTON, question the efficacy of vaccination.

CORRESPONDENCE.

The Organization of the Missouri Board of Health; A Letter to the Governor by C. H. Hughes, M.D.

ST. LOUIS, MO., May 25, 1897.

HON. LON. V. STEVENS, GOVERNOR OF MISSOURI:

Dear Sir:—Yours of the 22d inst. is received. My idea about appointments on the State Board of Health from the standpoint of a chief executive acting for all the people would be that all interests should be represented in proper ratio. The preponderating interests should be the majority of the people through the medical men who represent them. Every lawfully recognized medical interest should have a place on the Board in proportion to ratio of population. The people who employ the regular medical methods of advanced modern medicine being preponderatingly ascendent, should have the majority. Regular modern medicine is in no sense a theoretic school of medicine, nor the "old school," nor allopathic school, as the homeopathists derisively term it. Its votaries administer treatment on the allopathic, contrapathic, homeopathic or any other principle. It is simply rational medicine founded on observation, experience and the study of the human machine and how to regulate it, in health and disease, so as to keep it running best and longest.

A century ago the practice of medicine was as different from the practice of today as methods of transportation are as compared with those of today. The regular profession itself was divided between theorists. The theory of Hahnemann was in vogue as that of Paracelsus, a regular physician, only Hahnemann cut away and made an exclusive system of practice and adopted the infinitesimal dosage idea.

Laboratory study and biologic investigation, vivisections and animal experimentations, supplanted all the theories with facts of physiologic and chemic research and made a new medicine, and the regular practice is the newest of all schools of medicine, if a practice that accepts everything that cures, unhandicapped by any theory of its action, can be called a school. We ignore the term as a misnomer, as we reject the epithet, allopath, as too restrictive and sectarian, as homeopathy is. Scientific investigations, continuous observation and enlightened experience guide the best minds in regular medicine. It has learned some things that are good from homeopathy and adopted them and some things that are bad and rejected them. Personal proving without physiology and pathology is fallacious. Medicine is a developing science and its practice an evolution. No broad-minded observer, no matter how he starts or what he professes, if he has a naturally qualified medical mind, can honestly continue through life a sectarian physician—an exclusive pathist of any kind. There is but one place for a physician and that is unhandicapped and without a sectarian designation, free to choose from all sources in the regular profession.

I do not approve of persecution or censure of the sectarian physician, nor of excluding him from fellowship with regular physicians, if he drops his trade mark, as many do and more are now doing. Men become sectarian physicians as they join churches, because of environment, wife, mother, etc., and when a woman's arms are about a man what can he do?

I hope you will constitute that board as it seems to me you are in duty bound to do, recognizing all interests. It is not with you a question of schools but one of the people.

I object to the procedure at Fulton, not because *the hom-*

eopathists should not have a place to be treated in but because regulars who represent so large a part of the people should not be turned out to make a place for them and because the act is in its nature *ex post facto*, the patients having been sent there for regular treatment. As a physician I should object to real, honest old time homeopathy because of its fallacy and inadequacy, not because some superior homeopathic physicians do not show more skill than some inferior regular physicians, for medical practice is much in the man and his personal judgment.

Before you finally act on this subject I hope you will fully inform yourself as to the status of this sect with reference to onward-marching modern medicine that has done in the last third of a century and is now doing so much for mankind, and not be influenced by the stale old cries of old school, nauseous drugs, allopath, etc., against the most advanced of all scientific pursuits of our day. Modern hygiene, neurology, bacteriology, quarantine, the study of the causes and prevention of disease, antiseptic surgery, etc., all belong to regular medicine. All that homeopathy accedes to or uses is taken from the work of our laboratories, clinicians and savants. While a sect in medicine or religion should be recognized by the State, it should not be placed in a position to dominate the non-sectarian.

On reflection, I think it would be an unjust stab at the large college interest in the State and at the honor of college men, not to allow it representation on the Board. It strikes me that one or two fair-minded men might be selected from all interests involved. I think the college men know best what the schools want and if no one college should have a majority fairness in action would be assured. Regular medicine is undoubtedly entitled to larger and permanent representation, not alone because it is now the newest, most advanced and most liberal school (if you insist on the term), and the most truly eclectic, for it gathers freely from every source that may enlighten or cure, but from a sound political standpoint, viz., it represents the greater number of the body politic. More of the people prefer it and employ regular physicians than the sects in medicine and, hence, as their chief executive representative you are in duty bound to regard their wishes and interests. You are the people's spokesman and servant in the the premises. Yours very truly, C. H. HUGHES, M.D.

The Treatment of Typhoid Fever.—A Reply to Dr. John Eliot Woodbridge.

RICHMOND, VA., July 19, 1897.

To the Editor:—The JOURNAL of July 17 contains a communication from Dr. John Eliot Woodbridge criticising my paper published in the current number of the JOURNAL, June 3. I would pass this communication unnoticed, but the writer overlooks my disavowal in my paper of any intention to treat him with discourtesy, and descends to offensive personalities. I pass these by with the single criticism that Dr. Woodbridge has misunderstood me.

I read the paper in the Section of Practice at the recent meeting of the ASSOCIATION. Dr. Woodbridge was a member of that Section, and I do not understand *why* he should have waited until now to criticise my position. If not present at the time my paper was read he was when the discussion came up. I was not present during the few remarks he made, and which are reported in the proceedings. His criticism of the earlier part of my paper is not worth noticing. I leave it to a discriminating profession whether a room will be better disinfected by the methods suggested in my paper, or by his method of "sending a stream of formaldehyde gas through the keyhole, and the next night use the room with safety as a surgical ward." What does he send it in with? He should tell us all about it. It seems to me a consistent suggestion, and as gassy as his other assertions. But I am not inaccurate, nor have I misrepresented him. Messrs. Parke, Davis & Co. have scattered broadcast over the country a pamphlet purporting to be extracts from Dr. Woodbridge's paper read before the Section on Practice of the AMERICAN MEDICAL ASSOCIATION, and other societies, and if he is disingenuous enough to take my quotations in my article and compare them, he will find the quotations accurate to the letter, and I again assert that such assertions do not commend themselves to the mind of any physician familiar with the causation and pathology of typhoid fever. There is a question of accurate diagnosis when he tells us the patient must "be put on the treatment when first seen; if you await pathognomonic symptoms, it will not always succeed." Strange he has no criticism of my quotations from Tyson and I. C. Wilson. I am in very good company with these gentlemen, and Osler and many others of the best authorities the land over. I deny that I have made any unjustifiable or unprofessional attack upon members of the AMERICAN MEDICAL ASSOCIATION. There are hundreds of good men who fail to analyze cases and treatment, and specious statements, made like those in Dr. Woodbridge's papers, find many followers, and accurate observations *are not made*. I want to *know* from these gentlemen how this treatment cures. I want them to tell us something of the nature of the disease. and how, when the poison has been multiplying and developing the clinical conditions present in typhoid fever, all of these morbid conditions can be aborted. Grant for argument's sake that every case was correctly diagnosed, I commend to his consideration the following, freely quoted from the authors to whom they are accredited, and ask him how he gets over these undeniable facts:

"The typhoid bacilli gain access by the intestinal tract and enter the lymph structures of the intestines, developing there, elaborating toxic principles, which give rise to the constitutional phenomena. The bacilli are not found in the fecal discharges in the early course of the disease, but first appear about the time of the necrosis of the lymph elements. *These facts justify* the assumption that *the bacilli do not develop, as do those of cholera, in the lumen of the gut.*" (Italics mine.)

"Infiltration attains its maximum development at the end of the first week, and the tenth day of the disease. Rapid necrosis now takes place, and the sloughs separate about the latter half of the second and the first of the third week." "The mesenteric glands show histologic changes similar to those in the intestinal structures. . . . Other lymphatic glands may undergo enlargement; notably those in the fissure of the liver." "Spleen enlarged in over 90 per cent. of cases. Investigations of Walter Reed, at Johns Hopkins, show that the lymphomata of Wagner are in reality areas of necrosis (in the liver); as to whether due to the direct action of the bacillus, or caused by the toxalbumins, has not yet been definitely determined. Reed considers the latter most probable. In the kidneys, similar changes to those described in the liver have been found. When suppuration occurs, miliary abscesses are found, and typhoid bacilli have been found in these minute collections of pus." ("American System of Practice," Loomis-Thompson, pp. 173-179.)

The *above* sustained by Tyson: "There are instances of the general infection of the body, etc.," see Osler, second edition, p. 11. See also clinical history and pathology described in Wood and Fitz.

Now, sir, I commend to Dr. Woodbridge and his endorsers the above authorities, and deny, backed by such unquestioned authority, that it is possible for him, or any other man, to abort typhoid fever by seeking by such depressant methods as he recommends, to take out of the system the infectious principle. There is a period of several days to several weeks of prodromes, *the patient is not seen until after* the system is too fully under the influence of the disease to have it cut short.

It is true, I do not possess a knowledge, "either theoretic or practical," in line with the Woodbridge methods, but a large experience for thirty years, and the small mortality of 6 to 7 per cent. in the treatment of typhoid fever contradicts the statement of a failure to understand the disease from every standpoint. I did not deal with statistics in my original paper, because I did not think it required, except in the discussion of the Woodbridge method. I leave it to any candid man to read the testimonials of the Woodbridge treatment and compare them with those of any quack nostrum, and draw the distinction if he can. It is only necessary to refer to Dr. Woodbridge's paper of July 10 of the Journal. Dr. Woodbridge charges me with gross misrepresentations. I venture to assert that in my own city and State my reputation for fairness and truth, for accuracy of observation and progressive professional methods, is fully equal to Dr. Woodbridge's, and will be attested not only by my professional confrères, but by many students whom I have taught.

Dr. Woodbridge's assertions are fallacious, based on faulty principles, and he, not I, shows gross ignorance and assumes a knowledge of the pathology and nature of the disease which *nothing* he has written sustains, and finds its outcome in a treatment so unscientific as to make it the solemn duty of every lover of his profession to denounce it as a piece of routinism and quackery. He cries out because he is hurt. I leave him to a discriminating profession.

Very respectfully yours, J. M. Upshur, M.D.

National Examining Board.

Lyle, Minn., July 27, 1897.

To the Editor:—Has there ever been anything done to foster the idea of or create a *National Examining Board*? I believe a movement of this nature would meet with the support not only of every reputable practitioner but of the present *State Boards* as well. Nothing is more commendable and more enthusiastically supported by the best class of physicians than the increasing standards being required in several States to obtain a license to practice medicine. A rigid examination should be passed before a license is granted; but the rank injustice of the present system is apparent to anyone who will give it a moment's thought. If a physician is located near the line as I am here he will be required to pass an examination in two, three or possibly four States to practice in one district. If one should desire to change his location to another State, there is the examination again. It is not only a nuisance and an expense, but requires a thorough review of technical points that are never used in practice. I would like to add to your cry for a "Department of Public health" and a "National Examining Board." S. H. Rabuck, M.D.

Answer:—For articles on National Examining Boards see the Journal, vol. xviii, May 15, 1892, p. 610; vol. xxvi, May 16, 1896, p. 950.

Is Diabetes Increasing?

Philadelphia, July 31, 1897.

To the Editor:—In an editorial in one of your recent numbers the stand is taken that diabetes is increasing in England and America, because the reports from city hospitals show an increase. I will not attempt to dispute the figures, but I only wish to point out a possible cause for the increase.

Diabetes is supposed to be common among Jews. In the last fifteen years there has been a great influx of Jews from Russia to both England and America, and as a rule they remain in the cities. To my own personal knowledge the patients who present themselves at the dispensaries of the large Philadelphia hospitals are largely from this class, consequently this fact alone may serve to increase the number of cases of diabetes in London, New York and Philadelphia.

No doubt other diseases peculiar to races will be found to be on the increase from like causes. At least, immigration is a factor that must be considered in a matter of this sort.

Very respectfully, M. V. Ball, M.D,

BOOK NOTICES.

Text-book on Mental Diseases.—By Theo. H. Kellogg, A.M., M.D., late Medical Superintendent of Willard State Hospital, etc., etc. Octavo, 792 pages, illustrated by original sphygmographic tracings and photographs of the different types of mental disorder. pp. 776. Extra muslin, $6.00.

It is a pleasure to review this work, which is dedicated to the distinguished editor of the *Medical Record* of New York, as follows:

"George F. Shrady, A.M.,M.D., in special appreciation of his persistence and able advocacy of progressive and scientific methods of treatment of the insane; in recognition of his useful and distinguished professional career as Medical Editor and manager of State Hospitals, and visiting and consulting Hospital Surgeon; and as a personal tribute to his sterling traits of character."

The author's long experience as Superintendent of Hospitals for the insane and in the treatment of mental diseases has given him a right to have an opinion on the diagnosis and treatment of the various types of insanity.

The work opens with a chapter on the history of insanity. It also includes a historic sketch of the general condition and treatment of the insane, and the summary survey of the evolution of the science of psychiatry. The chapters are divided as follows: 2. Statistics of Insanity. 3. Nosology. 4. Etiology. 5. Termination of Mental Disorders. 6, is divided into three sections under the general head of Psychical Symptomatology. Chapter 7, on Somatic Symptomatology, is divided into eleven sections, viz.:

1. On the Defects and Pathological changes of the Osseous System.
2. The Muscular System.
3. The Vascular System.
4. Changes in the Cutaneous Surface.
5. Splanchnological.
6. Nutritive, Secretory and Trophic Disturbances.
7. Disorders of Cerebral, Spinal and Nervous System.
8. "On the Pathology of Insanity," is divided into two sections, viz.: 1. On the Pathogenesis of Mental Disorders. 2. Pathology of Insanity, the Macroscopical Changes and the Microscopical Changes.
9. Diagnosis of Insanity, including feigned Insanity and the deduction of various forms of malingering.
10. Prognosis of Insanity.
11. Treatment of Insanity, including prophylaxis.

Part 2 is on the special groups and typical forms of insanity, and contains twelve chapters, viz.: 1. Insanity from general organic arrest of development. 2. Insanity from Neuropathic State. 3. Insanity from Established Neurosis. 4. Insanity from Physiological Crisis. 5. Insanity with General Systemic State. 6. Insanity with Definite Lesions of the Cerebral, Spinal and Nervous System. 7. Psycho-Traumatic Insanity. 8. State of Depression. 9. State of Exaltation. 10. State of Mental Weakness. 11. State of Stupor. 12. State of Impaired or Suspended Volition.

It will be seen that the treatise is at once systematic and comprehensive, and we have no hesitation in commending the book as an entirely trustworthy volume in the study of mental diseases. The work is destined to take high rank as a standard treatise on the subject.

The National Confectioners' Association of the United States.

This little volume published in 1897 from the office of the *Confectioner's Journal* is a handsomely printed volume, on good paper. It contains extracts from Constitution and By-laws, list of officers and members and organization and object of work, pure food and pure candy laws of each State in the Union as they were in force April 1, 1897.

On account of these laws being so collected the book should have a permanent place in the library of every sanitarian as a reference volume.

System of Diseases of the Eye by American, British, Dutch, French and German Authors. Edited by WILLIAM F. NORRIS, A.M., M.D. and CHARLES A. OLIVER, A.M., M.D. Vol. ii, 214 illustrations, pp. 556. Philadelphia: J. B. Lippincott Co. 1897.

This magnificent system has been given a handsome setting by the publishers; inset plates, beautiful paper, and excellent illustrations make it a pleasurable task to give it notice. This part of the system is given to chapters on examination of the eye, school hygiene, statistics of blindness and antiseptics.

The contributors to this volume are J. Snellen of Utrecht, Holland, L. Laquern, M.D., Strasbourg-en-Alsace, Germany; George M. Gould, M.D., A.M., Philadelphia, Pa.; Edward Jackson, A.M., M.D., Philadelphia, Pa.; Adolphe Javal, Jr., Paris, France; William S. Bennett, M.D., New York City; George T. Stevens, M.D., Ph.D., New York; Herman Wilbrand, M.D., Hamburg, Germany; William Thompson, M.D., Philadelphia, Pa.; S. D. Risley, A.M., M.D., Philadelphia, Pa.; I. M. Hays, A.M., M.D., Philadelphia, Pa.; J. A. Andrews, M.D., New York City; Jos. McFarland, M.D., Philadelphia, Pa.; Samuel S. Kneass, M.D., Philadelphia, Pa.

The articles of Snellen, Laquern and Wilbrand have been carefully translated. As all the articles in the volume are written especially for it, the whole appears as a new contribution to the subject.

Dr. Thompson in his article on Color Blindness, in writing of the main impetus of the practical side of this question omits reference to the pamphlet of Professor Henry of the Smithsonian Institution, and does but scant justice to the work of Jeffries. (Page 316.) And he omits all reference to the work of the United States Government in the examination of pilots, the initial step of which was taken by the editor of this journal, then at the head of the Marine-Hospital Service in 1880, in first giving facilities for voluntary examination of seamen. The matter was subsequently taken up and made compulsory by the Board of Inspectors of Steam Vessels; this was done before the system was introduced on railroads, although no one would suspect it from reading the article of Dr. Thompson. The instance quoted on page 330 of the Steam Tug Lumberman, originally appeared in the Marine Hospital Service Report and the finding of the color-blind pilot was the direct result of the orders issued in 1880. Jeffries' book as mentioned in Thompson's article refers to the second edition only; the book was originally published in 1879, and at that time there was nowhere in this country a systemized test for color blindness of the personnel of any railroad employes or the merchant marine in the United States. With the exception of the historical matter, however, the article is an excellent one, although it may be doubted whether the Thompson method of using the worsteds is any improvement over the original plan of Holmgren.

It is an ungracious task to refer to any defect in so excellent a work, but our duty is clear. The second volume of the system contains internal evidence that it will undoubtedly last for many years as the standard American work of reference on the eye. The other two volumes of the system, we are informed will speedily follow.

The Eye as an Aid in General Diagnosis, A HAND-BOOK FOR THE USE OF STUDENTS AND GENERAL PRACTITIONERS. By E. H. LINNELL, M.D. Philadelphia: The Edwards & Docker Co. 1897.

The object of this book is to show that the examination of the eyes affords valuable aid in the diagnosis of diseases of the nervous system as well as of numerous affections of other organs and to induce the practitioners to pay more attention to this too much neglected subject.

Possessing the experience of a general practice of twenty years and fifteen years of experience as an oculist, the author is singularly well qualified to produce a book, which though written from the standpoint of a specialist, is perfectly suited to the understanding of the general practitioner. The first part of the book is devoted to the eye symptoms of nervous and constitutional diseases. The author taking up the various parts of the eye in their anatomic order from the lids and conjunctiva to the retina and optic nerve, points out the local affections and the general diseases they are symptoms of. This part closes with a very practical reference list of diseases arranged alphabetically, with their more or less characteristic eye symptoms.

The second part, treating of the reflex neuroses, deserves our highest praise; it is an admirably well written statement of the etiologic relation of certain ocular affections to the functional nervous diseases and, on the other hand, of the dependence of certain functional eye troubles upon reflex actions emanating from distant sources of irritation.

The third part discusses the ocular affections of toxic origin; and closes with a very complete index, which is of the greatest value in a book of reference. We wish this book would find a place in the library of every progressive physician; it would then not fail to fulfil its mission to impress upon the practitioners the diagnostic importance of the symptoms in general diseases.

Suppression and Prevention of Leprosy. By ALFRED S. ASHMEAD, M.D., late foreign medical director Tokay Hospital, Japan. Paper. Illustrated, pp. 96. Norristown, Pa.: Herald Printing and Binding Rooms.

The author briefly considers the history of the microbe, the non curability of leprosy and the conditions predisposing to leprosy, going more into detail on the horrors of leprosy, necessity of absolute isolation and the idea of a national lazaretto. Touching on the relation of the church to leprosy, leprosy in Japan and the advantages of asepsis, he concludes that nothing "has been done for the leper through the discovery of the bacillus, or in any other way. . . . That consequently anybody who *seriously*, *truly* wishes for the abolition of the terrible disease, can hope for nothing else but isolation, and isolation absolutely alone."

Schaefer's Course of Practical Histology. By EDWARD ALBERT SCHAEFER, LL.D., F.R.S., Jodrell Professor of Physiology in University College, London. Second edition; 12mo. 307 pages, 59 engravings. Cloth, $2.25. Philadelphia and New York: Lea Brothers & Co. 1897.

It has been some time since the first American edition of this work appeared and the reader who peruses it will recognize as careful condensation and method of arrangement as in the first edition. New illustrations have been added, with description of new processes necessary to bring it to include the result of recent progress in histology.

The student will find this book one of the most trustworthy condensed guide books on the market.

Sixteenth Report of the State Board of Health of Wisconsin.

The report covers the biennial period ending Sept. 30, 1896. Besides containing the "General Report of the Board," "Report of the Secretary," "Report of the Inspection of the Different State Institutions" and "Report of Delegate to the Conference of State Boards," we note "The Purification of the Water Supply of Ashland by Sand Filtration," and "Enteric or Typhoid Fever," articles of much value. The report also presents a list of health officers of local boards, and extracts showing the general health of the different cities and towns. Dr. U. O. B. Wingate is secretary of the Board.

Transactions of American Pediatric Society. Eighth Session, held at Montreal, Canada, May 25, 26 and 27, 1897. Edited by FLOYD CRANDALL. 1896.

This volume contains the minutes of the eighth annual meeting, address of the president, various papers read, and the report on antitoxin, which we have heretofore printed. These papers have been printed in abstract in the JOURNAL and in full in the *Archives of Pediatrics*. The illustrations are excellent and the mechanical execution of the work fair.

PUBLIC HEALTH.

Health of Denver, Colorado.—The Bureau of Health reports twenty-seven cases of infectious and contagious diseases reported in June 1897, with fourteen deaths therefrom, as compared to thirty-nine such cases reported in May, with nine deaths therefrom. The total number of deaths, in Denver, for the year ending June 30, 1897, was 1,696, a rate of 10.60 per 1,000 per annum.

Who Pays for Preventing Spread of Contagious Diseases?—The Indiana statute provides that the Board of Commissioners of each county shall constitute a Board of Health *ex officio* for the county, "whose duty it shall be to protect the public health, by removal of causes of diseases, when known, and in all cases to take prompt action to arrest the spread of contagious diseases, to abate and remove nuisances dangerous to the public health, and perform such other duties as may, from time to time, be required of them by the State Board of Health pertaining to the health of the people." In carrying such purpose into effect, according to the meaning of the statute, the appellate court of Indiana says, April 2, 1897, it might become the duty of the county, under particular circumstances, to supply medical service, medicines, nurses, shelter, fuel, food and raiment for patients taken for the time being under the control of the board, and placed in such situation that such provision would be a necessary part of the protection of the public health. At the same time, it says that it does not mean to indicate what would be the proper conclusion in this regard in other cases. It only decides that where, as in the case of Board of Commissioners of Jay County v. Fertich, the patients remain in their own home, and are not shown to be indigent, but, for all that appears, are amply able to pay for medical treatment of the disease with which they are afflicted, and the case differs from other cases of illness in the fact that the disease is contagious, and that, therefore, for the protection of the public health, they are quarantined, the only expenses which should fall upon the county, within the intent of the statute, are such expenses as are properly attributable to measures taken for the prevention of the spread of the disease. It draws the line at requiring the afflicted persons to defray expenses not incurred for their own benefit. And it suggests that the particular items of expense for which allowance should be made will vary with changed circumstances.

Compulsory Vaccination of School Children.—The question whether or not the State Board of Health, or the school directors of a district, acting under its orders or otherwise, had any power to impose, as a condition of the admission of children to the public schools, the requirement of vaccination, was considered by the supreme court of Illinois, in the case of Potts v. Breen. Its decision was that neither had the power. No such power had been conferred on the State Board of Health, it said, unless by the broad and general language of the statute which provides that "The State Board of Health shall have the general supervision of the interests of the health and life of the citizens of the State." But that was not intended to confer plenary powers on the board. It had and could have no legislative power. Its duties were purely ministerial and the foregoing provision could not be held to confer that broad discretionary power contended for, to prescribe conditions upon which the citizen of the State might exercise rights and privileges guaranteed to him by public law. As recently held by the supreme court of Wisconsin in a similar case, the powers of the State Board of Health are limited to the proper enforcement of statutes, or provisions thereof, having reference to emergencies requiring action on the part of the agencies of government to preserve the public health, and to prevent the spread of contagious or infectious diseases. The right or privilege of attending the public schools is given by law to every child of proper age in the State. Whether the legislature has the power to make vaccination a condition precedent to the exercise of this right or not, was not decided. It could not be supposed that it had undertaken to do so by mere implication. No one would contend that a rule enforcing the use of antitoxin as a condition precedent to the admission of a child to the public schools, would, as the law now is, be valid, however fully satisfied by learning and experience that it would prevent the spread of diphtheria. And when vaccination is compulsorily applied it must, like all other civil regulations, be applied in conformity to law. In cases of emergency it might be proper, in the exercise of the police power of the State, to exclude children from the public schools on the ground that they refuse to be vaccinated. Undoubtedly, also, children infected or exposed to smallpox may be temporarily excluded, or the school may be temporarily suspended. But this power ceases when the necessity ceases. Nor have school directors and boards of education authority to exclude children from the public schools for refusing to be vaccinated, unless in cases of emergency.

The "Animal Odor" of Milk.—Dr. Huff of Rome, N. Y., has recently reported to the Board of Health of that city upon the commonly unnoticed elements of contamination of milk within the dairies themselves. He says: "Consumers of milk have often asked me what was the cause of a peculiar odor, characteristic of new milk, that is usually considered as being one of the necessary elements of milk. My observation leads me to believe that nine-tenths of the so-called 'animal odor' is caused by imperfect circulation in the skin of the animal and by particles of dung falling into the pail of milk. Cattle are milked in stables reeking with filth, and with swarms of flies congregating upon the strainer that is placed upon the can, and the milk is filtered over the carcasses of drowned flies that may have just been feeding upon the sputa of a consumptive or regaling themselves upon other putrid or offensive matter, and their excrement is washed into the can of milk to be sold to the public. The udder is frequently washed by dipping the hand into the milk that is in the pail, or by milking into the hand and then washing the teat with the milk. Very seldom will one see the udder washed with clean water or wiped with a clean cloth. And it is said that in cases after the cow had put her foot into the pail half full of milk, the milk went in with the rest and the consumer was none the wiser. A very small percentage of dairy farms are supplied with water of good quality and sufficient quantity.

"As a healthy cow will consume from 60 to 100 pounds of water per diem, the influence that a supply deficient in quantity and quality would have upon the milk is obvious. It is not an uncommon thing to see the drainage from the stable passing into the stream from which the cows drink. Cows confined to the stable require a space of 800 sq. feet each to obtain sufficient oxygen to aerate the blood properly, but we usually see cattle huddled together in as close a space as possible, generally allowing each cow about 275 to 300 square feet, where they are compelled to breathe and rebreathe the contaminated atmosphere because the dairyman informs us he can get more milk from them if they are kept close together. The majority of stables are built as cheaply as possible, and are roughly finished inside and out, furnishing nooks and crannies for dirt to locate and to propagate disease. The floor frequently consists of 12-inch planks laid side by side, just where the hind feet of the cows are placed and the milker stands when milking, and a trench about a foot wide behind the cows for the excrement to fall into. There is not one stable in a hundred that has any way of flushing, and no greater percentage has any system of drainage. There are stables that have stood for years upon the same ground and have contained hundreds of cows, and all the liquid manure made in them has been allowed to soak into the ground and there remain. There has been so much said about milk containing germs of disease that it seems almost unnecessary to mention the fact, but we are so forcibly reminded that dirt and filth are the abiding places of disease and that cleanliness is the surest guide to health, that your attention is again called to it and you are again warned of the danger that exists. The dairyman is a citizen and entitled to all kindness and courtesy, and in making changes in the arrangement of stables and methods of handling the product, we should remember that we are in a position to be of great assistance or to work a cruel hardship. We should endeavor to make changes in a kindly manner, but with all the firmness that a public servant should have. No honest dairyman should or would object to a strict observance of sanitary measures, but the dishonest dairyman must be controlled."

NECROLOGY.

Hugh Flournoy McNary, A.B., M.D. (*vide* Journal, p. 1045), born at Princeton, Ky., Jan. 15, 1837; son of Dr. Thomas Logan and Maria Louisa Flournoy McNary. He graduated from Cumberland College, Princeton, in 1857. He studied medicine in his father's office, and attended a course of lectures at the Medical Department of the University of Louisville, 1860-61. Proceeding to Harvard University, he graduated in the Medical Department of that institution in 1863. He entered the United States army volunteer service as assistant surgeon at Camp Nelson, Ky. He served subsequently at the General Hospital at Jeffersonville, Ind. He and Dr. Middleton Goldsmith accompanied the expedition of General Banks in the Red River campaign. He left the service of the United States army on Aug. 31, 1865, and settled in Louisville, for the practice of his profession. In 1867 the Governor of Kentucky appointed Dr. McNary physician to the Western Kentucky Lunatic Asylum at Hopkinsville. Tiring of this service, he resigned in 1869, and returned to Princeton, the home of his youth, where he was elected city and county health officer. He had a large practice, and was devoted to society work, rarely missing a meeting of his local or State society; and frequently attending the American Medical Association as a delegate from Kentucky. In the quiet pursuit of his practice at Princeton, he ceaselessly pursued the study of his profession. In 1895, when Wm. O. Bradley was elected Governor of Kentucky, he appointed Dr. McNary superintendent and physician in charge of the Central Kentucky Asylum for Lunatics. Dr. McNary entered upon the duties of this office with a full sense of his responsibility. He looked into every detail of the management of the institution; inaugurated new methods of general management; classified and arranged each subordinate department, and suggested vast and important enlargements and improvements in the buildings of the institution, which were rapidly advancing to completion, when a fatal affection of the heart seized him, and on May 12, 1897, he breathed his last in the home of his brother-in-law, Judge Darby of Louisville. No man in the medical profession of Kentucky was more widely and favorably known. He was a most genial companion, fond of good fellowship, and indulged in no dissipations. Those who knew him throughout his whole professional life, miss him sadly. He was a scholar gifted with superior powers of expression, an easy and fluent writer, yet he contributed but little to the literature of medicine. In the meetings of our local and State medical societies he always contributed something of interest, and was a debater of superior ability. He was a man of superb and magnetic presence, more than six feet tall, with a beaming countenance and sparkling eye, which always attracted attention in any company. He was modest as a girl, generous and charitable; a veritable philanthropist whose noble deeds of charity will be sadly missed by large numbers of the poor and afflicted.

William Thurman, M.D., New York City, July 21. He was an alumnus of the College of the City of New York (1860) and of the College of Physicians and Surgeons, New York (1864); also a Fellow of both the Academy of Medicine and the New York County Medical Association. After his service on the House Staff of the New York Hospital, he became House Physician of the Northern Dispensary and subsequently attending surgeon of the Children's Free Hospital St. John's Guild.

John James Hervey Love, M.D., New York University Medical College, 1855, died suddenly at his home in Montclair, N. J., July 30. He was an alumnus of Lafayette College, Easton, Pa., class 1851, and during the war while serving as surgeon of the 13th Regiment New Jersey Volunteer Infantry was also surgeon of the 3d Brigade, 1st Division, 12th Army Corps, March, 1863, and surgeon 1st Division, 12th Army Corps, Army of the Potomac from August, 1863, until his honorable discharge Jan. 23, 1864. As a man of affairs and a practitioner, he was widely known.

Charles O. Baker, M.D., Auburn, N. Y., died July 16. He was born in 1852, was graduated in 1874 from the College of Medicine, Syracuse (N. Y.) University, practiced general medicine until 1891, when after a special operative course under Lawson Tait, he limited himself to abdominal surgery.

John Condict Pennington, M.D., College of Physicians and Surgeons, New York, 1875, died in New York City, July 27. He was a son of Dr. Samuel H. Pennington of Newark, N. J. For some years his name was in the list of physicians at Colorado Springs.

Louis F. Kiefer, M.D., College of Physicians and Surgeons New York, 1886, a resident practitioner of New York City, died there July 23, aged 45 years. He was unmarried and a member of several fraternal societies.

Greig Smith, M.D., Bristol, England, Member of Royal College of Surgery of England; Surgeon of Royal Infirmary, Bristol; Professor of Surgical Pathology, Medical College of Bristol; Medical Examiner of the University of Aberdeen, and well known by his works on abdominal surgery. His treatise on abdominal surgery, published in 1887, placed him in the first rank.

William T. Hobbs, M.D., Mound, Ill., July 18, aged 58 years.——Simson P. Hubbard, M.D., Taunton, Mass., July 20, aged 70 years.——John Le Crone, M.D., Effingham, Ill., aged 81 years.——John Wesley Noyes, M.D., Racine, Wis., July 24, aged 76 years.——C. S. Park, M.D., Mt. Pleasant, Mich., July 25.——W. A. Russell, M.D., Pittsfield, Mass., July 19.——Eugene F. Sanger, M.D., Bangor, Me., July 24, aged 68 years.——D. C. Scull, M.D., Lebanon, Ind., July 24.——William W. Skinner, M.D., Forrest, Ill., July 25, aged 27 years.——A. M. Stebbins, M.D., Fertile, Minn., July 21.——Edward Storck, M.D., Buffalo, N. Y., July 26, aged 66 years.——H. B. Smith, M.D., McAlester, I. T., July 17.——Judson J. Taylor, M.D., Syracuse, N. Y., July 26, aged 59 years.

SOCIETY NEWS.

Central District Medical Association of Iowa.—At the annual meeting of the Central District Medical Association of Iowa, held at Boone, Iowa, June 15, 1897, the following resolutions were adopted and ordered printed and a copy furnished each member of the society:

Whereas, Complaints of various characters and kinds have been made to the Committee of Ethics and the Board of Censors, therefore be it hereby

Resolved, That it shall be deemed cause of expulsion or bar to admission for any member of this society either directly or indirectly to consult or hold counsel with any irregular practitioner of medicine. G. H. Stanger, Secretary.

Boone, Iowa, July 1, 1897.

Rocky Mountain Doctors.—Delegates from the inter-mountain States and Territories organized the Rocky Mountain Interstate Medical Association at Salt Lake City, July 21. The officers chosen were: C. P. Hough of Salt Lake, president; C. K. Cole of Helena, vice-president; Clayton Parkhill of Denver, second vice-president; E. Steuver of Wyoming, secretary and treasurer. The meeting for 1898 will be in Denver during the meeting of the American Medical Association.

MISCELLANY.

Personal.—Dr. Edward G. Janeway has been elected President of the faculty of Bellevue Hospital Medical College, N. Y., to succeed Dr. William T. Lusk, deceased.

The Missouri Medical League has been organized at St. Louis. Its object is "to unite doctors of good standing for mutual protection" and to collect evidence of hospital and dispensary abuse and to exclude well-to-do persons from medical charities.

Tuberculosis in Birds and Fishes.—Recent investigations have established the fact that the tuberculosis of birds and fishes is the same as human tuberculosis, but that it can not be transmitted to man owing to its lesser virulence in the cold-blooded animals.—*Bull. de l'Acad. de Méd.*, June 29.

International Prize Competition.—The *St. Petersb. Med. Woch.* announces that the Moscow "City Duma" has founded a prize as a memorial of the International Congress, to be awarded tri-annually for the best work on the subject of public health, prevention of epidemics, etc. It will consist of 5,000 francs and be awarded irrespective of nationality.

"The Pennsylvania Medical Journal."—At its recent meeting, the Pennsylvania State Medical Society made the *Pittsburg Medical Review* the official organ for publishing the transactions of that Society, and the *Review* becomes with the July number, the *Pennsylvania Medical Journal.* All success to the *Review* under its new name!

Correction.—Dr. E. A. de Schweinitz of Washington, D. C., says that in his article on "Antitoxic Serum for Tuberculosis" (JOURNAL, July 17, page 114) that the reference to Dr. Trudeau should be changed as follows: "Dr. Trudeau noted a reduction of temperature after the use of this serum in one case, and Dr. Stubbert, etc."

A Mild Sensation in Paris.—The Hospital Aubervilliers recently lost through thieves a number of rabbits kept for the culture of diphtheria, cholera, bubonic plague and other germs. The bacteriologists averted a panic by the assurance that if the rabbits were sold to be eaten there could be no danger if they were well cooked. So far as can be learned the advice was considerately taken.

Tattooing, according to the *Press and Circular*, was an ancient method of treatment, the forerunner of scarification. A mummy discovered in Egypt in 1891, that of a priestess of Hator, some five thousand years old, displays traces of a methodical tattooing of the abdomen, suggesting that the cause of death was generalized peritonitis. Tattooing is still resorted to in Egypt as a remedy for periostitis, arthritis and synovitis, and even for migraine and neuralgia.

Damages for a Cough.—The market value of a cough was the question submitted to the Birmingham (England) County Court. A barrister sued a railroad company for £50 for discomfort suffered by smoking being allowed in a waiting-room at a station and in non-smoking carriages. The smoking aggravated the barrister's cough, and he was awarded £10.—*Law Notes.*

Mexican Physicians en route for Moscow.—The *Normania* which left New York July 27 numbered among the passengers the following: Francisco Vasquez Gomez, Dr. Ismael Prieto, Dr. Carlos Tejedo and wife, Dr. I. Urquiza and family, Mr. Lorenzo Chavez, Dr. Alonzo, Dr. Eduardo Liccaga and family; Dr. Francisco P. Bernaldez, Roberto Garcia, Dr. Jose Terres and family, Dr. Domingo Orvananos, Dr. J. L. Vallejo, Mr. Salvador Echagray, Dr. Manuel Toussaint, Dr. Porfirio Parra, Dr. Francisco Hurtado, Dr. Vergara Lopez, Dr. M. Carmond y Valle, Mr. Luis S. Carmona, Rafael Caraza and wife, J. M. Bandera, Dr. Eduardo Garcia, Dr. Antonio Carbajal, Alberto Losa y Gomez, Dr. Angel Gavino, Dr. Tomas Noriega, Dr. Rafael Riba, Nicolas Ramirez Arrellano, Dr. Salvador Garciadiego and Dr. Morales and family. The remainder of the party are on their way from Mexico. Some of the delegates will proceed to the Moscow convention by way of Berlin and others by way of Paris.

The Human Lorgnette.—Gaston Seguy, the first man in France to repeat the experiments of Roentgen and who has been most of his time occupied in the laboratory of Le Roux in studying vacuums and the properties of cathode rays, has constructed what he styles a "human lorgnette," which will show the organs of the human body with minute exactitude. The French Department of Customs has applied the instrument with signal success in the examination of sealed packages suspected of containing dutiable articles. The apparatus in question is not larger than a parlor stereopticon and is as readily handled. In a comparatively small compass Seguy has put the various components of his contrivance, such as electric storage cells, transformers and tubes, all of which are essential for the X-ray.

Heredity and Trauma in Intestinal Carcinoma.—Boas has been collecting statistics on these points and finds heredity active in only three out of sixty-two certain cases (forty-nine men and thirteen women). In nine the carcinoma could be traced directly to a trauma with four years to half a year as the limit of intervening time. He states that carcinoma may exist for years without developing, as is proved by the unsuspected carcinomas found at necropsies, and he is inclined to ascribe a latent stage—a year and a half at longest—to cancer of the stomach. Some influence, usually of a mechanical nature, starts them into active growth, and this applies especially to the gastro-intestinal canal. But trauma of a member would not suffice; there must be some *commotio* of the whole organism or of the entire gastro-intestinal tract or part of it to start a carcinoma to proliferating from this cause. The age is also important, the younger the individual the more probable the connection.—*Therap. Woch.*, July 4.

Medical Schools in Denver.—The supreme court of the State of Colorado has forbidden the University of Colorado from carrying on any part of its Medical Department in Denver because the constitution locates the University itself at Boulder. In consequence of this the members of the Faculty resident in Denver have resigned and the larger portion of them have united with the Medical Department of the University of Denver. Among those who have thus strengthened the Denver Medical School are Dr. H. T. Pershing in diseases of the mind and nervous system; Drs. S. G. Bonney and H. B. Whitney in medicine; Dr. Charles A. Powers in surgery; Dr. Walter A. Jayne in gynecology; Dr. George B. Packard in orthopedics; Drs. L. E. Lemen and J. W. O'Connor in clinical surgery; Dr. T. E. Taylor in clinical obstetrics and Dr. John Chase in clinical ophthalmology. The faculty of the school has been further enlarged by the election of Dr. P. V. Carlin in obstetrics, Drs. W. H. Bergtold and W. B. Fenn in pathology and Dr. Carroll E. Edson in therapeutics.

Sterilization of Surgical Instruments.—G. Denigès has combined Marechal's suggestion that instruments can be protected from rust indefinitely by the addition of a small quantity of some alkaline (*vide* JOURNAL, Vol. xxvii, p. 547), with the use of a powerful antiseptic, and announces that instruments thus treated are absolutely sterilized while they suffer no injury, even if left for months in the antiseptic solution. His formula is mercuric cyanid 2 to 5 grams in 1 liter water, to which are added 5 grams sodium borate or carbonate. It is also remarkably effective and harmless for disinfecting the hands. As the efficacy of sodium bicarbonate has been recently proclaimed in the treatment of purulent wounds (JOURNAL, Vol. xxviii, p. 655), he adds that this might be substituted for the borate. The present low price of mercuric cyanid would be still further reduced if there were more demand for it. Its toxicity has been much exaggerated, as 1 molecule, Cy_2Hg, only contains 1 5 cyanogen to 4·5 mercury. It is much superior for the purpose to the bichlorid; it is less caustic, and does not affect the albuminoids, which are coagulated by sublimate. He hopes to see his formula generally adopted in outside antisepsis and hospital practice.—*Bull. de la Soc. de Pharm. de Bordeaux*, June, 1897.

Validity of Minnesota Law as to Committment of Insane.—The supreme court of Minnesota holds, in the case of State v. Kilbourne, that subchapter 14, of chapter 46, General Laws of 1889, did not authorize the probate court to proceed to find a person insane, without bringing him into court, or giving him notice of the proceedings being taken against him, or an opportunity to defend, and is not for any such reason unconstitutional because not providing for due process of law. Properly construed, it says the law simply authorizes the court to dispense with the issuing of a warrant when the alleged insane person can be brought into court without it. The court further holds that in order to collaterally impeach the judgment of the probate court in proceedings to commit an alleged insane person to the hospital for the insane, the want of jurisdiction must affirmatively appear by the record itself. The fact that it does not appear that any warrant had been issued for the arrest of the alleged insane person, or that he was present in court at any time during the proceedings, is not sufficient to impeach the judgment or show want of jurisdiction. The record of proceedings in the court does not show want of jurisdiction by its own mere silence.

The Morbid Histology of Epileptic Idiocy and Epileptic Imbecility.—As a result of histologic studies, Andriezen (*British Medical Journal*, May 1, 1897, p. 1081) has found in cases of epileptic idiocy and epileptic imbecility, a diffuse sclerosis or overgrowth of the neuroglia fiber cells in the brain substance and a co-extensive change in the nerve cells. The latter was of two kinds: 1. Defective development (fewness and slenderness) of protoplasmic processes. 2. Increase in amount and diffusion of pigment throughout the cell body, especially its basal part, and a displacement of the nucleus toward the apex of the cell. Later changes were a gradual destruction and atrophy of the nerve-cell processes, consequent on or co-extensive with the further overgrowth of the glia (sclerosis), until whole groups or islands of cells might be so destroyed. There is thus a common pathogenic basis for epileptic idiocy and epileptic imbecility, and for focal epilepsy occurring in the child, namely, anomalies of growth and nutrition impressed upon the growing nerve cell as well as upon the neuroglia cell, and affecting predominantly this or that area of the brain, frequently in territories corresponding to a particular vascular distribution. In cases of epilepsy supervening in adult life, after the brain cells had attained complete development, the changes found were, as regards the nerve cells, only of the second kind. But in addition these very frequently exhibited intranuclear vacuolation of the cortical cells also. The significance of the changes especially associated with the epileptic neurosis (more particularly when occurring congenitally or in early life, and therefore entailing also a more or less obvious degree of mental impairment) is still more striking when it is remembered that in the brains of non-epileptic idiots and imbeciles similar lesions are generally absent, and the convolutionary forms may be, and often are, plump and well formed, though inclined to simplicity of arrangement. These are to be looked on as general arrests of development, not complicated of course with the epileptic neurosis. In the brains of non-epileptic imbeciles sclerosis and microgyria are both conspicuous by their absence. When the epileptic neurosis is present, however, this process also is present, and the other changes detailed are also present in varying degrees. It is in the combination of these two classes of pathologic changes that lesions are to be found, the surest indication, the seal as it were, of epileptic idiocy or epileptic imbecility in the brain.

Right of Appeal from Medical Board.—Does the Montana statute allow an appeal to an applicant who has been refused a certificate by the medical board authorizing him to practice medicine and surgery in the State on the ground that the applicant's examination papers show that he has not the requisite learning to entitle him to such certificate? This question was raised in the case of State v. District Court, and was passed upon by the supreme court of Montana. Its decision is of increased importance because a number of other States have similar statutes, and this appears to be the first authoritative adjudication of the question. The language especially involved is as follows: "In all cases of the refusal or revocation of a certificate to practice medicine by the said board, the person aggrieved thereby may appeal from the decision of the board to the district court of the county in which such revocation or refusal was made." It was argued by the attorney-general, that this provision only gave the right of appeal where the certificate was refused or revoked by the board for unprofessional, dishonorable, or immoral conduct, and that there was no appeal from the refusal of the board to issue a certificate on the ground of incompetency of the applicant. But, in examining the statute, the supreme court said it found no language that restricted the right of appeal to any particular class of cases. The terms of the statute are general, giving the right of appeal "in all cases of the refusal or revocation of a certificate to practice medicine by the said board." So it holds that it gives the right of appeal in the class of cases referred to in the question. Nay more, it holds that the trial in the district court, awkward, difficult, and unsatisfactory as same might be, would have to be *de novo*. Whether or not such laws are wise or unwise, politic or impolitic, it says is for the legislature to determine. Justice Hunt adds, in a concurring opinion, that judges often have to pass upon equally difficult questions, involving study and knowledge of abstruse sciences, and when these difficult problems arise they are permitted to call to their aid those who are most proficient and experienced in the branches of knowledge required to settle them. Nor does he think that courts will be disposed to reverse medical boards, if they can help doing it, where there is no wilful wrong or prejudice proved.

Societies.

The following sessions are noted:

Illinois.—Peoria City Medical Society, August 3.

Iowa.—Bussey District Medical Society, Tracy, July 29. Jasper County Medical Society, Newton, July 20.

Kansas.—Eastern Kansas Medical Society, Leavenworth, July 20.

Kentucky.—Henderson Medical Society, Henderson, July 28.

Maryland.—Baltimore County Medical Association, Towson, July 15,

Massachusetts.—Hampden District Medical Association, Springfield, July 20.

New York.—Northern District Branch of New York State Medical Association, Utica, July 20. Oneida County Medical Society, Utica, July 13.

Ohio.—Lorain County Medical Society, Lorain, July 20. Northeastern Ohio Medical Association, Steubenville, July 13. Northern Ohio District Medical Society, Sandusky, July 29. Union Medical Association, Lisbon, August 12.

Pennsylvania.—Tri-State Medical Association of Western Maryland, Western Pennsylvania and West Virginia, Bedford, Pa., July 15. Westmoreland County Medical Society, West Newton, July 15.

Rhode Island.—Newport Medical Society, July 21.

Vermont.—Union Medical Society, Manchester, July 20.

Wisconsin.—Fox River Valley Medical Association, Marinette, July 27. Inter-county Medical Society, Ashland, July 13. Inter-urban Academy of Medicine, Superior, July 16. Northwestern Medical Association, Stevens Point, July 11.

Ontario, Canada.—Lambton Medical Association, Lambton, July 21.

Louisville.

Dr. William Bailey, ex-president of the American Public Health Association, has received a notification from Hon. Gardner G. Hubbard, chief of the Committee on Awards of the Tennessee Centennial Exposition, of his appointment by Dr.

Geo. M. Sternberg, chairman of the Committee on Awards for the Department of Hygiene, as a member of that Committee. The Committee will convene at Nashville October 8, and will probably be in session about one week.

PENSION EXAMINERS.—The appointment of the Republican members of this Board has recently been announced as follows: Drs. William Bailey, Allen Kelch, J. Hunter Peake. It seems that under a recent ruling the members of the Board appointed by a Democratic President can not be removed as they are protected by the Civil Service, but the appointment of the three republican members will divide the work among six instead of three as formerly.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.—Arrangements are being rapidly completed for the entertainment of the visiting members and friends of this Association, and from the present outlook there will be a large attendance and a full program. One of the features of the meeting will be a souvenir button provided by the local committee, which will contain an engraved likeness of Ephraim McDowell, which will be appreciated by all those receiving them. Louisville is justly proud of her reputation for hospitality and every endeavor will be made to live up to it.

BRITISH MEDICAL ASSOCIATION.—Dr. J. B. Marvin, ex-president of the Kentucky State Medical Society, was at the last meeting of that Society appointed a delegate to represent the Society at the next meeting of the British Medical Association at Montreal. Dr. Henry E. Tuley has also received an invitation from the Montreal branch of the British Medical Association and will attend.

Washington.

ANNUAL REPORT OF THE CORONER.—The Commissioners have received the report of Coroner Hammett for the year ending June 30, 1897, which shows as follows: The number of deaths during the year were 581 and are divided as follows: Accidental deaths, 100; suicide, 33; homicidal, 12; violent deaths, 145; deaths from natural causes, 328; still births, 108. There were 43 autopsies and 34 inquests held during the year.

NEW INSPECTORS APPOINTED.—The Commissioners have appointed Drs. Walter D. Cannon and Edwin L. D. Roach sanitary and food inspectors for the District.

DRUG INSPECTOR RECOMMENDED.—The annual report of the Commissioners of Pharmacy was submitted to the Commissioners July 31. It shows during the year a total of eight pharmacists registered upon examination and thirty-nine upon diploma. A recommendation is made in the report for an inspector of drugs as follows: The appointment of an inspector of drugs, who would have the right to go into the pharmacies of the city and condemn any medicine offered which does not measure up to the requirements of the United States Pharmacopeia, is earnestly recommended. Instances in faulty manufacture of preparations are cited.

DENTAL EXAMINERS' REPORT.—The annual report of the [illegible] of Dental Examiners has been submitted to the Commissioners. It shows that certificates entitling to registration have been issued to twenty two persons. The total number of dentists registered in the city is now 300.

THE PUBLIC SERVICES.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from July 24 to 30, 1897.

Col. Dallas Bache, Asst. Surgeon-General, U. S. A. (Omaha, Neb.), is granted leave of absence for one month, with permission to apply for an extension of one month.

Capt. John L. Phillips, Asst. Surgeon, is granted leave of absence for four months, to take effect upon the arrival of Capt. Frank R. Keefer, Asst. Surgeon, at Ft. Walla Walla, Washington.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the two weeks ending July 24. 1897.

Surgeon C. G. Herndon, ordered to special duty at naval rendezvous, Duluth, Minn., July 19.

Asst. Surgeon S. B. Palmer, detached from the "Texas" and ordered to the "Annapolis" July 20.

Asst. Surgeon F. L. Pleadwell, detached from the "Constellation" 17th inst., and ordered to the "Texas" July 20.

P. A. Surgeon G. B. Wilson, ordered to the "Constellation."
P. A. Surgeon L. W. Spratling, detached from naval hospital, Norfolk,
P. A. Surgeon L. W. Spratling, detached from naval hospital, Philadelphia, July 19,
and ordered to naval hospital, Philadelphia, July 19.
P. A. Surgeon R. M. Kennedy, detached from naval hospital, Philadel-
phia, July 19, and ordered to naval hospital, Norfolk.
Asst. Surgeon J. C. Pryor, detached from naval laboratory, New York,
and ordered to the naval hospital, Mare Island, Cal.
Asst. Surgeon W. M. Wheeler, detached from naval hospital, Mare Island,
and ordered to the "Oregon."

Asst. Surgeon A. Farenholt, detached from the "Oregon" with insane patient to Washington, then to the "Vermont."

Asst. Surgeon C. E. Riggs, detached from the "Vermont" and ordered to the New-York navy yard.

Medical Inspector A. F. Price, detached from the New York navy yard July 14 and ordered to the "Olympia" as fleet surgeon.

Medical Inspector J. A. Hawke, ordered to the New York navy yard August 14.

Medical Inspector J. G. Ayers, detached from the "Olympia" as fleet surgeon, ordered home and granted two months' leave.

Surgeon H. E. Ames, detached from the "Cincinnati" July 25, and ordered to the naval hospital, Yokohama, per steamer August 14.

Surgeon J. C. Byrnes, detached from the Norfolk navy yard and ordered to the "Cincinnati" July 25.

Surgeon P. Fitzsimons, detached from naval hospital, Yokohama, on relief, ordered home and placed on waiting orders.

CHANGE OF ADDRESS.

Bowers, W. C., from La Place to Rooms 210-212 Milliken Blk., Decatur, Ill.; Bushang, L. B., from Maple Hill to Lyndon, Kan.; Bosworth, F. H., from 26 W. 46th Street, to 41 Park Avenue, New York, N. Y.

Curts, F. G., from Peoria to 208 Genesee Street, Waukegan, Ill.; Cheshire, M. U., from Anamosa to Cascade, Iowa; Crawford, S. K., from Baltimore, Md., to 440 Hermitage Avenue, Chicago, Ill; Carter, R. H., from Belton, Texas to Lynnville, Tenn.; Campbell, R. A., from Bellingham to 267 Cedar Avenue, Minneapolis, Minn.; Carpenter, Julia W., from Cincinnati Ohio, to Bay View, Mich. (Temporary address).

Givens, J. W., from Los Angeles, Cal., to Blackfoot, Idaho.

Hartman, F. T., from Anamosa, Iowa, to Victoria, Texas; Hatch, W., Grant, from Schleisingerville, Wis., to 357 S. Lincoln Street, Chicago, Ill.; Heise, W. F. C., from 215 S. Winchester Avenue to Presbyterian Hospital, Chicago, Ill.; Hakanson A., from 198 92d Street to 7716 Coles Avenue, Chicago, Ill.

Lehon, J. W., from Dunlap to Aurora, Ill.

Ohlmacher, A. P., from Cleveland to Gallipolis, Ohio.

Rohr, S. M., from Geyserville ro Santa Rosa, Cal.; Rucker, H. N., from 524 13th Street to 668 14th Street, Oakland, Cal.

Starr, J. N., from Snohomish to Room 9 Fernwell Bldg., Spokane, Wash.

Whammond, A. A., from 1104 W. 12th Street to 1329 S. 40th Avenue, Chicago, Ill.; Womeldorf, J. M., from Chicago, Ill., to Hartley, Iowa; Wadey, B J., from Esmond, Ill., to Belleville, Wis.; West, M., from Camden to 1302 Pacific Avenue, Atlantic City, N. J.; Wilkinson, D. L., from Bolling to Montevollo, Ala.

LETTERS RECEIVED.

Anderson, S. Lane, Chadd's Ford, Pa.; Arnold, C. D., El Reno, O. T.; Ayres, S. C., Cincinnati, Ohio.

Baughman, J. A., Neoga, Ill.; Ball, M. V., Philadelphia, Pa.; Bremer, L., St. Louis, Mo.; Buell, Mary C., Hampton, Iowa; Brown, Mark A., Cincinnati, Ohio; Boehringer & Soehne, (2) New York, N. Y.; Binswanger, Otto S., Portland, Ore.; Bowman, David E., Toledo, Ohio.

Crawford, S. K., Chicago, Ill.; Christopher, Hiram St. Joseph, Mo.; Curry, Wm., Palmyra, Neb.; Coomes, M. F., Louisville, Ky.

de Schweinitz, E. A., (2) Washington, D. C.; Dickinson, G. E., Upper Fairmount, Md.

Eichberg, Joseph, Cincinnati, Ohio; Elliott, A. K., New York, N. Y.; Egan, J. A., Springfield, Ill.; Edson, Carroll E., Denver, Colo.; Eve, Paul F., Nashville, Tenn.

Fairbairn & Sons, Edinburgh, Scotland; Feltwell, A. L., Altoona, Pa.

Gihon, A. L., Sykesville, Md.; Griffith, B. B., Sharpe, Ky.

Hummel, A. L., Advertising Agency, New York, N. Y.; Hospital College of Medicine, (2) Louisville, Ky.; Hays, T. A., Burns City, Ind.; Horn & Caylor, Pennville, Ind.; Herdman, W. J., Ann Arbor, Mich.; Herrick, C. L., Albuquerque, N. M.

Imperial Granum Co., New Haven, Conn.

Katharmon Chemical Co., St. Louis, Mo.; Karsten, A. C., Horicon, Wis.

Lowenstein, Fred P., New York, N. Y.; Lofton, L., Emporia, Va.; Loeb, H. W., (2) St. Louis, Mo.; Lewis, L. R., Auburn, N. Y. Levy, E. C., Richmond, Va.; Library Surgeon General's Office, Washington, D. C.

McCormack, A. T., Bowling Green, Ky.; McClellan, B. R., Xenia, Ohio; Montgomery, Liston H., (2) Chicago, Ill.; McDougal, J. G., New Lexington, Ohio.

Midgley, R. J., Chicago, Ill.; Mulford, H. K. Co., Philadelphia, Pa.

New York Pharmacal Association, Yonkers, N. Y.; Norwich Pharmacal Co., The, Norwich, N. Y.

Ohlmacher, A. P., Gallipolis, Ohio.

Paquin, Paul, (2) St. Louis, Mo.; Patterson, John H., Chicago, Ill.; Parmele, Chas. Roome Co., New York, N. Y.; Parker, J. C., Farmington, N. H.

Reber, Wendell, Philadelphia, Pa.; Reynolds, Dudley S., Louisville, Ky.; Reynolds, H. D., New York, N. Y.

Stallman & Fulton, New York, N. Y.; Stuver, E., Rawlins, Wyo.; Solis-Cohen, J., Philadelphia, Pa.; Schering & Glatz, New York, N. Y.; Schooler, Lewis, Des Moines, Iowa; Smith, Kine & French Co., Philadelphia, Pa.

Tuley, Henry E., Louisville, Ky.

Van Etten, C. S., Rhinebeck, N. Y.

West [illegible] ruff, [illegible] L., T. A., [illegible] nry Alton, [illegible] W., Dallas, Texas; [illegible] (2) [illegible]imore, Md.

PAMPHLETS RECEIVED.

Further Report of Cases Treated with Anti-tubercle Serum. By Paul Paquin, M.D., 8 pages. Reprinted from the Journal of the American Medical Association.

Medical College of Alabama. Announcement for 1897-8

Mouths of our School Children, The. By Carl Theodor Gramm, M.D. 4 pages. Reprinted from Columbus Medical Journal.

Neurological Progress in America. By C. H. Hughes, M.D. [illegible] pages. Reprinted from Alienist and Neurologist.

New Orleans University Year Book, 1896-97.

Position or Posture of the Patient During Parturition with Special Reference to the Merits of the Walcher Position. By Andrew F. Currier, M.D. 16 pages. Reprinted from Medical News.

St. Elizabeth Hospital Reports. 12 pages. La Fayette, Ind.

Ventral Hernia Resulting after Abdominal Section and its Treatment, By Andrew F. Currier, M D. 12 pages. Illustrated. Reprinted from Annals of Gynecology and Pediatry.

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ORIGINAL ARTICLES.

PRINCIPLES UNDERLYING THE SERUM DIAGNOSIS OF TYPHOID FEVER AND THE METHODS OF ITS APPLICATION.

Presented in Opening the Discussion on Serum Diagnosis in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY WILLIAM H. WELCH, M.D.
PROFESSOR OF PATHOLOGY, JOHNS HOPKINS UNIVERSITY.
BALTIMORE, MD.

I comply the more readily with the suggestion of the Chairman of this Section that my remarks in opening this discussion on the "Serum Diagnosis of Typhoid Fever," shall relate to the general principles of the method, inasmuch as the results obtained by this method at the Johns Hopkins Hospital will be presented in the course of this discussion by Dr. Block, and others will relate the results of their personal experience.

Before the introduction of the Widal method of diagnosis the discovery and subsequent studies of the typhoid bacillus had been comparatively barren of results available to the general practitioner of medicine. In this respect the typhoid bacillus afforded a marked contrast to many other pathogenic microorganisms, notably the tubercle bacillus, the diphtheria bacillus and the malarial parasite.

For various reasons improved methods of diagnosis of typhoid fever are most welcome to the practitioner. Inasmuch as the prevalence of this disease is a just reproach to the sanitary conditions of a locality, there has often been a readily explicable, if not creditable, reluctance on the part of some physicians, especially in public institutions, country towns and summer resorts, to make the diagnosis of typhoid fever even in clear cases. Moreover, notwithstanding all that has been written on the subject, knowledge of the frequent deviations of typhoid fever from the classical type, amounting sometimes to entire absence of all features of this type, can hardly be said to have become sufficiently common property of the medical profession in this country. The differential diagnosis of typhoid fever from certain other diseases, such as acute miliary tuberculosis, tuberculous peritonitis and meningitis, acute ulcerative endocarditis and various other septic affections, may, for a time at least, be most difficult or impossible, even to skilled diagnosticians. In children the disease is prone to anomalous manifestations. Since the discovery of the malarial parasite there is no longer any excuse for confounding typhoid and malarial fevers. A method of positive diagnosis of typhoid fever will elucidate the much disputed nature of many short and mild febrile diseases and of certain fevers of warm climates, as in the southern part of this country.

Before the introduction of serum diagnosis, numerous attempts had been made to utilize the presence of the typhoid bacillus for purpose of diagnosis. One can obtain with considerable regularity cultures of the typhoid bacillus by hypodermic puncture of the spleen in typhoid patients; but this procedure is not wholly without danger. Anyone who has seen at autopsy a swollen, soft typhoid spleen with its capsule distended to the utmost and ready to burst the moment it is lifted from the body, would certainly hesitate to insert even a hypodermic needle into such a spleen during life. Instances are on record in which such puncture of the spleen has given rise to severe intraperitoneal hemorrhage. Cultures from roseola spots, suggested by Neuhauss in 1886, yield uncertain results. Cultures from the blood give positive results in some cases, especially if large amounts be used. Cultures from typhoid stools reveal the presence of the specific bacillus in many cases if the examination be made with sufficient patience and care. The introduction of the Elsner and of the Capaldi nutritive media marks a distinct advance in this method. None of these procedures, however, in their present form afford simple and ready methods of diagnosis in the routine of hospital and private practice.

History.—The Widal method of diagnosis is based on the application of scientific discoveries made before Widal's first publication, June 26, 1896. As a controversy for priority, attended with no little bitterness, has arisen, it may be well to state the main historic facts. Like so many other bacteriologic discoveries of practical utility, this one is the outcome of investigations concerning immunity.

In 1889, Charrin and Roger noticed that the bacillus pyocyaneus grows in the form of clumps in the undiluted serum of animals rendered immune from this bacillus, whereas in normal serum it grows with diffuse clouding of the medium. This is the first observation of the property of immune serum to cause agglomeration of specific bacteria.

In 1891, Metchnikoff observed the same phenomenon together with immobilization of the bacteria in cultures of the vibrio Metchnikovi, and also clumping of the pneumococcus, in their immune sera and he said: "This fact, presenting a general importance, should be investigated more fully." He did not, however, pursue the investigation, and as he failed to find the same behavior of the hog cholera bacillus[1] in its immune serum, he seems to have abandoned the idea first expressed as to the general importance of the phenomenon.

In 1893, Issaeff, in the Pasteur Institute, and in 1895, Washbourn, confirmed Metchnikoff's observation as to the pneumococcus, and in 1894 Issaeff and Ivanoff, in Koch's Institute, made the same observation regarding the vibrio of Ivanoff.

In 1894, Pfeiffer, in conjunction with Issaeff, published his important studies on immunity from Asiatic cholera, in which he showed that cholera spirilla introduced into the peritoneal cavity of immunized guinea pigs, or introduced together with immune serum into the peritoneal cavity of normal guinea pigs, quickly lose their motility and break up into small granules. This behavior in the animal body, known as the

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[1] As a matter of fact, the hog-cholera bacillus is agglutinated and immobilized by immune hog cholera serum, as has been shown by Dawson (New York Med. Journal, Feb 20, 1897). This is an additional proof, if any were needed, of the fact repeatedly insisted upon by the writer and others in this country, that Metchnikoff's so called hog cholera bacillus is not the genuine hog cholera bacillus discovered and described by Theobald Smith (Welch and Clement. Proceedings of the 30th Annual Convention of the U. S. Veter. Med. Assoc and 1st Veterinary Congress of America, October, 1893).

"Pfeiffer phenomenon," and demonstrated in 1896 by Pfeiffer and Kolle also for typhoid infection, became the subject of investigation by others, which led to the recognition of the importance and general bearings of the agglutinative reaction of specific sera. The Pfeiffer phenomenon is distinct from the agglutinative reaction upon which the method of serum diagnosis to be here considered is based, and Pfeiffer himself can not be credited with a clear recognition of the diagnostic importance of the latter reaction before it was made manifest by the work of others. He, however, directed attention to the diagnostic employment of serum with his reaction, and his discoveries formed the basis for the later work on the agglutinative reaction and, therefore, they occupy an important position in the history of serum diagnosis.

In 1895, Bordet, in studying the conditions of production of the Pfeiffer phenomenon outside of the animal body, noted that if a small quantity of immune serum be added to a suspension in salt solution or bouillon of cholera spirilla these lose their motility and become agglomerated. The significance of Bordet's observation is that he was the first to dilute the serum. His interest, however, was chiefly in the determination of the conditions causing the disintegration of the spirilla by cholera serum, and it can not be said that, at this time, Bordet had a clear perception of the importance and general significance of the agglutinative reaction.

January 3, 1896, Durham presented to the Royal Society a paper giving the results of investigations in Gruber's laboratory in Vienna. This communication embodies the first thorough and systematic study of the agglutinative and immobilizing properties of immune serum outside of the animal body. In this and the rapidly following papers of Gruber and Durham the real importance and general characters of this reaction with immune serum were for the first time made clear. The macroscopic and the microscopic tests, the importance of dilutions, quantitative estimations of agglutinative power, the value of the test for the differentiation of bacterial species and for the determination of a previous attack of cholera or typhoid fever, and many other details were described.

It seems but a small step to determine whether a reaction which had been demonstrated to characterize the serum of animals and human beings which have recovered from an infection may not also be present during the period of infection, but upon this step depended the applicability of the reaction as a method of clinical diagnosis. It was Widal who took it and thereby made available for the diagnosis of an infection a reaction which had previously been thoroughly worked out by Gruber and his collaborators so far as immune serum is concerned.[2] Widal's first communication was presented to the Société Médicale des Hôpitaux on June 26, 1896. This first paper has been followed by numerous important contributions by Widal and others to the same subject.[3]

Nature of the agglutinative property and reaction.—As the result of infection with many bacteria or of intoxication with their products, the blood, even when highly diluted, acquires the property of causing loss of motility and clumping together of the specific bacteria concerned in the infection or intoxication. The clumping is called by Gruber agglutination, and is attributed by him to the presence of substances to which he has given the name agglutinins. He supposes that these agglutinins make the gelatinous capsules of the bacteria swell up and thereby stick the bacteria together. Although there is no proof of this theory, the names "agglutination," to designate the phenomenon, and "agglutinins," for the supposed substances causing it, have been widely adopted.

In the case of motile living bacteria two phenomena characterize the complete reaction, paralysis or immobilization of the bacteria and clumping. Usually these two phenomena go hand in hand, but sometimes there is loss of motility with little clumping or clumping without much cessation of motion, so that the opinion has been expressed that the paralyzing and the agglutinative substances are not identical. The more common deviation from the usual course of the reaction is the occurrence of clumping, with partial preservation of motility.

The agglutinative serum reaction appears to be of wide, although not universal, application, both for motile and non-motile pathogenic bacteria, having been demonstrated for typhoid, Asiatic cholera, pneumococcus infection, tetanus, pyocyaneus disease, glanders, hog-cholera, Malta fever, colon infection, proteus infection, psittacosis, and several other infections.

The change in the blood upon which the reaction depends is doubtless a specific one in the same sense as are the antitoxic, lysogenic, and other specific alterations caused by the action of definite bacteria or their products. It is upon this specificity that the diagnostic value of the reaction is based. It is true that, as in the case of the antitoxic, lysogenic and other protective modifications of the fluids of the body, the normal blood may possess in some degree the same property, so that the specific character of the change may not be apparent without resorting to considerable dilution of the blood or serum. Normal blood may agglutinate, to some degree, not only the typhoid bacillus but various other bacteria. The specificity of this change resulting from infection with a given microörganism is made apparent by increase of the agglutinative power of the serum only for that microörganism, or to some extent also for closely allied microörganisms. The increase of reaction in some degree with closely allied bacteria, does not militate against the specificity of the change, for it is only an expression of the natural affinities between varieties and races of organisms, as between the typhoid bacillus and the bacillus of psittacosis, or between the cholera spirillum and certain other spirilla, or between the varieties of proteus bacilli or of colon bacilli. The development of the specific agglutinative properties of the blood in typhoid fever affords additional proof, if any were needed, that the bacillus typhosus is the specific cause of this disease.

The blood acquires the specific agglutinative power at a variable period, usually within a few days, after the entrance of the pathogenic microörganism or its products. This power tends to increase, but with much irregularity, during the course of the infection, and gradually to diminish and finally to disappear weeks, months, or it may be years after recovery from the infection. Widal lays much emphasis on the reaction being one of infection and not of immunity. Still it is to be noted that by following procedures for raising experimental immunity to great heights, there may be a corresponding rise of agglutinative power, whereby degrees of this power may be attained which are entirely unknown during natural infections. Thus, Widal, by successive inoculations of an ass, has secured typhoid serum with an agglutinative strength of 1 to 43,000, and Salimbeni has obtained, experimentally, cholera serum agglutinating in a dilution of 1 to 50,000. Gruber speaks even of immune sera which agglutinated distinctly in a dilution of 1 to 500,000. There is, however, no necessary correspondence between the height of immunity and that of agglutination; especially may the latter lessen or disappear when the former is preserved. In the light of the experimental results, and for other reasons, it seems to me somewhat misleading to designate the reaction as merely one of the period of infection.

We are not informed as to the nature of the relationship between the agglutinative and the protective properties of the blood. Gruber has based a new theory of immunity on the agglutinative reaction, but this theory is opposed by many facts and can not be accepted. The agglutinative property has been shown to be distinct from the bactericidal, lysogenic, antitoxic and other known protective properties of the blood. At present we have no satisfactory evidence that the agglutinative reaction is concerned in any of the defensive mechanisms of the body. According to Salimbeni, whose results, however, are not in entire accord with those of Durham, agglutination of bacteria does not take place within the animal body, although it has been demonstrated that the living blood plasma possesses the agglutinative property.

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[2] It appears that Grünebaum, working in Gruber's laboratory, had determined the agglutinative property of the blood serum during the period of typhoid infection before Widal's first publication, but the results of his investigations were not published until after several papers by Widal and others had appeared.

[3] A summary of their own work on serum diagnosis, as well as that of others, with references to literature, is presented in a recent elaborate paper by Widal and Sicard in the Annales de l'Institut Pasteur, 1897, No. 5.

We do not know the origin or nature of the so-called specific agglutinating substance, save that in some way it results from the activities of bacteria or their products within the living body. Gruber believes that it is derived from the bodies of the bacteria through the agency of the cells. Bordet considers that it is secreted by leucocytes. Experiments of Widal and Sicard, and of Achard and Bensaude, indicate that it is not secreted by leucocytes outside of the living body, but there is nothing which shows that it may not be formed by cells within the body.

The agglutinative substance is generally believed to be a proteid, as it is precipitated from blood plasma with fibrinogen and globulin, and from milk with lacto-globulin and casin, but it is possible that it is simply mechanically retained by these albuminous precipitates. In typhoid fever it may be absent from albuminous urine and may be present in urine which gives no reaction for albumin (Widal). It behaves like an albuminous substance as regards filtration and dialysis.

The question whether it is strictly proper to speak of agglutinative, bacterolytic, antitoxic, substances in the blood is a legitimate one. They have never been isolated as chemical substances. Behring has expressed the opinion that isolation of antitoxin will never be accomplished, for, in his opinion, it is a force pertaining to highly organized material, and there is no more possibility of separating it as a substance than of isolating the magnetic force from an iron magnet. In all probability these various properties, agglutinative, bacteriolytic, antitoxic, belong to the same general category, and we may look upon the agglutinative property also as a physical one which proteid substance may acquire as the result of the activities of bacteria or their products, and no more separable in the form of a chemical substance than is electricity.

The agglutinative property is quite resistant to injurious agencies. It survives desiccation of the blood or serum for months, and may persist for months in blood serum, even when this is seriously contaminated with microorganisms. It is not destroyed by sunlight, unless overheated. It is weakened by prolonged heating at 60 degrees C., and is annulled by heating for ten minutes at 75 to 80 degrees C.

The agglutinative property in typhoid fever is present in maximum amount in the blood, being somewhat greater in the blood plasma than in the blood serum. It is found in blister serum in essentially the same strength as in blood serum. In other fluids, as the pleural, peritoneal, pericardial, inflammatory and edematous, it is in smaller and variable amount. In milk and colostrum it is present in marked degree. It is weak and inconstant in the urine, bile and aqueous humor. It has been found in tears naturally secreted, but is said to be absent from those provoked by irritants. It may be present in typhoid stools (Block). It has not been found in the cerebrospinal fluid or the fluid in the seminal vesicles. It has not been positively determined whether the distribution of the agglutinative property in the various humors of the body outside of the blood, can be explained wholly by processes of filtration and diffusion from the blood plasma, although these are doubtless the main factors.

The agglutinative reaction may or may not be obtained with the blood of a fetus or new-born infant of a mother with typhoid fever. Chambrelent and Saint-Philippe consider that the presence or absence of the reaction in the fetus depends on whether or not the typhoid bacilli break through the placental barrier from mother to fetus and cause infection of the latter. Further investigations are needed to determine this point and thus to decide whether the agglutinative property is passively or actively acquired by the fetus. For it has been shown that this property, like immunity, not only may be actively acquired as the result of infection or intoxication, but may be passively transmitted by injection of agglutinative serum, the reaction in the latter case appearing promptly without symptoms of infection. being relatively slight, and disappearing after a short time.

Courmont thinks that the development of typhoid bacilli in a fluid robs it of agglutinative power. Thus he has found that the vegetation of the bacilli in typhoid serum deprives it, in a few days, of the agglutinative property, and that blood obtained, post-mortem, from the spleen, liver and mesenteric glands, organs in which the typhoid bacilli are especially abundant, is poorer in agglutinative power than that from other parts. Ménétrier found in a case of typhoid fever that the pleural exudate, which usually gives the agglutinative reaction, did not do so, and that it contained typhoid bacilli in large number. It has been suggested that these observations may shed light on the exceptional cases of typhoid fever with absence of the specific serum reaction. Flexner has shown that, occasionally, the typhoid bacilli develop in the blood in such large numbers as to produce a genuine typhoid septicemia. Still these observations, interesting as they are and deserving further investigation, must be interpreted with caution, for Widal has found a purulent exudate from an immunized ass, swarming with typhoid bacilli, to present, even after fifteen months' preservation, an agglutinative power of 1 to 13,000, the power of the blood serum of the same animal kept for the same length of time being 1 to 14,000.

We have no satisfactory explanation of the production of the phenomenon of agglutination by specific serum. Gruber's explanation already mentioned has received no confirmation. The phenomenon occurs with non-motile as well as with motile bacteria, with dead as well as with living organisms. Typhoid bacilli killed by formol in weak solution, or by heating for five minutes at a temperature of 56 degrees C., are about as sensitive to the reaction as are living bacteria, and retain their agglutinability for a long period (Widal). The phenomenon, therefore, is a physical rather than a vital one, although probably dependent in some way on the protoplasmic constitution of the bacterial cell. Salimbeni, as has been stated, found that the phenomenon does not occur in the living body of immunized animals. He also found that the presence of atmospheric air greatly favors the reaction, it requiring much more concentrated serum and a longer time to bring about the phenomenon in a vacuum than when the fluid is exposed to the air. Widal has shown that other physical conditions, particularly contact with objects, such as the surface of slide or cover-glass, and partial evaporation, favor the production of the reaction.

Agglutinative serum is often likewise bactericidal and bacteriolytic, but the agglutinative reaction is independent of the bactericidal and is manifest with dilutions of the serum which annul the bactericidal power. In such dilutions the agglutinated and immobilized bacteria are not altered morphologically, or in staining properties, or in pathogenic power, or in any other way, so far as has been determined. Whether the temporary inhibition of bacterial growth in agglutinative serum is dependent on the agglutinative or on some other property of the serum is not known.

Methods of making the serum test for typhoid fever.—Widal, in his first communication, described both the slow or macroscopic and the quick or microscopic methods. For each of these he recommended a dilution of one part of blood or blood serum to ten parts of the fluid containing the culture. The macroscopic method consists in adding the blood or serum to be tested either to a young bouillon culture of the typhoid bacillus or to sterile bouillon which is then at once inoculated with the bacillus. In the former case the reaction with typhoid serum appears usually within two or three hours and consists in clarification of the previously turbid fluid, and the formation of a clumpy sediment composed of accumulated bacilli. In the latter case the tube is placed in the incubator and within fifteen hours the reaction is manifested by growth of the bacilli in the form of a sediment at the bottom of the tube, the fluid remaining nearly or quite clear.

The microscopic test, to which Widal gave the preference, is made by mixing the blood or serum with a young bouillon culture or with a suspension in bouillon or salt solution of a fresh growth of the typhoid bacillus and examining a drop or two of the mixture at once under the microscope. With a dilution of 1 to 10 this microscopic typhoid reaction appears, as a rule, immediately or within a few minutes, and is evidenced by loss of motility and by clumping of the bacilli into masses of various sizes and shapes.

Widal obtained the blood either with a sterilized hypodermic syringe from a vein of the arm, or by pricking the finger. It may also be conveniently obtained by pricking the lobule of the ear. A few drops of blood suffice for collecting the necessary amount of serum; indeed a single drop will do for the reaction. The blood may be collected in a small test tube where, usually in a few minutes, it clots. The separation of the serum may be facilitated by passing a sterilized platinum needle between the glass and the clot, or by the centrifuge, or the blood may be collected and allowed to clot in a slanted tube, which is then placed upright, the separated serum trickling to the bottom.

In a communication made July 31, 1896, Widal said that results equaling those with blood serum can be obtained with blister serum, and this procedure has been employed with much satisfaction by the Health Department of New York city.

At the same time Widal called attention to the preservation of the agglutinative property in dried blood and serum. Wyatt Johnston deserves t credit of developing the test with dried blood and i introducing the method of serum diagnosis into t work of municipal laboratories. The dried-blo method, which has been used far more extensive in Canada and this country than in Europe, possess certain manifest advantages, especially ease of colle tion, freedom from subsequent contamination an readiness of transportation, and it has given excelle results in the hands of Johnston and others. Th principal objection, and this is of considerable impor ance when precise results are desired, is the difficul of obtaining accurate quantitative dilutions with th use of dried blood.

Several observers, including Breuer, Haedke, D Mesnil de Rochemont, Scheffer, have expressed th opinion that the macroscopic method is more trus worthy than the microscopic. This I believe to be a error and to be due to unfamiliarity with all of th conditions essential for the accurate employment o the *microscopic* test. The latter is more delicat prompt and precise than the macroscopic reactio and requires less care in respect to accidental contamination.

A year's experience with the method of serum diagnosis of typhoid fever has led to a general consensu of opinion as to its great value. It has, howeve been recognized that certain precautions in the application of the test are necessary in order to avoi mistakes. Numerous modifications of the origina methods have been suggested, the most importan relating to quantitative determinations. In considering the value and practical utility of such modifications of the test, several points should be borne i mind. Practically all of the methods recommende by competent investigators have given good results i the great majority of cases. For clinical purposes i is desirable that neither the method of obtaining an collecting the blood, nor that of conducting the tes should be made more difficult and complicated than i absolutely necessary. Methods which may be essential for exact scientific work, where every possibl source of fallacy is to be avoided, may not be the bes for the routine examinations of a clinical or a municipal laboratory. Where absolute accuracy is not obtainable it is upon the whole better that the method should err on the side of now and then including a non-typhoid case than in excluding cases of genuine typhoid fever. With due allowance for such considerations as these, we must welcome all efforts to give greater precision to the methods of serum diagnosis and to determine the capabilities of these methods and their possible sources of error. In exact quantitative work with the serum test the most important points to be considered are the characters of the culture, the dilution of the serum, the time limits, the criteria of the reaction and certain physical conditions influencing the reaction.

Characters of the culture.—There has been considerable difference of opinion as to whether cultures of the typhoid bacillus obtained from different sources are equally sensitive to the agglutinative reaction. Widal, Durham, Stern and C. Fraenkel, who have all had large experience with different cultures, have found only unimportant and inconstant differences in susceptibility to the reaction. The fact determined by Pfeiffer that the less virulent the culture, the greater the sensitiveness to the lysogenic reaction (Pfeiffer's phenomenon), seems to have been considered by many without sufficient investigation to be equally applicable to the agglutinative reaction. Kolle, without however presenting sufficient evidence, emphasizes the greater susceptibility of cultures with weakened virulence to agglutination. The most satisfactory evidence on this point is furnished by Kuhnau, who made a careful comparative study of the behavior with the serum test of a non-virulent and a virulent typhoid culture, and found the former to react much more intensely with normal and typhoid sera. He, therefore, lays stress on consideration of the virulence of the culture in quantitative work with the serum test. In view of the conflict of opinion further investigations upon this question are needed.

It cannot be doubted that several observers have had to do with typhoid cultures which presented distinct differences in susceptibility to the agglutinative reaction. Especially worthy of consideration, although not wholly in accordance with some results of others, are the observations of Johnston and McTaggart, confirmed by Appel and Thornbury, that solutions of dried blood are more potent than serum in agglutinative power, although not in paralytic effect, and that such solutions from non-typhoid cases are prone to give partial (pseudo-) reactions with frequently transplanted typhoid cultures, whereas this difficulty is largely overcome by using fresh cultures planted from stock cultures a month old. Hence they strongly recommend for the dried-blood method cultures of the latter character. They, as well as other writers, likewise emphasize the importance of considering the composition of the culture medium, which should be favorable to vigorous growth and not too strongly alkaline.

Only young cultures should be used, preferably not over twelve to eighteen hours old, if grown in the incubator. Older room cultures can be used. Old cultures agglutinate more readily than young ones. Either bouillon cultures or suspensions in bouillon from solid cultures may be employed. There is no difficulty in securing uniform suspensions of isolated, actively motile typhoid bacilli, especially from young cultures on dried-out agar. In every case it is of prime importance to make a control examination of a drop from the same part of the culture or suspension which is used for the test and at the time of making the test in order to be sure that there are no preexisting clumps, that the bacilli are actively motile, and that the culture is not contaminated.

Stern suggested that the concentration of the suspension, that is the number of bacilli in it, may be a factor meriting consideration, and Kuhnau and Block have shown that this is the case. Weak suspensions are more readily agglutinated and paralyzed than stronger ones. Hence, Kuhnau recommends the use of suspensions of known concentration, which can be approximately secured without much difficulty. He uses a suspension in bouillon of a fifteen-hour virulent agar culture (grown in the incubator) containing about one hundred and twenty million bacteria in a cubic centimeter.

Dilution of the serum.—Inasmuch as normal and non-typhoid blood may possess distinct agglutinative property, especial importance is attached to dilution of the serum, in order to avoid mistaking the normal reaction for one of typhoid fever. The opinion has been widely expressed that the dilution recommended by Widal, 1 to 10, is too low, and that a dilution should be used which is not known ever to give a reaction with non-typhoid blood. The fixation of the upper limit of such a dilution has been placed gradually higher and higher, thus by du Mesnil at 1 to 25, by Kolle 1 to 30, by Grunbaum 1 to 33, by Stern 1 to 40, by Kühnau 1 to 50. Even if it should be admitted that a reaction in non-typhoid cases with these higher dilutions is ever of such a character as might mislead an experienced observer, its occurrence is, according to most observers, very exceptional.

The question arises whether the adoption of a dilution of say 1 to 50 as the standard, would result in the exclusion of genuine typhoid cases from the diagnosis. Widal divides the typhoid cases in which he has measured the agglutinative power of the blood into five groups: *a*, those with very weak power, less than 1 to 100 (four cases); *b*, with weak power, between 1 to 100 and 1 to 200 (nine cases); *c*, with medium or average power, from 1 to 200 to 1 to 500 (eight cases); *d*, with high power, from 1 to 500 to 1 to 2,000 (nine cases); and *e*, with very intense power, exceeding 1 to 5,000 (three cases). In only one case did the agglutinative power not rise over 1 to 40, it being 1 to 30 on the twentieth, and 1 to 40 on the twenty-second day of the disease. In one case, Widal found the strength to be 1 to 12,000. In nineteen cases measured by Stern, the agglutinating strength was never less than 1 to 50. C. Fraenkel found the average to lie between 1 to 100 and 1 to 200, sometimes reaching 1 to 5,000. Out of seven cases Kuhnau found two in which the serum was active only in dilutions less than 1 to 50, it being 1 to 30 in one, and 1 to 20 in the other case, but in both he made a positive diagnosis of typhoid fever in consequence of disparity of the action of the serum on the colon bacillus and the typhoid bacillus. From the observations thus far reported, although they are insufficient in number for definite conclusions, there would seem to be only small liability of failure to recognize genuine typhoid cases by resorting to dilutions of 1 to 40 or 1 to 50, but unquestionably a few cases would escape recognition, and for this reason lower dilutions should also be used, and if those between 1 to 10 and 1 to 50 give decided reaction there should be, at least, suspicion of typhoid fever.

It is not, therefore, to be recommended that one should make the test with only high dilution, such as 1 to 50. The negative result of a preliminary test with equal parts serum and culture suffices to exclude typhoid reaction. The examination, if positive, may then be made with a low dilution of the serum and for this Widal's recommendation of 1 to 10 or 1 to 15 may be well adopted. If with this dilution the microscopic reaction is complete and almost immediate, as is often the case, there is practically no risk in making a positive diagnosis. But for absolute certainty and above all in cases where the result of the reaction is not prompt, complete and unmistakable, higher dilutions should be employed; if the amount of serum permits only one such, it may be 1 to 50, but preferably intermediate dilutions should also be made, and it is desirable, if not absolutely necessary, to try dilutions higher than 1 to 50. For making the dilutions there are various simple technical procedures, which involve but little expenditure of time and labor and only small quantities of serum, as, for example, that recommended by C. Fraenkel. An accurate fixation of the upper limit of agglutinative power is often tedious and not generally necessary in diagnostic work. A positive diagnosis of typhoid fever, based exclusively on the test with a low dilution, in a case which subsequently proves not to be typhoid should not be considered as in any way invalidating the results of an accurate employment of the method of serum diagnosis.

It is self-evident that the employment of varying degrees of dilution of the serum, without at the same time taking into consideration other factors which influence the reaction, has little sense and does not constitute, in itself alone, an accurate method of mensuration of agglutinative power.

Time limits.—As the rapidity with which the reaction appears and progresses generally varies, other things being equal, according to the agglutinative strength of the blood it is evident that methods of exact mensuration of this strength must take into consideration the length of time required for the development of the reaction after the addition of the serum. Many writers have not paid much attention to this point. Stern has proposed that a limit of two hours be adopted as an arbitrary standard for the microscopic reaction, and Widal has accepted this proposal. With this unit, an agglutinative power fixed at 1 to 500 means that 1 part of serum added to 500 parts of the fluid containing the culture, agglutinates and paralyzes the bacilli within two hours, although a higher dilution may give a decided reaction in six or eight hours. The optimum effect is, according to Stern, not attained before the lapse of six or eight hours.

By varying the time limits, results obtained by lower dilutions may be roughly comparable with those by higher dilutions. Thus, for diagnostic purposes, a fifteen minute time limit for dilutions of 1 to 10 may be adopted and a two hour time limit for dilutions of 1 to 50 or higher, but it should be understood that in all doubtful cases quantitative determinations by varying the dilution should be employed.

Criteria of the reaction.—Some writers have proposed to make either the cessation of motility or the clumping the essential criterion of the reaction. Thus Stern selects the clumping and Kühnau the paralysis of motion. In my judgment both phenomena enter equally into the reaction and deserve equal consideration, so that a reaction is not to be considered complete and satisfactory unless the bacilli are both clumped and rendered immobile. Partial reactions in which one or the other characteristic is lacking may warrant suspicions and lead to further examination, but they should not be made the basis of positive diagnosis. For this reason the use of killed cultures, as suggested by Widal, while it may have a limited field of application, can not supplant the ordinary method. As already stated, the microscopic reaction is to be preferred to either of the macroscopic methods, although the latter afford striking objects for demonstration. With low dilutions bactericidal and lysogenic phenomena are common, but they do not pertain to the agglutinative reaction itself.

Certain physical conditions influencing the reaction.—As already mentioned Salimbeni has shown that free exposure to the air favors the reaction and Widal has pointed out that partial evaporation at the edge of the cover-glass and contact of the specimen with slide and cover-glass are also favoring conditions. Hence, the conditions for the reaction are not exactly the same with the serum bouillon mixture in thin layer beneath the cover-glass on an ordinary slide, as in a thick layer, or in a sealed drop culture on a hollow slide, or in a column of fluid in a test-tube, or in a moist chamber. The presence of fibrinous masses, granules and material foreign to blood serum may perhaps explain in part the greater frequency of partial reactions with normal blood when the dried blood method is used than when the serum method is employed. The temperature of the incubator, by favoring evaporation and in other ways, accelerates the reaction. For exact quantitative work these various physical conditions need consideration and further investigation. Widal prefers the use of ordinary slides to that of hollow-ground slides, and does not advise keeping the specimen in the incubator. It is not to be supposed that the diagnostic use of the serum test generally hinges on such delicate points as these, but they are among the points to be considered in the explanation of certain irregularities in the results of the test, in comparing the results of different workers, and in mensuration of agglutinative power, especially with high dilutions.

Reactions with the colon bacillus.—Statements of different writers as to the occurrence of the agglutination of the colon bacillus with normal and typhoid sera are not harmonious. Widal and Courmont find that all human sera, whether normal or typhoid, have a slight agglutinating action on the colon bacillus in dilution of 1 to 10, whereas normal sera have only exceptionally any such action on the typhoid bacillus in this dilution. Many observers have noted some agglutination of colon bacilli with typhoid serum, although the reaction is much less intense than with the typhoid bacillus. Vedel found, in a case with symptoms of typhoid fever but without the typhoid serum reaction, marked colon reaction, and he interpreted the case as one of colon infection simulating typhoid. He is not, however, inclined to attach much diagnostic importance to the colon reaction, as he found that it might be well marked both with normal and typhoid blood. Johnston and McTaggart found genuine colon reactions with typhoid blood to be rare, provided the typhoid reaction was well marked. In several cases, however, where the symptoms suggested typhoid but the typhoid serum reaction was absent, they found marked colon reaction. They are inclined, therefore, to attach diagnostic importance to the latter reaction. The colon cases were mild and of shorter duration than ordinary typhoid fever.

Kühnau makes use of the colon reaction to assist in the diagnosis of typhoid fever in doubtful cases. He finds that normal serum reacts in the same way with both colon and typhoid bacilli, whereas typhoid serum, even when of weak specific power, reacts much more intensely with the typhoid bacillus than with the colon bacillus. By availing himself of this unequal action of typhoid serum upon the two species of

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with lesions of the intestine. It can very frequently be found in internal organs outside of the intestine in typhoid fever, if careful search is made. We have no satisfactory proof that it produces either symptoms or lesions in most of these cases, and one would expect more common and intense serum reactions with bacillus coli in typhoid fever, if the organism was engaged in pathogenic work. The writer has repeatedly taken occasion to protest against what seem to him unwarranted inferences as to the pathogenic significance of the mere detection of the colon bacillus in the internal organs at autopsies, although there can be no question that under certain conditions this bacillus may be pathogenic for man.

As the colon group of bacilli contains numerous races, some approaching the typhoid bacillus closely, it is to be expected that they will vary markedly in their sensitiveness to agglutination with different sera.

Durham found that typhoid immune serum in no instance produced any agglutinative reaction with ten different specimens of the bacillus coli obtained from various sources. Colon immune serum reacted on its own race of bacilli exactly like typhoid serum on typhoid bacilli, but it did not react with all races of colon bacilli, a graduated series of effects being observed with different specimens of these bacilli. Rodet, however, whose results are reported in much less detail than those of Durham, found a certain degree of reciprocal action between colon and typhoid immune sera and their respective bacteria.

Date of appearance and disappearance of the typhoid serum reaction. Absence of reaction.—The presence of the specific agglutinative reaction can usually be counted on by the end of the first or the beginning of the second week of typhoid fever. It may appear as early as the second day of the disease (Johnston and McTaggart, C. Fraenkel), but this is very exceptional. It may here be noted that the determination of the exact day of a disease, often so gradual and insidious in its development as typhoid fever, must frequently be more or less arbitrary, and will vary according to the case and with different observers. Sometimes the first appearance of the reaction is delayed, exceptionally until the end of the second or into the third week, or even later. There are rare cases in which the reaction is missed during the first attack and makes its appearance in the relapse (Breüer, Thoinot, Biggs and Park, and others). It has even been missed until the first days of convalescence. Blumenthal relates an interesting case in which the reaction was absent during the fever, tests being made on the twelfth and twenty-first days with serum dilutions of 1 to 10, but it was found with dilutions of 1 to 100 two days after the beginning of apyrexia. Achard likewise once found the reaction only during convalescence. We have not at present a sufficient number of accurate data to furnish definite figures as to the frequency of these delayed reactions, but their occurrence undoubtedly constitutes a defect in the method of serum diagnosis of some importance. A negative result of the test does not exclude the diagnosis of typhoid fever. The probability against this diagnosis is the greater, the later the period of the fever in which the negative result is obtained and the oftener the examinations are repeated. As regards the interpretation of negative reactions, the serum test does not differ from other bacteriologic diagnostic tests, that for the tubercle bacillus for instance.

There are authentic cases of typhoid fever in which repeated examinations of the blood during the course of the disease and its convalescence failed to reveal the specific agglutinative reaction, even with serum dilutions of 1 to 10. We can not at present say what percentage of the total number they make. Widal and Sicard found absence of the reaction in only one out of 163 cases of typhoid fever examined by them. In this negative case, in which the diagnosis was confirmed by cultivation of typhoid bacilli obtained by hypodermic puncture of the spleen, the reaction was absent during the fever, the apyrexia, the relapse and the convalescence. Of 116 cases of typhoid fever examined by Courmont, the reaction appeared in all, being delayed after the eighth day in only five. Of 70 cases examined by Chantemesse, it was present in all. Of 129 cases examined by Johnston and McTaggart, if a few cases examined only late in convalescence, or at a very early stage without reëxamination, be excluded, the reaction was missed in only one. In many reports cases, believed to be typhoid, are recorded as giving negative reaction when only one examination was made, this being sometimes early in the disease. Such cases doubtless belong mainly to the group with delayed reaction. The importance of repeated examinations is illustrated by such observations as Stern's, in which the test was negative at the end of the second week and positive two days later; of Widal's, negative on the tenth, positive on the twenty-second day, and several others of similar purport.

The agglutinative power of the blood tends to increase during the progress of the fever, but there are exceptions, and in general the intensity of the reaction is subject to irregularities and oscillations, which may be notable from day to day. There may be marked sudden rise or fall of reactive power. While weak reactions are more common in mild cases, there is no definite correlation between premature or delayed development or the intensity of the reaction and the gravity of the disease. The persistence of high agglutinative power, for example 1 to 2,000, after subsidence of the fever, does not prevent relapses.

In the majority of cases the specific agglutinative power of the blood diminishes in the first weeks or months after cessation of the fever and disappears within a year. Exceptionally it may vanish as early as eight or ten days after the fever. Widal and Sicard noted its disappearance on the eighteenth and twenty-fourth days, Breuer on the seventeenth and twenty-fifth days, E. Fraenkel on the twenty-eighth day after defervescence, etc. Disappearances at such early dates as these are, however, not the rule. According to Courmont's experience, the serum reaction disappears in children most frequently during the course of the first two months, and in adults toward the fifth and sixth months, although it is not uncommon for it to continue a year. The specific reaction may, however, persist for years, perhaps indefinitely. Of forty cases which had had typhoid fever at least a year before examination, Widal and Sicard found the agglutinative reaction, either marked or slight, in eleven; after one and one-half year, one case, reaction weak; after two years, one case, reaction weak; after three years, two cases, in one marked, in the other weak; after six years, one case, reaction 1 to 10; after seven years, one case, reaction marked; after eight years, one case, reaction 1 to 1,800; after nine years, three cases, one marked, one 1 to 40, one 1 to 30; after twenty-six years, one case, 1 to 30. Kühnau found after one year, two cases with reaction of 1 to 80; after two years, one case, reaction 1 to 60; after seven years, one case, reaction 1 to 60. All others of a series examined (total number not stated) showed negative reaction after one year. It was observed by Widal and Sicard that in contrast to the reactions during infection and for the first weeks after defervescence, those of long standing showed no notable fluctuations in intensity during the periods of examination, extending sometimes over several weeks.

The persistence of the specific reaction after typhoid fever is of importance from two points of view, retrospective diagnosis and interpretation of the diagnostic significance of the reaction during a febrile infection. It is sometimes of interest and practical importance to determine that an individual has previously had typhoid fever. Thus Courmont was able by the serum diagnosis to determine that a patient with multiple neuritis, supposed to follow an attack of dysentery, was in reality convalescent for a month and a half from typhoid fever, and Achard recognized the real nature of an attack of osteomyelitis in a patient who had had typhoid fever a year before (cited from Widal and Sicard)

Many writers have called attention to the evident possibility of a mistake in diagnosis when the serum reaction is found in a person with a febrile infection, who has recovered from typhoid fever, although it does not appear that any serious difficulty has been encountered thus far from this source of error. It, however, indicates the importance of obtaining a careful history of the patient, not only as regards recognized typhoid fever, but as to attacks interpreted as dysentery, gastric fever, appendicitis, malaria, etc. An observation reported by Stern indicates that the specific typhoid reaction may be acquired even without manifest illness. He suggests that careful quantitative estimations of agglutinative power may restrict the possibility of error in diagnosis arising from long persistent reactions, as increase or diminution in the course of the fever or of the convalescence would speak for fresh infection. Even if the fullest possible allowance be made for this source of error, it applies to so small a number of cases that the value of the method is not seriously impaired.

Presence of the reaction in non-typhoid cases.—The blood of many hundred persons, either healthy or affected with diseases other than typhoid, has been tested for the specific typhoid reaction, and it can now be asserted that a serum reaction which an experienced observer using accurate methods would consider characteristic of typhoid fever, is to be found only most exceptionally in those who have not had typhoid infection.

Several observers, especially the Germans, find that by adherence to Widal's original directions mistakes may occur, but that these can be avoided by attention to quantitative determinations, especially dilution of the serum, time limits, and characters of the culture used for the test. The most remarkable observations on this point come from Breslau and are reported by Stern and Kuhnau. Stern examined the blood serum of seventy persons not suffering from typhoid fever and, according to their statements, never having had typhoid fever. In twenty of these the serum had an agglutinative strength of 1 to 10, in five a strength of 1 to 20, and in two a trace of reaction was obtained with dilutions of 1 to 30. In none of these cases did he find any reaction with dilutions of 1 to 40. Of more than fifty similar cases examined by Kühnau, in forty-one no reaction was obtained with dilutions higher than 1 to 5. In eight agglutination was observed with dilutions of 1 to 10, up to 1 to 20; in four with 1 to 30; in three with 1 to 35, up to 1 to 40; and in one even with 1 to 50.

In judging these results, apparently so divergent from those of Widal and nearly all others, it is to be noted that both Stern and Kühnau used the microscopic reaction, made two hours the time limit, even for the lowest dilutions, kept the specimens in the thermostat, and that Stern regarded the clumping and Kühnau the paralysis of motion as the criterion of the reaction, thus apparently recording as genuine what many others would consider partial or pseudo-reactions. It is clear that those who interpret only complete reactions occurring within fifteen to thirty minutes at room temperature as genuine reactions, would not be likely to obtain any such results as those reported by Stern and Kuhnau. Nevertheless, it must be admitted that even partial and late reactions are unwelcome and disturbing, even if an observer thinks that his skill and experience will enable him to avoid mistakes from their occurrence. It may also well be, as suggested by C. Fraenkel, that Stern's and Kühnau's normal and non-typhoid cases include not a few who had recovered from unrecognized typhoid infection, and this supposition is the more probable in consequence of the prevalence of typhoid fever in Breslau. Stern himself calls attention to the liability of failure to recognize certain mild cases.

There have been a few cases reported in which the diagnosis of typhoid fever was made on the basis of the serum reaction, but which the authors, from subsequent developments, considered to be free from typhoid infection. It has been claimed, therefore, that positive serum reactions are not a sure sign of typhoid fever, although no one claims that the chances of error from this source are more than slight. The cases reported by Achard and Bensaude, Jez, Ferrand, du Mesnil and van Ordt have given rise to the most discussion. For what seem to me justifiable criticisms of these reports, I would refer especially to the papers of Widal and of Stern, and I will limit my remarks to some general statements concerning such alleged failures of the serum test.

In the first place, as the matter now stands, positive reactions obtainable only with dilutions lower than 1 to 50, possibly than 1 to 60, especially if the reaction is partial and late in appearance, are not certain diagnostic signs of typhoid fever. In most of the cases just referred to no exact quantitative estimations of the agglutinative strength of the serum were made, and hitherto it has not been shown that the reaction ever occurs with non-typhoid serum in dilutions exceeding 1 to 50, with observance of other quantitative points which I have already considered. With the limited number of observations, however, which we now possess, we can not, of course, say but that such cases will be found in the future.

In the second place, infection with the typhoid bacillus can not be positively excluded either on clinical grounds alone or by anatomic examinations at the postmortem table. Infections with the typhoid bacillus occur without any characteristic anatomic lesions. There may be entire absence of ulcers or other lesions of the intestine. We have recently had at the Johns Hopkins Hospital a case with positive serum reaction, from which Dr. Flexner cultivated, in large number, typical typhoid bacilli from the gall bladder although there was no previous history of typhoid fever, and there were no intestinal lesions. In 1891 I called attention to the favorable conditions offered by the bile for the prolonged survival of the typhoid bacillus. In one case I was able to demonstrate large numbers of typhoid bacilli in the bile of a rabbit, 128 days after intravenous injection of 0.5 c.c. of a bouillon culture[4]. Pick has reported a case with marked positive serum reaction in which at the autopsy no typhoid intestinal lesions and no swelling of the spleen were found, but bacteriologic examination showed the presence of typhoid bacilli, not however in the spleen. Guinon and Meunier's case is instructive. During life the symptoms were those of acute miliary tuberculosis and typhoid fever combined. Serum reaction was positive. At autopsy the lesions appeared to be only those of acute miliary tuberculosis, small ulcers in the intestine being typically tubercular in aspect. Typhoid bacilli, however, were cultivated from the spleen and other parts. As both the symptoms and the bacteriologic examination indicated that the typhoid infection was in course of disappearance, the case, if examined at a somewhat later period, might readily, as Guinon and Meunier remark, be placed to the discredit of the positive value of the serum test. We are justified, in the light of such cases as these, in demanding that thorough bacteriologic examinations be made before cases which have given during life the characteristic serum reaction, but which do not present at autopsy the anatomic lesions of typhoid fever, be recorded as free from infection with the typhoid bacillus.

In the third place, the difficulty of excluding a previous attack of typhoid fever, after which, as already stated, the specific serum reaction may persist for years, is to be borne in mind.

In conclusion, I would emphasize the following practical points:

1. Experience has demonstrated that the method of serum diagnosis of typhoid fever is of great practical value.
2. The alteration of the blood on which this method is based, is a specific effect of infection or intoxication with the typhoid bacillus.
3. The microscopic serum test is to be preferred to the macroscopic methods.
4. Quantitative determinations, relating especially to the culture, the time limits, and the dilution of the serum. are of importance and, at least in doubtful cases, should not be neglected.
5. As the reaction may be delayed or occasionally absent, a negative result of the test does not exclude the diagnosis of typhoid fever. The later in the course of the disease the test is applied, and the oftener the examinations are repeated at intervals, the less is the probability of the existence of typhoid fever.
6. The persistence of the reaction, sometimes for years, after recovery from typhoid fever, is to be borne in mind in interpreting the reaction in febrile conditions. The appearance of the reaction and its increase during the period of observation speak for fresh typhoid infection.
7. The danger of mistakes from positive reactions in non-typhoid cases can be guarded against in nearly all cases.
8. Provision should be made, especially by the establishment and support of municipal or State laboratories, to render generally available to practitioners the serum method of diagnosis, as well as other bacteriologic procedures of similar practical value.

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A CLINICAL STUDY OF WIDAL'S SERUM DIAGNOSIS OF TYPHOID FEVER.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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The method employed was as follows: A drop of blood was taken from the previously cleaned finger of the patient suspected to be suffering from typhoid fever. This drop of blood was allowed to dry on a cover-glass or microscopic slide and was then taken to the laboratory.

The dried blood was dissolved in one drop of distilled water, at the time of making the test. One platinum loopful of this solution was added to nine platinum loopfuls of a pure bouillon culture of the typhoid bacillus, which was not more than twenty-four hours old. This mixture was then studied in the hanging drop.

These drops were examined from time to time until it was definitely established that the reaction was present or absent. In case the motility of the organisms was still present in the evening, when the light failed, the preparations were put aside in a warm room until morning when they were again examined. If motility was still present and there was no formation of clumps the reaction was definitely considered to be absent.

Early in the course of the examinations, instead of using a solution of blood which had been previously dried, the drop of blood was allowed to coagulate on the slide and then the serum was drained to one side and the bouillon culture added. This technique produced several faulty results because the undiluted blood serum was liable to cause agglutination on account of the normal agglutines contained in the blood.

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[4] Welch: Bulletin of the Johns Hopkins Hospital, August, 1891.

At first the bouillon cultures were grown over night in the incubator, at a temperature of 37 degrees. Later the inoculation into bouillon was made in the afternoon and the tube was carried in the vest pocket for several hours and then left in a warm room over night. This method gave a bouillon culture which was particularly suitable for the performance of the test and from which much better results were obtained than from cultures grown by the former process.

In this manner one hundred tests have been made. The blood was taken, in nine cases, from children under 15 years of age and in ninety-one cases it was taken from adults. Twenty-six of the patients from whom blood was taken were females, and seventy-four were males. The age or sex of the patient seemed to make no difference in the reaction. The results of the examinations will be classified under the following heads: 1. Cases of typhoid fever in the course of the disease. 2. Cases of convalescent typhoid fever. 3. Cases in which typhoid fever had been present at some previous time 4. Cases in which typhoid fever was absent.

1. Thirty-five examinations were made of typhoid fever blood, the patient being in the disease and the temperature ranging from 99.6 to 104.6. The reaction was present in all except four cases.

In one instance (obs. 25) the reaction was imperfect, there being a tendency to the formation of clumps of bacilli, but the clumping being irregular and numerous motile bacilli remaining distinct between the groups. This observation was made on the fourteenth day of the disease, at a time when the temperature was 102. Later on in the disease, on the twenty-third day, when the temperature was 102.2 the reaction was present and perfectly developed. In three cases the reaction was absent (obs. 32, 33 and 35). In one of these the examination was made on the third (obs. 35), in another on the fifth (obs. 32), and in the third on the seventh day (obs. 33).

The earliest observation made was on the third day of the disease (obs. 35), and the reaction was then absent. One examination was made on the fifth day and the reaction was absent (obs. 32). Two examinations were made on the seventh day. In one of these cases the reaction was present (obs. 4), and in the other it was absent (obs. 33). The reaction was apparently not affected by cold bathing. Concerning this point, however, the observations have been too few and not sufficiently accurate.

2. Twenty-four observations were made on the blood of patients convalescent from typhoid fever. In these cases the temperature ranged from 99.6 to 97, with two exceptions. In one of the excepted cases the temperature was 103, and was due to an attack of tonsillitis; in the other the temperature was 102.8, and was caused by an attack of post-typhoid meningitis, of which the patient finally died. At the autopsy in this case, healing typhoid ulcers were discovered. Of these observations, the reaction was present in eighteen cases, imperfect in four cases, and absent in three cases. The cases in which the reaction was still present were examined from the twenty-fourth to the sixty-seventh day after the commencement of the disease. In the cases in which the reaction was imperfect, thirty-four, one hundred and four, fifty-eight and one hundred and five days had elapsed from the beginning of the disease. Thirty-eight, eighty-seven and sixty-two days respectively had passed since the beginning of the disease, in the cases in which the reaction was absent.

3. Seven examinations were made of blood from patients in whom typhoid fever had been present at some previous time. A patient who was being treated for chlorosis presented a distinct reaction, and on inquiry it was found that she had suffered from typhoid fever ten years previously.

On a second patient who had suffered from typhoid fever in September, 1896, three examinations were made. Once the reaction was present, once imperfect and once absent.

In the cases of two nurses, who had suffered from typhoid fever in 1893, the blood showed the reaction in one, while the reaction failed to appear in the other. The nurse whose blood showed the reaction had had a more severe attack of the disease.

In the case of a man who had suffered from typhoid fever in January, 1897, the reaction was absent.

4. Thirty-five examinations of blood from patients suffering from other disease than typhoid fever were made. The reaction was absent in all these cases. The diseases from which the patients were suffering were varied. Two cases only of tuberculous disease were obtainable. The blood of these gave a negative result when the test was made. Examinations with negative result were made in two cases of catarrhal fever. A varying list of diseases of the alimentary tract were examined with like negative result. It is a matter of regret that the blood from a case of acute miliary tuberculosis could not have been tested. The blood from eight cases of pneumonia was examined and in each case was the reaction absent.

CONCLUSIONS.

1. The age or sex of the patient does not make any difference in the character of the reactions.

2. The reaction may be obtained from the blood of cases of typhoid fever during the course of the disease, and may be found as early as the seventh day. In some cases it is absent at the seventh day and in other cases it is not fully developed until later in the course of the disease. In no case was it found earlier than the seventh day. In another case it was not perfectly developed on the fourteenth day.

3. The reaction disappears at a varying time after the cessation of the disease. The bacilli may fail to agglutinate as early as the thirty-eighth day. The reaction may be perfect as long as ten years.

4. The reaction can not be obtained from the blood taken from patients suffering from diseases other than typhoid fever, unless there has been a previous attack of the latter disease. Even if there has been a previous attack of typhoid fever the reactive property of the blood may have disappeared.

5. The test is valuable in diagnosing between typhoid fever and other diseases presenting a so-called "typhoid state." This is particularly the case in tuberculous diseases, in catarrhal fever, and in pneumonia.

6. From the observation of the one hundred cases it would seem that the reaction was accurate and that

it could be relied on. It presents advantages over former clinical methods in doubtful cases.

CASES OF TYPHOID FEVER IN THE DISEASE.

Number.	Age.	Day of Disease.	Reaction.	Diagnosis.	Temperature.	Remarks.
1	25	27	Present	Typhoid fever	108.8	
2	13	18	"	" "	102.8	
3	17	29	"	" "	100.6	
4	26	7	"	" "	103.6	
5	30	17	"	" "	104	
6	13	11	"	" "	102.4	
7	15	11	"	" "	104.4	
8	23	12	"	" "	101.6	
9	16	32	"	" "	102	
10	32	12	"	" "	103	
11	28	14	"	" "	102 6	
12	18	28	"	" "	101.8	
13	20	15	"	" "	103	
14	22	11	"	" "	102.6	
15	26	28	"	" "	99.6	
16	23	30	"	" "	100.8	
17	?	?	"	" "	102	Relapse
18	17	15	"	" "	104.6	
19	40	26	"	" "	102.6	Before bath
20	40	33	"	" "	102.8	
21	29	?	"	" "	104.2	
22	15	20	"	" "	103	
23	5	17	"	" "	103.2	
24	23	?	"	" "	101.3	
25	28	14	Imperfect	" "	102	
26	33	15	Present	" "	102	No bath
27	16	9	"	" "	104.6	After bath
28	22	15	"	" "	104	" "
20	22	8	"	" "	100	" "
30	28	23	"	" "	104.2	Not tubbed
31	23	?	"	" "	104	No baths
32	31	5	Absent	" "	103.2	
33	6	7	"	"	101	
34	27	19	Present	"	102.4	
35	31	3	Absent	" "	103.2	

CASES OF CONVALESCENT TYPHOID.

36	18	24	Present	Typhoid Fever	98.8	
37	12	28	"	" "	99.6	
38	22	58	"	" "	98	
39	27	34	Imperfect	" "	99	
40	27	38	Absent	" "	99.2	
41	19	59	Present	" "	98	
42	22	49	"	" "	98	
43	28	30	"	" "	98.4	Relapse
44	28	39	"	" "	103	Temperature, due to an attack of tonsillitis
45	16	38	"	" "	98.4	
46	19	87	Absent	" "	97.6	
47	22	104	Imperfect	" "	98.8	
48	23	67	Present	" "	97.4	
49	22	46	"	" "	98.2	
50	31	58	Imperfect	" "	97.2	
51	17	36	Present	" "	98.2	
52	26	62	Absent	" "	98	
53	27	33	Present	" "	97	
54	22	60	"	" "	97	
55	22	31	"	" "	99.2	
56	27	42	"	" "	98.6	
57	16	23	"	" "	98.8	
58	24	27	"	" "	102.8	Temperature due to an attack of meningitis
59	35	105	Imperfect	" "	99	

CASES IN WHICH TYPHOID FEVER HAD PREVIOUSLY BEEN PRESENT.

60	25	. .	Present	Chlorosis	98.4	Typhoid fever ten years ago
61	20	. .	"	Peritonitis	101.2	Typhoid fever in September, 1896
62	20	. .	Absent	"	99.2	Typhoid fever in September, 1896
63	21	. .	"	Healthy adult	98.4	Typhoid fever in 1893
64	26	. .	Present	" "	98.4	Typhoid fever in 1893
65	20	. .	Imperfect	Peritonitis	97.8	Typhoid fever in September, 1896
66	30	. .	Absent	Sequelæ of typhoid	98.4	Typhoid fever in January, 1897

CASES IN WHICH TYPHOID FEVER WAS NOT PRESENT.

Number.	Age.	Reaction.	Diagnosis.	Temperature.	Remarks.
67	21	Absent	Normal blood	98.4	
68	36	"	Axillary abscess	103	Before incision
69	36	"	Axillary abscess	99.2	After incision
70	12	"	Pneumonia	102	
71	25	"	Rheumatism	102.2	
72	28	"	Malaria	98.4 to 103	
73	19	"	Tonsillitis	98.4	
74	19	"	Diabetes mellitus	98 4	
75	50	"	Rheumatism	98.6	
76	40	"	Cerebral tumor	99	
77	20	"	Chronic valvular endocarditis	99 8	
78	22	"	Acute Gastritis	98 8	
79	36	"	Pneumonia	97.2	
80	32	"	Tuberculous pleuritis	99.2	
81	40	"	Pneumonia	99.2	
82	18	"	Peritonitis	99	
83	28	"	Rheumatism	98.2	
84	28	"	Pneumonia	99.6	
85	?	"	Pleuritis	98.4	
86	?	"	Gastro-enteritis	99	
87	?	"	Tonsillitis	99	
88	?	"	Gastro-enteritis	104	
89	12	"	Rheumatism	98 4	
90	33	"	Influenza	. . .	
91	18	"	Pulmonary tuberculosis	101.8	Early stage
92	42	"	Nephritis	99.2	
93	?	"	Pneumonia	103	
94	?	"	Pneumonia	. . .	
95	28	"	Pleuritis	98.2	
96	31	"	Pneumonia	99	
97	52	"	Catarrhal fever	101	
98	34	"	Pneumonia	100.2	
99	49	"	Nephritis	101.8	
100	13	"	Catarrhal fever	99.4	

The pure cultures of typhoid bacilli were obtained from the Laboratory of Hygiene of the University of Pennsylvania, and thanks are due and are here extended to Dr. Abbott for permission to obtain them and to Dr. L. W. Peckham for making the inoculations.

The specimens of blood which were subjected to the test were obtained from patients in the wards of the Presbyterian and Episcopal Hospitals.

CLINICAL REPORT ON SERO-DIAGNOSIS.

Presented to the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY R. C. CABOT, M.D.
BOSTON, MASS.

I have collected and placed upon the blackboard the statistics relating to sero-diagnosis from all parts of the world, so far as I have been able to get hold of them, including those of good, bad and indifferent technique, and therefore open to criticism. The figures, as you see, show a very large proportion of successful serum tests. Out of 1,826 cases supposed to be typhoid, the result of the serum test was confirmed by autopsy or by the subsequent course of the case in 1,740, or 95.2 per cent. Out of 1,649 cases known to be other than typhoid, the serum reaction was negative in 1,592, or 96.5 per cent. Out of a total of 3,475 cases examined, in 98.8 per cent. the results of the serum test have been borne out by the court of ultimate appeal, the clinician. These are the combined results of seventy-one articles, twenty-five American, twenty-two French, fifteen German, five English and four Italian. About two-thirds of all these cases have been reported by American observers.

My own experience relates to a little over 400 bloods. It has been the experience of the practitioner, and not of the laboratory worker. I have had to do these cases entirely by myself. A large proportion of them have been cases in private practice and I have been able personally to follow every case. In that respect it is a somewhat better series of cases to judge from than those which have been placed under the control of somebody else. My personal results are as follows: In 101 cases supposed to be typhoid I got the reaction by serum in 96. I failed to get the reaction in 5. Of those 5 cases, however, 3 were seen late in the disease. One was seen only early in the disease and died the day after the reaction was tested. In one case the result was persistently negative throughout; there was never a typhoid serum reaction despite every evidence, except the evidence of autopsy, that it was a case of typhoid fever.

Three hundred and one cases were tested which were known to be other than typhoid fever; 300 were negative, 1 was positive. The single case, which occurred the day before I came to Philadelphia, which therefore I have not had opportunity to follow up, was a case of pernicious anemia in a negro. The clumping was prompt in a 1 to 20 dilution. I have not tried a dilution higher than that. Therefore it does not constitute a surely negative test according to the definition of Professor Welch. Out of 301 cases 300 were negative. The list included every variety of disease such as one sees in the Massachusetts General Hospital, going through the wards at random. It includes a considerable proportion of our epidemic of cerebrospinal meningitis, seventeen cases of which I have tested, always with negative result. I have taken the blood in almost every case from the ear, using a single drop of blood taken with the medicine dropper and put directly into a small tube containing ten drops of the bouillon culture of typhoid taken with the same dropper. This is not a strictly accurate method, but it seems to me to be sufficiently accurate. It is the quickest and simplest method I know of in that only one drop of blood from the patient is necessary, the puncture is trifling and it can be repeated without troubling the patient as would occur if more blood were taken at each test. The culture is taken in the test tube to the bedside. I have used bouillon cultures, taking care that the bouillon should be as nearly neutral as possible, using stock agar culture transferred once a week; the secondary cultures were either twenty-four hour cultures in the thermostat, or two, three or even four days old kept at room temperature. Bouillon cultures kept at room temperature preserve their motility and apparently their usefulness for this test, for considerably longer periods than if they are kept in a thermostat. And it is also true that the organisms are considerably more sparse, so that the disadvantages of the method mentioned by Dr. Johnston are partially avoided. I have found that the more rapid the motion the more reliable the culture in the technique which I have used. I think it has been very rightly insisted upon by Dr. Johnston, that one man should stick to one technique and work out the advantages and the disadvantages of that technique if he wishes to get the best results. I have not done that myself, but I think that when a man gets a technique he should stick to it in order that he may know the advantages and the disadvantages of his own method.

I have used a dilution of 1 to 10, which, as Professor Welch has said, is now generally thought to be too low a dilution. I think that that question depends entirely on what the length of the time limit is. Most German observers who have condemned the 1 to 10 dilution, have used either no time limit at all or a much longer time limit than that which has been my practice. From fifteen to thirty minutes has been the limit in my cases within which the reaction must occur if it is to be considered typhoid reaction. With the exception of the one case of pernicious anemia, I have met no case other than typhoid in which the typhoid reaction was given by this method. I have used exclusively the quick or extemporaneous microscopic method, never the twenty-four hour method. The testimony of observers who have tried both has been almost overwhelmingly in favor of the quick method, and it has not seemed to me worth while to test the twenty-four hour method considerably.

As to what constitutes a reaction, I agree entirely with what Dr. Johnston has said, that a cessation of motion with clumping is the most satisfactory, and that either clumping without cessation of motion, or cessation of motion without clumping, is to be looked upon with suspicion and the case is to be subject to further test. I think it can not be too strongly insisted on that every culture should be examined every day before a series of typhoid tests is made, with reference to the existence or non-existence of clumps in that culture before any serum is added. This would not be true, perhaps, were the laboratory conditions quite as favorable as possible. If that is done it throws out, I believe, one of the greatest sources of error in this reaction as tried by the general practitioner.

The question arises, How early does this reaction come on? The statistics of different observers are different upon that point. In my own series of thirty cases, in which the patient was seen between the first and the seventh days in bed, twenty-six, or 85 per cent. gave the reaction. One point which seems to me worth discussing is, What constitutes the first day of a typhoid case? I have yet to see any observer who has adequately explained what he means by the first or any other day of typhoid fever. With reference to this reaction, we all know how difficult it is to fix that point. So it seems to me that in reporting statistics we must adopt some fixed rule. I have called the first day in bed the first day of the disease, without meaning that it really is the first day. But, for the purpose of statistics, the first day in bed is as good, or perhaps as little open from criticism, as any other which has been used.

Using that standard, the first day in bed as the first day of the disease, the reaction has been present in the first week in 85 per cent. of my cases. In those reported by Professor Biggs and Professor Park, I believe 63 per cent. was the figure during the first week. In those reported by Elsberg it was only 8 per cent. We need further evidence on this point. Out of the whole number of cases which I have collected there were fourteen in which the reaction appeared very late for the first time, anywhere from the fourteenth day of the disease on to the second week in convalescence. In two of my own cases the reaction was always absent until relapse. It was absent on repeated examinations throughout the whole of the original attack, and present only in relapse. Of the remaining 101 cases it was present sooner than the twelfth day. I have seen the reaction in one case two years after the typhoid attack. There are about sixteen cases on record of these very late reactions, occurring later than eighteen months. The longest period which I have seen carefully recorded was thirteen years.

A source of error which I think has not been referred to is the fact that the reaction is intermittent; that it may appear one day, be absent the next, and present again the third. And this adds to the difficulty of interpreting the meaning of a negative reaction. A negative reaction may mean one of various errors in technique; it may mean that the reaction has not yet appeared and may appear later. It may mean the reaction has been present but has disappeared.

With regard to the presence of this reaction in the blood of negroes who have not had typhoid fever, a number of observations are on record. Dr. George B. Shattuck of Boston found a positive reaction in two who were not known to have had typhoid, although there was some uncertainty in the history. He found there was reaction in three others whom he was quite positive had not had typhoid fever. In other negroes who had not had typhoid fever he did not get the reaction.

This test is not available for prognosis, in my opinion. The great majority of those who have studied the test have agreed that it is not regularly more marked in severe cases than it is in mild cases. In a general way severe cases tend to have a little surer and stronger reaction, but it is not a rule, and the test can not be used for purposes of prognosis.

A word as to the possibility of this test being used be the general practitioner. I think there is no doubt that, for the greatest accuracy of results, the test should be performed in laboratories by laboratory specialists. But I think it can be performed with *sufficient* accuracy to be a very material help in diagnosis by the ordinary practitioner who has familiarized himself somewhat with the methods of modern bacteriologic work. I think the reaction can be made at the bed-side of the patient, and with a good deal of accuracy if proper precautions are carried out, and I think it is of very material aid to diagnosis, even with the inaccuracies which are necessary when the test is not performed in a laboratory and by a trained bacteriologist.

OPEN DISCUSSION ON THE SEVERAL PAPERS ON TYPHOID FEVER.

Dr. **William Osler** of Baltimore—The question of meningitis in typhoid fever is an extremely interesting one. Dr. Ohlmacher's[1] is the first communication presented in this country in which the typhoid bacillus has been definitely demonstrated in the meningeal exudation. It is an excessively rare complication. I have never met it personally, and I have records of over one hundred autopsies of typhoid fever. The interesting point is that in neither of these cases reported by Dr. Ohlmacher were there any clinical suggestions as to the occurrence of meningitis. Clinically I have seen meningitis diagnosticated in many cases, but as Stokes pointed out many years ago, there are no definite criteria by which we can make an absolute diagnosis of menigitis in typhoid fever. Just as in the cerebral type of pneumonia, so in the cerebral type of typhoid fever, there may be every symptom of meningitis, even to retraction of the head and jerking of the arms, without one single cubic centimeter of exudate being found at autopsy.

The question of perichondritis touched upon by Dr. Fussel is one of considerable interest, particularly with reference to perichondritis, not internal, but external to which the author did not allude.

Dr. McCormick is still a young man, and I have no doubt that with his years his experience will increase also. There is no good whatever in bringing forward lists of cases without a death. I have had fifty-three cases of typhoid fever without a death under the Brand treatment. My late colleague, Dr. Stewart, at the Royal Victoria Hospital, Montreal, has treated 130 consecutive cases by the Brand method without a death. One thing which I think indicates that Dr. McCormick is a young man is, that he should go on treating typhoid fever by his method when having 19 per cent. of hemorrhages. Had I 19 per cent. of hemorrhages in my treatment of typhoid fever I would change it next year for something much less risky.

As to opening the bowels in typhoid fever, I would like to open the minds of the profession in this country with reference to that point. Take a long series of cases, five or six hundred, take from among them the cases in which there has been constipation, cases not treated with calomel, not treated with intestinal antisepsis, and I will guarantee that the cases which have run the shortest course, which have given the least trouble and the least mortality, are these cases in which there has been constipation. I always hope that if any one special symptom is to develop it may be constipation.

Dr. **John Cronyn** of Buffalo, N. Y.—Out of sixty-five cases, of typhoid which I have seen this winter there was this kind of relapse in four. I would ask Dr. Osler whether the latent poison which redevelops in the patient who is almost a convalescent is in the spleen or glandular structure of the intestine, or somewhere else. Two of my patients were up and about the wards; they lost their appetite, became feverish, and began—this is a symptom to which I wish particularly to call attention—to have a little cough as if they were going into acute tuberculosis. It took them a much longer time to recover after this relapse than it had before to reach convalescence. The treatment used after the relapse was directed entirely toward the spleen and the general system; a mixture of iron and quinin, proper nourishment, followed by ultimate recovery.

Dr. **J. M. Allen** of Kansas City, Mo.—I regard typhoid fever as a self-limited disease, and when cut short it is not the result of medicine but of difference in individual power to resist the germ. There is no other disease in which good, sound medical knowledge and practical experience tells so well as in typhoid fever. I enter protest emphatically against the calomel purgative course of treatment. I believe there is something in intestinal germicide remedies, but I have not seen that this or any other system of treatment will cut short this disease. I desire to endorse Dr. Osler's statement because as you may know, I can go back to the period when it was considered safe to let the bowel remain closed, if you please for a week, and the percentage of recoveries in that class of cases was always large. When there is constipation it carries with it a positive idea that the pathologic condition is limited. Hence the chances for recovery are better. I do not mean to say that the patient should not have an action of the bowel once in twenty-four hours, but I do wish to say that there is not the slightest necessity for his having more than one action in twenty-four hours. The general plan of treatment should be one of practical common sense: one case with water, another with something else, using all the remedies which have been mentioned, according to circumstances. There is no place that the physician realizes the statement of the great Dr. Watson more fully than here, that in obviating the tendency to death he has treated the case masterfully.

Dr. **Fowler** of Pennsylvania—I am almost amused at Prof. Osler's criticism of Dr. McCormick's paper. The Professor says that if he had 19 per cent. of hemorrhages from any plan of treatment he would abandon it as soon as possible. I would take this ground: If I had a certain number of cases of typhoid fever of such severity that nineteen of them had hemorrhage, and severe hemorrhage at that, and they got better in spite of it, I would stick to my plan of treatment notwithstanding.

Dr. **Herrick** of Cleveland—It is obvious to me that there are two classes of inquirers with regard to this disease. One comes to the disease with the microscope in the hand, the microscopist who sees it with that instrument. Another class includes the macroscopist, who sees the coarse characteristics of the disease. Most of the gentlemen here, I presume, come to this subject as the macroscopist. Now, the facts are that this is a disease of an organ, and there is no question but what that organ has a peculiar relation to the whole system, and that relation gives rise to the phenomena which we observe in typhoid fever. It is an enteric fever. We are all agreed as to that. Whether it is due to an infection, or whether the infection comes subsequent to inflammation of the glands is a matter of some interest. I will not discuss that. I am ready to accept both theories. The infectious theory is a working hypothesis for sanitation. I would take all precautions against infection. There is inflammation of Peyer's glands. What is the danger from that? There is danger of sepsis being carried through the tumefied glands into the general circulation. Let us apply common sense to the treatment. I can approve of the treatment advised in the several methods in some instances, for there are no two cases alike. You can not classify the disease as you can the plants of a garden. I would urge the necessity for holding to our physiology and anatomy in their application to this disease. Call it infection, call it inflammation, but there is a local infection, and there is no fever until that local infection has been carried into the circulation. All agree on that point.

As to treatment, it should be as simple as possible. The digestive organs are the ones affected. There is no better principle to carry out in inflammation than rest. Put the patient in bed. Put the digestive organs absolutely Do not fill up the bowel with milk, or meat, or those things that constantly irritate the bowel. With regard to medication, I do not care if it is only water, pure water, and given abundantly outside or inside. I prefer it inside. I do not believe in Brand. I do not believe in being chained down to Brand's method, or Woodbridge's method, or anybody else's method.

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[1] Paper recently received, will be published very soon. [Ed. Journal.]

Dr. ANDREWS of Pennsylvania—I should like to counteract the influences of the statement made by Dr. McCormick that opium should not be used in hemorrhage of the bowel in typhoid fever. I trust the medical profession will not lose sight of that leading principle in surgery as well as in medicine, that the first requirement in all cases of hemorrhage is absolute rest of the part. It is just as necessary to arrest peristalsis where hemorrhage occurs, or seriously threatens, as it is to quiet the heart in hemoptysis.

Dr. J. E. WOODBRIDGE of Cleveland, Ohio—The gentleman who read the paper did not follow my advice, or did not quote me correctly in every instance. I certainly never said that one dose would cure a patient. One gentleman says that reports of cases are of no value. How, then, are you to establish any theory in medicine? If in one epidemic they have a certain percentage of deaths, and in the following epidemic they have no deaths by a different method of treatment, is that not some evidence that the different method is better than the one first employed, especially if the duration of the disease is greatly shortened? If in the hospital in Massachusetts they had a very large death rate, they changed the method of treatment and had no deaths, and the same physician who applied the treatment in the hospital also applied it in private practice and had no deaths, quite a large number of cases having been treated, is not that some evidence that the one method is better than others, especially when all his brother practitioners using former methods had the same death rate as in previous years? Such instances could be multiplied indefinitely. The cases are numerous.

I have used Professor Osler's name, and I fear he has misunderstood the manner in which I have used it. I wish to say that I used it in the most complimentary way. I took him as the representative of the best thought of the medical profession of the United States and of the world when I quoted him. I have been accused of saying many harsh things, but I want to say that I never said a harsh thing about any member of the medical profession until I was driven to it by harsh duty. Leading members have continued to write me and ask about my management of typhoid fever. I would like to read one letter from a gentleman of wide experience, who said he proposed to write me about my views and apply the method as closely as his intelligence would permit, and if he found that I had misrepresented facts, if he found I did not give him a correct statement he would denounce me before every medical society in the land. He writes me that since commencing the treatment of typhoid fever by this method he has employed it exclusively and he would not now use any other. All of the patients recovered; none had sequelæ. In one the temperature went two or three degrees higher within two days after beginning the treatment, but it then came down and the patient made an early recovery. That is only one letter out of perhaps fifteen hundred which I have received from various physicians. If I am wrong, there are a great many physicians in the United States who are wrong. The gentleman whose letter I have quoted has charge of a hospital through which thousands of cases pass annually; he knows typhoid fever when he sees it, and he would have denounced me if he had not secured the results which I had promised.

As to one remark of Dr. Osler—I beg his pardon—that cases of typhoid with constipated bowels did better than those with diarrhea. The diarrhea of typhoid is evidence of poison, and if the patients are treated by the antiseptic system there can be no diarrhea, but every single case will be constipated. If antiseptics are properly used it is not possible to have diarrhea, or to get along without using saline laxatives in addition to the little tablets.

Dr. OSLER—Could you not have diarrhea from fermentation?

Dr. WOODBRIDGE—In the antisepticised alimentary canal you can not have diarrhea. You will have constipation in spite of all you can do, and you will have to fight that from the beginning to the end of the disease. I can give these tablets and get up passages next day; I may get them the day following, but not on the fifth, sixth, seventh or eighth day. You can not give enough of the tablets for such an effect. In one hospital it was said they were given ten at a dose, yet it was necessary to give Hunyadi water. Those are only a few facts.

Dr. ——— —I have looked into the Brand system, and have been much pleased with the results. It is applicable to the hospitals in our large cities. Now we need something which can be applied by the country practitioner in houses where there is no bath tub. If we can get just as good results from the Woodbridge method, or the McCormick method, let us have both of them tried. I feel that the professors in our great hospitals would do a very great service if they would put these several methods on trial side by side in our great hospitals, and announce the result for the benefit of the general practitioner. It is a notorious fact that physicians are so prejudiced against the antiseptic treatment that they are afraid to give it a trial.

Dr. McCORMICK—It would appear to be a piece of presumption on my part, being but a country doctor, to read a paper here that would in any way lead this Association to believe that the college professors and the makers of text books were not teaching the proper teaching. But, somewhere early in my education as a physician, I conceived the idea that the cure of disease was the ultimate object and aim of the physician, and on that basis I have practiced medicine ever since. So far as the hemorrhage of typhoid fever is concerned, I wish to say to my friend, Professor Andrews of the Medico Chirurgical College, that no stronger impulse to abandon opium was ever made upon my mind in case of hemorrhage in typhoid fever, than when I was called in consultation by a young man who had just left his college to see a woman who had had hemorrhage and had lost considerable blood. The doctor gave this woman a hypodermic injection of a quarter of a grain of opium. At the end of fifteen hours she had another hemorrhage and he gave her another injection. After this I saw her in consultation. She was swollen like a drum. I said I thought I would not have given her the second dose. He replied that he was never taught anything else. That woman died, and I am as firmly convinced as I have existence that she would not have died if she had not received that injection of morphin. If one single principle has been demonstrated in medicine it is that opium and morphin are no longer the agents with which to treat inflammation in the abdominal cavity. The surgeons long since taught us that we must stop giving opium in these diseases, and if we must stop giving opium in surgical diseases, why not more so in medical diseases? I believed the college professor was infallible; I believed the text books were infallible. But when my patients died under the treatment they told me to give them I made up my mind something was wrong.

Dr. OSLER—As to college professors and authors of text-books, they are just as fallible as the rest, just. But they have eyes and ears, and some of them common sense, and those who have common sense when they have a case of typhoid fever which is bleeding will give opium and morphin.

SUMMARY OF VIEWS EXPRESSED AT THE DISCUSSION ON SERUM DIAGNOSIS AT THE MEETING OF THE AMERICAN MEDICAL ASSOCIATION AT PHILADELPHIA.

The committee appointed by the Chairman of the Section on Practice of Medicine make the following report:

1. In selecting the material used in making the test the choice between: a, serum, b, dried blood, c, fluid blood, and d, blister fluid, will depend largely upon whether the object be scientific research, clinical diagnosis in hospital or private practice, or public laboratory diagnosis where the samples have to be sent some distance.

2. In spite of considerable variation in technique, there has been a remarkable uniformity in the results obtained by those taking part in the discussion, and their average of about 95 per cent. of successes agrees with the general average of the cases, nearly four thousand, thus far recorded in medical literature.

3. Each of several methods of technique advocated may thus give good results in the hands of those thoroughly familiar with the details found necessary in each case and the sources of error to be avoided, success depending rather on being perfectly familiar with one method than on the particular one selected.

4. For routine diagnostic work even the very simplest methods may give good practical results, but for recording scientific observations those methods which are accurately quantitative should be selected. This is especially necessary in reporting exceptional cases at variance with the general results recorded or where the observations are made the basis of generalizations.

5. A complete reaction should comprise both characteristic clumping and total arrest of motion occurring within a definite time limit. For practical diagnostic work a dilution of 1 to 10, with a fifteen minute time limit, is convenient. In any doubtful case the dilution should be carried as far as 1 to 50 or perhaps 1 to 60, and a reaction not obtainable at that point should

not be regarded as perfectly conclusive. For these higher dilutions the time limit should be extended to two hours.

6. Intensity of reaction in a given serum should be estimated by determining the degree to which it may be diluted without losing its power of giving a decided reaction, both as to agglutination and loss of motion.

7. The intensity of reaction shown by the same serum is influenced by the age, condition and virulence of the test culture and by the composition and reaction of the culture medium. For purposes of comparison the sensitiveness of the test culture should be taken into consideration.

8. The evidence so far recorded establishes that the reaction may be delayed or occasionally may not be obtained in cases of genuine typhoid infection; and also that it may be exceptionally present in non-typhoid cases, though not in an intense degree.

9. In investigating exceptional and contradictory results the following circumstances have to be considered: *a.* The uncertainty of clinical diagnosis. *b.* The absence of bacteriologic or other confirmatory methods of diagnosis during life, giving decisive negative results. *c.* The possibility of overlooking typhoid infection even postmortem, in the absence of characteristic intestinal lesions where a very thorough bacteriologic examination has not been carried out.

10. The modifying influences mentioned above suffice to explain the divergencies existing in the reports of different observers. Without being absolutely infallible the typhoid reaction appears to afford as accurate diagnostic results as can be obtained by any of the bacteriologic methods at our disposal for the diagnosis of other diseases. It must certainly be regarded as the most constant and reliable sign of typhoid fever, if not an absolute test.

N. B. The above summary, while expressing the general consensus of opinion brought out during the discussion on serum diagnosis before the Section on Practice of Medicine of the AMERICAN MEDICAL ASSOCIATION, does not claim to represent exactly the individual views of any one of those who took part.

W. H. WELCH,
WYATT JOHNSTON,
J. H. MUSSER,
R. C. CABOT,
S. S. KNEASS,
A. C. ABBOTT,
J. M. SWAN,
E. B. BLOCK,
H. M. BIGGS,
N. S. DAVIS, JR.,
M. W. RICHARDSON,
J. B. HERRICK,
A. R. GUERARD,
A. P. OHLMACHER,
Committee.

NEUROLOGIC PROGRESS IN AMERICA.

Presented to the Section on Neurology and Medical Jurisprudence, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY C. H. HUGHES, M.D.
ST. LOUIS.

America has contributed much to the creation of modern neurology, especially to neuriatry or clinical neurology. By the term neurology I include normal neurology and abnormal neurology, which I term neuriaty, and psychology and its opposite morbid aspects psychiatry. In this great historic city one of its most honored names in medical and political history, Dr. Benjamin Rush, was the pioneer psychiatrist and neuriatrist[1] (if you will permit the coinage of this word) of the century. The consideration of mental aberration received much attention at his hands. It was here that insanity first had a hospital set apart to its victims, and inebriety was treated as a disease under the name oinomania. This great physician and statesman made a study of alcoholism, its causes and consequences and boldly proclaimed it the drink disease in advance of all the world, just as Ephraim McDowell in Kentucky had boldly cut into the abdominal cavity and made the first successful laparotomies, thus opening the way to the greatest of the present life-saving triumphs of modern surgery, as he had also opened the way for that great declaration of principles that made this a free independent and invincible nation.[2]

No record of American medical progress, no tribute to American medical glory is complete without Pennsylvania, and no literary monument commemorative of the the profession's grandeur and honor could stand whose pedestal is not placed in this city of medical greatness and brotherly love. He not only took a seat in the Continental Congress and made a preliminary draft of and signed the final Declaration of Independence, but he laid the foundation, with his eminent colleagues, broad and deep for the first, and still living and vigorous, American medical college. But he did more in neuriatry than I have mentioned. He recognized the neuropathic diathesis which he called the "phrenitic predisposition," "a union of diffusive morbid irritability involving the nerves and that part of the brain which is the seat of the mind," and he notes the disposition and capacity of certain lunatics to simulate sanity for a purpose. He also notes how the incipient delusions of the insane are mistaken for the cause and relates a case of delusional mental infidelity in a woman "of great medico-legal significance" (*op. cit.*, p. 44). He recognized and named a phase of affective or moral insanity before the term had been invented in what he called the lieing disease.

Rush's definition of illusion, "a waking dream," is the briefest on record, and his amplification of it, as "a false perception, in the waking state, from a morbid affection of the brain," is perhaps the best on record. His presentations of the morbid aspects of love, grief, joy, fear, anger, reverie, the moral faculties and, in fact, of all the passions and of the morbid state of the sexual appetite, are unique and advanced for his day; described in 1793 a sexual pervert who answered the doctor's question as to desire and excess thus: "*Dixit per annos tres, quinque vices, se coitum fecisse in horis viginti quatuor, et semper semine injecto,*" antedating the records of Arnold, Krafft-Ebing and others on this subject.[3]

He was familiar with sexual tabes dorsalis, hypochondriasis, etc., and from 1804 to 1807 records four cases of madness due to onanism. He took the psycho-somatic view of insanity, such as the best alienists hold today, saying that "did cases of madness reside exclusively in the mind, a sound state of the brain ought to occur after nearly every death from that disease," whereas he know of "but two instances upon record of the brain being found free from morbid appearances in persons who have died of madness."

Here is sound modern psycho-pathology and a correct psycho-somatic conception of the nature and definition of insanity such as we hold today. He denied that insanity was "an ideal disease" and asserted that "epilepsy was a bodily affection."

He had a correct conception of aphasia as a brain trouble, though he neither knew its precise seat nor its name as we call it today. Although he believed too much in venesection, as we believe too little, his therapeutics for acute violent mania, venesection, solitude, seclusion and rest, acts of justice and a strict regard for truth, "everything necessary to their comfort and every promise made to them faithfully performed," is good, *fin de siècle* pyscho-therapy, except that we have therapeutic substitutes for blood-letting not known to this archiater in physiologic medicine. He was the American pioneer in the modern management and treatment of the insane and the world's pioneer in correctly understanding and providing for the inebriate as a brain-damaged man. He was the world's champion of the mobid inebriate's rights and demanded for him hospitals for treatment like other sick persons. "They are as much objects of public humanity and charity as other people," he said (*vide op. cit.*, p. 267). He invented the tranquilizing chair as a more humane substitute for the straight jacket, and his law of kindness with his patients is now the modern rule of action for all hospitals for the insane. Rush's record might be further extended, but enough has been said to name him among the immortals in medicine and philanthropy as he is among statesmen. His name was not born to die whether Congress builds or neglects to honor Washington with his statue.

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[1] I certainly think the time has come for the invention and use of this term. A term I have employed for many years in my lectures, explaining its derivation and necessity.

[2] Though not germane it is a source of professional pride to note the historic fact as a "member of the provisional conference of Pennsylvania and chairman of the committee to which was referred the great question whether it had become expedient for Congress to declare Independence," he made a "report which was adopted and sent to the Congress the same day." This was a "most animating document, most probably written by Rush, as he was chairman of the committee and ever ready with his pen." The whole committee consisted of himself and Col. James Smith, and "included all that has been so much praised in the declaration attributed to Thomas Jefferson, of which it might appear to have been the protocol" (Stone's "Eminent American Physicians and Surgeons," p. 137). Rush also went into the Continental Congress, knowing he was to vote for independence, for he was el[illegible] to fill a vacancy created by the resignation of a member who de[illegible] to remain and vote for separation.

[3] Vide p. 345, "Diseases of the Mind," Philadelphia, 1812.

Surely the profession of America and especially of this great city should be proud of having had in its ranks this far-seeing philanthropic physician.

Before leaving this subject we here note the fact in parenthesis that Robley Dunglison, also a Philadelphian, in earlier editions of his classic medical dictionary, has informed us that such a nervous condition as nervous debility existed and even gave us the name of neurasthenia with the long accent on the i.

The first systematic treatise devoted exclusively to the medical jurisprudence of insanity in any language was written by the friend and the benefactor of my youth, Dr. Isaac Ray of Philadelphia, a work still recognized as high authority in American and foreign courts. Ray's exposition of the clinical features of insanity are clear and concise. His delineations of its affective forms have never been surpassed, while his pleas for justice to the insane have been so masterly and forceful as to markedly modify the practice of American courts in the direction of greater humanity and justice to the mentally maimed than prevailed before his day. He so amplified and emphasized the definition of Andrew Combe: "A prolonged departure without adequate external cause from the natural modes of thought, feeling and action of the individual," as to make it plain and effective in many celebrated cases of lunacy inquiry before American courts and juries. His clear-cut description of morbid mental character as shown in the Parish and Angell will cases, the Hinchman and Bernard Cangly cases, and the trials of Rogers and Winnemore won him undying forensic fame as a faultless psychiater in court, while his analysis of Shakespeare's delineations, his illustration of the insanity of distinguished writers and of King George III.; in short, every chapter in his contributions to mental pathology prove him to have been the peer in power of psychologic analysis of the mind diseased, of any alienist of his day. His treatise on mental hygiene for youth further confirms this opinion, and I had opportunity in his later lifetime to personally observe his clinical ability as a very Corypheus in practical psychiatry as I, as a guest, walked the corridors of Butler Hospital with him while he filled the place of my friend, Dr. Sawyer of Butler Hospital, then absent in Europe. Both are jewels in psychiatry's crown. Ray was the author of "The Propositions," a set of rules and regulations for the government of hospitals for the insane, which, like his little treatise on the good superintendent and the good attendant, were never equaled before and have not been surpassed since.

Since Ray, Galt, Stearns, Awl and Gray, Godding, Spitzka, Hammond, McLane Hamilton, Fisher, Webber and Folsom have made valuable contributions, also Storer and Mann, and I myself have added a few monographs, but none have surpassed or even equaled the great leader whose mortal remains lie buried in Greenwood, while immortal memories stretching over the world of psychologic science, center at his tomb.

Before passing on I stop to note the most philosophic treatise on pseudopia since "Dendy's Philosophy of Mystery," or "Brierre de Boismont's Hallucinations" appeared, and far more scientific, namely, "Visions: A Study of False Sight" (pseudopia), by Edward H. Clarke, M.D., of Boston, written, like the memoirs of General Grant, Napoleon and Thomas H. Benton, while fighting malignancy, marching remorselessly and resistlessly to inevitable victory. In this book, written in 1877 and dedicated to Dr. Oliver Wendell Holmes, the author's anatomic, physiologic and pathologic basis of cerebral visions still holds to a very considerable extent with the profession and though not wholly novel at the time, no work up to that date with which I am familiar, had so fully or so clearly presented the subject.

We go back now to an earlier date to find in neurologic annals the distinguished name of Dr. Amariah Brigham, first of Vermont, later and finally of New York, and his two treatises, the one on "Mental Cultivation and Excitement," in 1845, the other on "The Brain and Nerves," show how early and forcibly American attention was drawn to neurology as a proper and imperative study. In an inquiry of 227 pages, "Concerning the Diseases and Functions of the Brain, Spinal Cord and Nerves," published by George Adlard, New York, in 1840, by this author, is contained a great many valuable clinical contributions to psychiatry and neurology, which have not been duly credited to him. He was the first alienist to look upon masturbation in certain cases as the result and not the cause of insanity, contrary to Rush.

The power of expectant attention and self introversion is most intelligently presented by him under the head of "Effects of Mental Attention on Bodily Organs," giving clinical illustrations of dyspepsia, melancholia and fever thus induced and of cures effected. His original view of dyspepsia as a nervous breakdown, I believe to be the most tenable view of the subject in the face of extensive clinical observation, as I have elsewhere noted.[4] He noted cases of hysteria in the male and elucidated the subject, as well as of chorea, tetanus, hypochondriasis, delirium tremens, etc. His conceptions of the nature and causes of neuralgia were nearly up to the present date. He understood epilepsy about as well as we do today and enjoined that "the brain and nervous system of those who die of epilepsy should be examined with great care, and whenever opportunity presents should be compared with those who have never been affected with that disease." He had advanced knowledge respecting the relationship of the vagus nerve and sympathetic systems. Discussing a case of suicide in a case of recurrent delusional insanity, which, on postmortem examination, showed "upon the nervus vagus, or pneumogastric nerve, of the left side, just before the recurrent is given off, a fixed hard jagged body about the size of a kidney bean or small wart composed of calcareous matter," he says: "When we consider that the nervus vagus rises in the medulla oblongata, but is chiefly distributed to the great organs not under our control, and that it communicates with almost the whole of the ganglionic nerves, we may form some idea of the irritation and disturbance produced in the digestive, sanguiferous and sanguific organs by a jagged calcareous mass implanted, as it were, into one of the most important nerves of the great vital viscera!"[5] How like a modern neurologist he speaks! But hear him further. Concluding an article on the great sympathetic nerve and diseases and autopsic morbid appearances connected therewith, with regret at the paucity of knowledge of its functions, he says: "We know . . . enough to convince us that they (its functions) are important" and "we can not but lament its condition is so little regarded in disease and in postmortem examination."[6] Tilt could talk no better. He discusses focal lesions of the brain and of all of the cranial nerves in a most intelligent manner for his time; gives a case of traumatic aphasia without, of course, having a name for it, and a case of bullet wound of the corpus callosum from Hennan with apparent recovery, but subsequent death from a bout of drinking with the wounded soldier's comrades. But we can not follow this interesting pioneer in neurology further. From what we have thus far taken from this author we are well prepared for such up-to-date expressions as appear in the preface to Brigham on the brain, notwithstanding they were spoken fifty-seven years ago. "The study of the human brain yields in utility and dignity to no other. It is the study of the most important part of the organism, of that portion for which all the others seem to be created. It is of the highest philosophic interest from the connection of the nervous system with the manifestation of mental phenomena."

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[4] Vide Address on Medicine, American Medical Association, at San Francisco, 1894.

"From the general diffusion of this system and its known uses we should expect it to have great influence in disease and that, as intelligence and mental cultivation, the excitement of the feelings and passions, all of which affect this system, increase, that an increase of nervous diseases and new affections of this system should be observed." And this we find to be true. Apoplexy, palsy, inflammation of the brain, dropsy of the head, insanity, etc., are far more common now than in past ages and are most observed in countries where there is the most mental excitement. We also now witness forms of nervous diseases or affections of the brain and nerves that were nearly unknown half a century since. Enjoining a more accurate knowledge of the anatomy of the brain and its connections, he regrets that "generally diseases of the nervous system are not thus investigated," and complains that "attempts to elucidate the diseases of the spinal marrow by autopsic examination are quite rare and those of the ganglionic system still more so." "Every one knows," he continues, "that certain symptoms indicate disease of the brain, or its membranes, or nerves, but until quite recently, and now almost generally, physicians rest satisfied with merely knowing that disease is located somewhere in the skull, but we should certainly strive to know more than this. . . Few physicians are satisfied with merely knowing that a patient has some disease within the abdomen or thorax; they seek to know what particular organ is affected and what tissue or portion of the organ is diseased. . . . We have but to pursue the same course as regards diseases of the nervous system," etc. "This field of investigation is indeed very great and will require for a long time many laborers, but ultimately, I apprehend, will richly reward those who cultivate it."

The object of his work, he tells his readers in his preface, "is to call attention of practitioners of medicine to the importance of the nervous system; and to persuade them to embrace every opportunity to study its functions and diseases," which have "vastly increased with the increase of civilization and now constitute a far greater proportion of the diseases of mankind than in past ages and consequently demand far more attention."

Here was the neurologic pathfinder who blazed the way through the unknown forests of neuriatry for an army with torches and banners whose bright lights have since illumined the world. By these early lights we now see why it is that American neurology has so many brilliant and sturdy devotees and contributors like its emblematic statue of Liberty, to enlighten the world. If nervousness is, as our neurologic cousins across the water assert, the American disease, it had American discoverers, and the name of George M. Beard is immortal as a later pathfinder in neurology and neuriatry. His untimely death was indeed a great loss to the world and that part of the world in which we delve.

His treatise supplemental to "Neurasthenia" entitled "American Nervousness," and the "Scientific Basis of Delusions" and other contributions which go to make up the pedestal of his fame, are noted elsewhere.

M. Gonzalez Echeverria, whose work on epilepsy with anatomico-pathologic notes, original plates and engravings, first appeared in 1870, had about as thorough a clinical knowledge of epilepsia as any writer of his time, and basing his views on clinical observation and the experiments of Kussmaul and Tenner, "that sudden arterial anemia of the brain, as also Faradization of the cervical sympathetic nerves which determines permanent spasms of the blood vessels, gives rise to epilepsy," he maintained that epileptic convulsions are likewise induced, as well as "when the blood rapidly assumes a venous character."

Kussmaul and Tenner's experiments, in addition to those of other physiologists, establish the chief share which the sympathitic has on the determination of spasms and confirm Brown-Sequard and Vander Kolk and *he* maintained that the seat of epilepsy "the *nodus epilepticus* is in the medulla oblongata, with a material modification in every case." The over-excited action of the "ganglionic cells of the medulla controlling the vasomotor elements and nutirtion," were to him the seat and cause, the invariable and necessary element, of the epileptic paroxysm which he says, "may well occur without muscular spasms." Notwithstanding the exception taken by Vander Kolk to Echeverria, "cerebral anemia is among the very initial phenomena of the epileptic paroxysm."

Though the exclusive medulla oblongata origination of epilepsy is not now tenable and cortex or Jacksonian epilepsy is a proven fact, yet the vasomotor spasm view of this author has not yet been overthrown and his "Discussion of the Modern Doctrines of Epilepsy" is still critical and classical in the light of further and later discovery.

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[5] P. 222. [6] P. 197.

Next upon the scene appear in paths to American Neurologic glory William A. Hammond, Weir Mitchell, H. C. Wood, Seguin, E. C. Spitzka, McLane Hamilton, James G. Kiernan, Chas. K. Mills, J. J. Putnam, Isaac Ott, Charles L. Dana, R. W. Amidon, M. Allen Starr, J. K. Eskridge, S. V. Clevenger, B. Sachs, Daniel R. Brower, Harold N. Moyer, Frederick N. Peterson, William Fuller and a host of others whose names may come to us as we proceed, and their work appear in the supplement to this paper and in the future historian's pantheon of America's neurologic gods.

Hammond, by his indefatigable zeal and captivating style of writing, gave an impetus to neurologic medicine whose wave is still felt in the profession. In 1867, shortly after his retirement from the surgeon generalship of the United States army, he founded and for many years maintained the *Journal of Psychological Medicine and Medical Jurisprudence*, a high grade quarterly periodical which was promptly accorded and always held front rank in the literature of neurology.

In the second volume, the dynamometer and dynamograph are for the first time, in this country at least, illustrated and elaborately described by Dr. H. In this volume Hammond maintains that chlorosis is a disease of the nervous system. In this volume also appears a unique presentation of the subject of "Carnomania" by Charles F. Taylor; the "Microscopical Appearance of the Brain and Spinal Cord" by J. G. Webber of Boston; "Historical Considerations Concerning the Properties of the Roots of the Spinal Nerves" by Austin Flint, Jr.; Roberts Bartholow, then of Cincinnati, and E. C. Seguin have separate articles on "Aphasia;" T. Edwards Clark handles the subject of "Animal Magnetism;" Hammond, "The State of the Mind During Sleep;" "Organic Infantile Paralysis," S. Henry Dickson;" "The Legal Consequences of Insanity," Horatio R. Storer; "The Law of Rape, Suicide and Insanity," by T. Edwards Clark; Hammond, "Epilepsy Due to Cerebral Anemia;" Nathan Allen of Lowell, "The Law of Human Increase, or Population Based on Physiology and Psychology;" "Statistics of Opium poisoning" by Alonzo Calkins of New York; "An Improved Pocket Æsthesiometer" by Hammond, besides an interesting chronicle in each number of the world's contributions to psychiatry, neurophysiology and neurology. This ably conducted and invaluable journal was continued for years.

Hammond's classical works on "Diseases of the Nervous System," "Insanity," etc., are too familiar to the neurologic world to require elaborate portrayal here, even if we had the space and you the time for the record.

Hammond's early impress on American neurology, as it is upon the literature of medicine, is indelible. His original description of athetosis alone is an addition to neurologic discovery, as are Weir Mitchell's on "Erythromelalgia" and the cremaster reflex that have stood the crucial test; and I think I may likewise modestly claim something for the virile reflex and its clinical and medico-legal value when it shall have been further studied. The difficulty of eliciting it is its chief obstacle to acceptance, but it is an undoubted clinical fact of great value in diagnostic neurology.

Hammond inspired a host of younger men to follow his footsteps. In January, 1874, under his inspiration the first number of the *Chicago Journal of Nervous and Mental Diseases* was started by the lamented and talented J. S. Jewell and his able associate H. M. Bannister; the first article of the first volume being an original lecture on the "Pathology of the Vaso-motor Nervous System" by Jewell, who had produced the same at a lecture in the Chicago Medical College. These lectures were continued through this volume. The articles, selections and annotations were of a high order. This journal was temporarily suspended at the death of its talented and cultured senior editor, but soon revived again and brought out in New York, where it continues to appear as a monthly of no mean merit under the editorial management of Dr. Charles Henry Brown and an able corps of well-known collaborators.

In January, 1880, my own journal, the *Alienist and Neurologist*, first appeared in St. Louis. It has never missed an issue since its first number and we continue to do business at the old stand and on the same principles of progress; regarding a proper understanding of the nervous system, anatomic, psychiatric and neuriatric, as the chief end of man in medical research and practice.

Antedating all of these periodicals, we must not omit mention of that staid and valuable old neurologic periodical, limited in its scope, however, to the psychiatric side of neurologic medicine, the *American Journal of Insanity*, which, under the editorial management of Richard S. Dewey of Chicago, continues the good work so well begun over a half century ago. In its earlier issues may be found the records of American clinical and forensic psychiatry of most of the old masters, especially of the original thirteen who founded the Association of Superintendents of American Hospitals for the Insane, from which has descended the present American Medico-psychological Association. Their names were: Samuel B. Woodward of Connecticut, first president of the association and originator of the Hartford Retreat; Samuel White, of the same State, and late Professor of Obstetrics and Surgery in the Berkshire Medical Institute, founder in 1830 of a private institution for the insane on the Hudson, and president of the New York State Medical Society; Isaac Ray; Luther V. Bell, of New Hampshire; Charles H. Stedman, of Massachusetts, a graduate of Yale and Honorary of Harvard; John S. Butler, of Hartford; Amariah Brigham; Pliny Earle; Kirkbride; William M. Awl, of Pennsylvania; Francis T. Stribbling, of Virginia; John M. Galt, of Virginia; Nehemiah Cutter, of New Hampshire—all men who made their mark well for the welfare of the insane and the advancement of American alienism.

No country ever had so enthusiastic, united and powerful a phalanx to fight for the rights of the insane. Following in the footsteps of Chiarugi, Pinel, York and Tuke, they bravely fought the foes of psychologic advance to overwhelming defeat and won a lasting triumph of humanity and science in the treatment of American insane.

Weir Mitchell's work is likewise too familiar to us all to need recalling here. He is known out west as "rest cure" Mitchell, and "fat and blood" Mitchell, though he himself at the time he was so christened was as lank and lean as hungry Cassius. But his fame rests on more enduring laurels, though these were enough. His views of the cerebellum as a re-enforcing ganglion, first offered in 1869, have lately been reaffirmed by Italian physiologists.[6] Besides what I have already referred to his scientific, to say nothing of his literary work, beginning in 1852 with an investigation into the "Various Forms of Uric Acid Crystals and their Alterations in Highly Acid Urine," and not yet ended, we hope, in his instructive clinic lessons of the present year, is a rich heritage of inestimable value to America's and the world's contributions to medicine. Hysteria, mental aberration, sciatica, neuralgia, neuritis, sleep jerks, ataxia, headaches and apparitions, blood pressure, double consciousness, the reflexes and too many other subjects to here enumerate, make up a volume of titles alone for the instruction of the student of neurology that will perpetuate his name forever.

The elder John K. Mitchell, father of Weir, is claimed by the latter to have antedated Sir William Gull in the description of spinal arthropathies, and the present John K. Mitchell, grandson of the senior, is walking wisely in the footsteps of his father. His recent book, "Remote Injuries of Nerves," is a valuable presentation of the subject highly creditable to modern American neurology. The younger Mitchell has added something worth considering to the classic work of Bowlby to the study of section and injuries of nerves and made valuable contributions on ascending and migratory neuritis and the knowledge of contusions and commotions of nerves, and degeneration and regeneration thereof has been advanced in his recent work, "Remote Consequences of Injuries of Nerves."

No history of neurasthenia would be complete without record of the writings of my much esteemed friend, Dr. E. H. Van Deusen of Kalamazoo, Mich., whose observations on this subject made public in 1867, I called renewed attention to in the initial volume of my journal, the *Alienist and Neurologist*, in 1880. Dr. Van Deusen was at the time medical superintendent of the Michigan Asylum for the Insane, and under the caption, "Observations of a Form of Nervous Exhaustion (Neurasthenia) Culminating in Insanity," wrote as follows: "Our observations have led us to think that there is a disorder of the nervous system, the essential character of which is well expressed by the term given above, and so uniform in development and progress that it may with propriety be regarded as a distinct form of disease."

A reference to the article introducing the subject will show also the essayist's view on that subject.

Neither would the subject of inebriety be justly treated without reference to the many American contributions to its literature by Mason, Crothers, Wright and others. Dr. T. D. Crothers has contributed since 1875 over a hundred articles on this subject, his chief elucidations being of alcoholic trance states and the medico-legal aspects of inebriety.

Alcohol and drug addiction and their psychic and physical causes have been studied by Crothers, Mason, Matteson and many contributors for the *Journal of Inebriety*, a quarterly periodical which has long held the uncontested field as the only journal of the world devoted exclusively to this subject. While some of its editors' views have been regarded as too radical, others have undoubtedly been held as advanced. Its clinical records give it just claim to a prominent and permanent sharer in neurologic progress. Valuable contributions by Gurdon W. Russell, T. L. Wright, Mason, Crothers and others, may likewise be found in the earliest numbers of my own journal. Wright's Treatise on this subject had its inception in the earlier contributions to the *Alienist and Neurologist* as Geo. T. Stevens' later book on "Eye Strain in Nervous Diseases" did. In 1877 Stevens enucleated an eye-ball and cured a case of diabetes and in 1888 another for epileptiform disease with diabetes. Both recovered.[7] The subject of oculo-neural reflex irritation also first appeared in the (*vide supra*) *Alienist and Neurologist*.

The foundation of the American Medico-Psychological Association which was begun by the original thirteen as the Association of American Hospitals for the Insane and the organization of the American Neurological Society was the beginning of the diffusion of correct conceptions of mental and nervous diseases and their real clinical and medico-legal significance among the general profession and the people. This work has also been greatly promoted by the New York, Philadelphia and American Medico-legal Societies, and sections and societies of psychic research. The clinical lectures of E. C. Seguin gave the world new light on the spastic paralyses and paraplegia, the excellent work of Spitzka takes rank with that of Golgi and others abroad on the fine anatomy of the brain. While Sepilli was working on cerebral thermometry in Italy, Amidon and Carter Gray were engaged in the same work in New York and Bert Wilder has overwhelmed us with an almost entire recast of the nomenclature of cerebral anatomy, some of which has already and much more is destined to be finally accepted by anatomic cerebrology.[8]

The late contributions of William Fuller of Grand Rapids, Mich., to the objective study of course cerebral anatomy by his unequaled sectional models and book of plates, as well as his contributions to neurosurgery, tapping the lateral ventricles and exploration for cerebral abscess, the differentiation between coma of compression and reflex arteriole spasm coma, in 1897, his enunciation of the anemia theory of convulsions, his arteriole spasm theory of the treatment of cerebral convulsions and his cranial sections for certain forms of idiocy at an earlier date, certainly entitle him to honorable mention in any record of neurologic progress. He also maintains that keloid is of the nature of neuroma and caused by injury or disease of nerve endings, and he drained off the subarachnoid in a case of convulsions, embarrassed respiration and cerebro-spinal fever in 1880.

In 1879 Dr. C. H. Hughes read before the Missouri State Medical Association a paper entitled "A Clinical Inquiry into the Significance of Absent Patellar Tendon Reflex," showing at that early date that the knee phenomenon was absent in many cases other than locomotor ataxia. Subsequent or simultaneous observations of others, including Landon Carter Gray, Bannister, Erb, Westphal and Tschirjen, have confirmed the fact. The paper maintained that the diagnostic value of the patellar tendon reflex sign was rather in its having been lost in connection with other ataxic symptoms. Dr. Gray was the first to maintain that the nerves involved in the tendon reflex phenomenon belong to a variety not hitherto recognized, *viz.*: voluntary nerves with involuntary fibers distributed to voluntary muscles, while Gowers at the time objected to characterizing the phenomenon as peripheral-central. But it is quite probable that all voluntary muscle innervation has also latent involuntary nerve fiber tracts, and that the involuntary muscles have also latent voluntary fibers, else how are we to explain the phenomena of convulsions and the control of the heart in certain persons, as in the case of Colonel Townsend, who could at will arrest his, and the control of the ears, scrotum, etc., in others.

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[6] Vide American Journal of Medical Science, Vol. 57, p. 320.

[7] See Alienist and Neurologist, 1, Vol. No. 1.

[8] The old world and ourselves may make wry faces at having to swallow the new nomenclature, as chemistry did a few decades ago, but I think we shall have to come to Wilder's terms, not all of them, but most of them in time. Wilder schemes than his [illegible] cable in science.

Peripheral nerve tissue is readily reproduced. Dr. S. Weir Mitchell, in speaking of the pathologic results of neuritis after injury to nerves, long ago noticed an enormous development of connective tissue elements, and Herdman has made some confirmatory observations the present year on nerve repair after injury. But the reproduction of brain substance has been doubted. Al. M. Vitzoy[9] (Bucharest) found in the brain of a monkey a new formation occupying the back part of the skull, after incision of the occipital lobes two years previously, which he proved to be nerve cells and neuroglia exactly comparable in appearance to those present in normal tissue. Theodore Simon, in the earlier editions of Virchow's *Archives*, reports some cases of what he denominates additional brain growth where new formations were found superincumbent upon the gray matter of the convolutions. In these new growths the gray and white matter were normal in their relations and proportions. But Dr. John B. Gray as early as 1875 (Tranactions of the New York Academy of Medicine) records two cases of reproduction of brain tissue after brain injury, the length of time in reparation of tissue corresponding with reparation of nerves after injuries. The brain was some twenty days in completing its structure and the convolutional character of the surfaces was distinctly marked.

The case of Phineas P. Gage, who had a part of his left brain destroyed by a premature quarry blast in Vermont, and the projection of a tamping iron through his head, Sept. 13, 1848, subsequently dying on a farm near San Francisco, May 20, 1861, is the most remarkable contribution to the subject of brain tolerance of violence and the possibility of brain repair on record. The iron that went through his head was a cylindric bar one and one-quarter inches in diameter, three feet seven inches in length and weighing thirteen and a quarter pounds. The bar tapered to a quarter of an inch and was chisel shaped at one end. It entered the brain in front of the left lower jaw, small end first, and out through the anterior-superior part of the left parietal, destroying the anterior part of the left hemisphere, thence through the corpus callosum anteriorly to the opposite side, extensively involving the margin of the right hemisphere, lacerating the anterior and middle lobes, falx and the longitudinal sinus. Gage recovered by the sixty-second day so that he walked a half mile, and by the seventy-third day so that he went home thirty miles away, the wound being closed on the one hundred and twentieth day. This man traveled, exhibited himself and the bar, acted as a hostler, drove a stage coach in South America and worked as a farm hand, dying of epileptic convulsions after an irregular life, in which intemperance played a part, but without paralysis or mental impairment, nearly thirteen years after; that is, he had neither paralysis nor mental impairment in the beginning. I was told by Dr. Warren or Dr. Bowditch, at the Boston General Hospital, by whose courtesy I saw the skull and tamping iron in 1868, that Gage was actually intellectually a brighter man after than before the accident. We all know that the skull of this remarkable case is now in the Warren Anatomical Museum and that the man was never lost sight of by American devotees of psychologic and neurologic science from the time of his remarkable recovery until head and history were secure in the depositories of science for the good of mankind. It will always be regretted that the brain could not have been examined microscopically. But psychiatry owes to Boston a debt of everlasting gratitude for what it has preserved in its archives of this case under such difficulties, as it likewise is indebted to the labors of C. E. Brown-Sequard for his contributions to the duality of the brain and the bromid treatment of epilepsy, though an English surgeon timidly antedated him before he took up his abode in Paris, and America antedates the world on the subject of brain and nerve repair and on the subject of neuritis. Kiernan, in 1882, and myself have contributed something to the literature of the duality of the hemisphere of the brain. I saw at the same time another remarkable case in the Boston General Hospital from Findlay, Ohio. I think it was a young man who had blown through his head, through the pontal region, a piece of gas piping about three-fourths of an inch in diameter.

Since Hammond, Allen McLane Hamilton, Landon Carter Gray, Wood, Dana, Ranney, M. Allan Starr and Dercum have given us treatises that compare with the best foreign authors. Dercum has marshaled in his treatise a galaxy of bright particular stars of the neurologic firmament, and Chas. K. Mills has in preparation a volume which we predict will be unsurpassed in any language. These, with Fuller's "Architecture of the Brain" already referred to, Shaw's "Diagnosis," Clevenger's and Moston's, would seem almost to have amply supplied the demand for neurologic literature without the many excellent translations. But the "Twentieth Century Practice," an international encyclopedia of modern medical science by leading authorities of Europe and America, edited by Thomas L. Stedman, M.D., New York city, is before us, and here is what an able reviewer[10] says of one of its volumes to the credit of American neurology:

"Volume ten is devoted to 'Diseases of the Nervous System.' With the exception of Dr. Féré of Paris, who furnishes articles on hysteria, epilepsy and the spasmodic neuroses, the contributors to this volume are all our own countrymen—the international element is less in evidence than in the preceding volume.

"Dr. Joseph Collins of New York has a long article of 300 pages on the important subject of diseases of the brain, and another on diseases of the meninges. Dr. B. Sachs of New York deals with tumors of the brain, and is sanguine enough to predict even far greater success in the diagnosis and surgical treatment of intracranial neoplasms during the next decade than has been achieved in the recent past. Dr. Charles L. Dana of New York writes on neurasthenia: Dr. H. T. Pershing of Denver on disorders of speech, and Dr. Sanger Brown of Chicago closes this volume of 859 pages with a short article on disorders of sleep."

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[9] American Journal of Medical Sciences, October, [illegible].

[10] Boston Medical and Surgical Journal.

Treatises like those of Wilks, Ross. Maudsley, Bevin Lewis, Obersteiner, Hirsch, Erb, Westphal, Edinger, Mendel and others, with Charcot, Sepilli and a host of other German, French and Italian confrères, will ever be esteemed in America, but it is now plain that if cut off from them, American neurologic medicine would not starve for neurologic nutrition in its psychic centers.

But let us proceed. The first medico-legal differentiation between aphasia and aphasic insanity in this or any other country, so far as I can discover, was made by myself in 1879. The first contribution on the "Simulation of Insanity by the Insane" was also written by myself in 1876. In 1880 I wrote on nitrite of amyl in differential diagnosis, on reflex cardiac gangliopathy; in 1881 on consciousness in epilepsy, in 1882 on hyoscyamin and something new on the diagnosis of neuratrophia or neurasthenia. I proved the vasomotor contractile power of cephalic galvanization in 1883, maintained and established the curability of certain hitherto hopeless types of epilepsia and showed that the lesion of hemophilia and malarial hematuria is in the sympathetic system. While it is perhaps true that

> "To observations which ourselves do make,
> We grow more partial for the observer's sake,"

and that we do not wish our work, real or fancied, for the weal of the world forgotten, we must not overlook the fact that we have but meager space here for detail record of any one's work, so I pass over a few dozen of my own contributions to further notice those of your distinguished confrères in neurology, noting some of their work in the context and the remaining in an appendix.

Let us make a short trip to Chicago and dwell a few moments with that living neurologic and psychologic encyclopedia, James G. Kiernan. Next to Kohlbaum, he has thrown more light on katatonia than any other writer in the country. His first contribution on this subject appeared in 1877. And next on the study of Shakespeare's psychiatric characters. while his psychology and psychiatry of the prominent characters of history has not been exceeded by John C. Buchnill or William Ireland. His contributions to the study of psychology and psychiatry of genius, and the neurology as contradistinguished from the neuriatry of genius, have been numerous and instructive. Insanity in nearly all of its various forms and in many novel features has been described by his fountain pen of neurologic truth. In 1882 he wrote on the duality of the cerebral hemispheres.

The relation of insanity to crime has been instructively studied by Harold N. Moyer, Kiernan and others in this country: insanity proceeding from the colon by the former and by the lamented Jewell; the medical jurisprudence of railway surgery and shock by Moyer, Clevenger, Outten; the nervous sequelæ of influenza by Moyer, myself and others; a rare form of occupation neurosis by Moyer; also paranoia, nystagmus, acromegaly, infantile chorea, neuritis with knee jerks and nystagmus, exophthalmus with nephtis, etc.

In an inaugural thesis before the American Neurological Society, entitled "A Study of Nerve Cells and their Functions," Clevenger appears to have anticipated the later neuron theory (*vide* Chicago *Medical Review*, March 11, 1881, and "Comparative Physiology and Psychology," 1885). Fry has made some recent studies on the same subject. Clevenger's contributions are too numerous for detail here.

Frederick N. Peterson in 1879 made valuable studies on the posterior cerebral lobes in an inaugural thesis, and has kept up his search for new neurologic light steadily ever since. Among his later contributions are his prize essay on "Morbus Basedowii," the principles of craniometry, the study of muscular tremor, cataphoresis. electrothanesia, the colonization of epileptics, deformities of the hard palate in degenerates, the new phrenology, katatonia (with Dr. C. H. Langdon), chapters in Starr's special forms, Starr's children's diseases, Loomis', Bigelow's treatises, and the American text-book of diseases of the nervous system.

The "State Hospitals Bulletin" of New York, conducted by Wise, Brown and Reeves, has thrown a flood of new light over the pathway of our progress, Ira Van Giesen having made some startling revelations from the State Pathological Institute, of which he is director, on the relation of the auto-intoxications to neural diseases, which Nelson Teeter has followed up and elaborated on the autotoxic origin of epilepsy. Teeter's clinical studies on cerebral tumor and Courtney's on pachymeningitis also grace the first number of the first volume.

While trephining for cerebral pressure by fluid was first suggested abroad by T. Clay Shaw in 1889, and performed by Hamson Cripps in July of that year, it was done in this country on the following March by Wagner of Utica.

In 1891 Quincke first performed paracentesis spinalis for hydrocephalus. In May, 1896, Turner performed this operation for general paralysis, and in this country Dr. Warren L. Babcock in July of same year; and these bulletins contain a record of his work. Here, too. we find Hutchings following up the discovery of Huchard on cerebral meiophragias with valuable researches on this condition of arterio-sclerosis associated with certain mental symptoms.

In truth, these bulletins reveal a bewildering scope of work creditable to American clinical psychiatry and neurology, and we can not name all the works save in a bibliography. Here Somer's case of general paresis in its postmortem showing coincides with those of the West Riding Asylum's early reports, and Babcock's moral insanity confirms the contentions of our own earlier days.

Syphilitic hypochondriasis was presented in 1888 by Allen McLane Hamilton, and Carter Gray has lately added to the diagnostic signs of melancholia and intracranial syphilis, and Frank C. Hoyt of St. Joseph, Mo., pathologist to State Lunatic Asylum No. 2, gives us postmortem light on this subject.

Hugh T. Patrick, who is no more of a saint than my friend who dreams over the hookah, though he hails from the saintly city of Chicago, maintains that he has knocked out the Bryson symptom in exophthalmic goiter, showing by a study of forty cases that the diminished chest expansion frequently found in Graves's disease is in no sense pathognomonic, but is simply an expression of the general myelasthenia which he maintains is always present in this affection. An experimental and anatomic study of the course and destination of Gowers' tract by this writer, established the fact the Gowers' antero-lateral tract extends as a separate bundle as high as the corpora quadrigemina and then passes in a retrograde direction to the middle lobe of the cerebellum.

The intimate relation between asthenic and bulbar paralysis and poliomyelitis, has been shown by this author in a recent report of a case of so-called polioencephalitis superior and inferior with a careful microscope. Dr. Patrick's studies in trunk anesthesia in locomotor ataxia and syringo-myelia reveals a novelty in symptomatology and he maintains that "spinal irritation" is psychic and not located in the spine.

Frank G. Lydston and Eugene S. Talbot have made valuable contributions to the study of the stigma of degeneration especially in criminology, including regicides, inebriates and aristocratic degenerates. Chicago is a good place in which to study criminology and degeneracy and these gentlemen are well qualified for the work.

M. Allen Starr's atlas of the nerve cells, with the coöperation of Strong and Leaming, though published abroad, is highly creditable, like Fuller's plates and casts, to American neurologic industry, ability and ingenuity. Starr's work on brain surgery has been complimented by translation into the German and French languages. His contribution to the study of tumors of the spinal cord, 1895, and diagnosis of cerebral abscess, 1897, are valuable additions to cerebrology and spinology.

We are indebted to Daniel R. Brower of Chicago, for a new surface thermometer, and many studies in medico-legal and traumatic insanity, electro-therapy and spinal neurosis; to Brower, Andrews and Hughes for separate clinical studies of hyoscyamin; to Brower, Clevenger, Kiernan and many others, for records of traumatic insanity; to Brown for the case of Mark Gray (concealed insanity) and Pendergast as a paranoiac, and too many other records and monographs for our space.

Progress in the knowledge of the localization of sensations has been made in this country, especially through the studies of Dr. Charles L. Dana, and the diagnosis of intra-cranial hemorrhage and acute softening, vertigo in temporal lobe lesions; apoplexy, the apoplectic pulse, the cause of perforating necrosis of the spinal cord, its continued sclerosis, the pathology of chorea and paralysis agitans, and studies in alcoholism, acromegaly and the pathologic anatomy of tic douloureux, besides his text book on nervous diseases, now going into the fourth edition, which has features unexcelled in any book published abroad.

The.literature of multiple neuritis, paramyo-clonus multiplex, the neuron conception of the nervous system, chorea and Raynaud's disease have been written upon by Fry, of St. Louis. Bauduy has given us a book that ought to be revised; Bremer has added to the literature of microscopic blood states in disease, and Shaw's diagnostic neurology and contributions to morbus Thomsenii, are valuable additions to the literature of neurology, and my own work which appears mainly in my journal, the *Alienist and Neurologist*, founded in 1880, offer to your critical consideration. If I have accomplished but little it is not because my intentions have not been good. In addition to what has already been cursorily referred to, I claim the introduction of chloral hydrate per rectum in puerperal eclampsia, infantile convulsions and obstetric practice, besides early articles on the dual action and vicarious functions of the cerebral hemispheres and lobes of the brain, aphasia, hyoscyamin in psychiatry, moral and other forms, and the definition of insanity. If we take the wings of the morning and fly to the uttermost parts of the earth we shall find the neurologist there, so rapid has been the progress of neurology within the short time since it began to take rank as a medical specialty, almost within the average life of a generation of men. But we read and go beyond the confines of our own country to be satiated with the richness of neurologic contributions. An examination of the psychiatric and neuriatric bibliography here appended would make one feel, after what we have thus far gone over, like "gnawing a file and fleeing unto the mountains of Hepsidam" for rest, "where the lion roareth and the whangdoodle mourneth" for our diversion, but we will stop awhile at the Rockies and here we find Pershing perched on the heights of Denver, Thombs lower down in Pueblo, and Jeremiah T. Eskridge, the lion of the tribe of Judah, who went out to Denver with one lung and developed a voice that has been heard in highest and strongest neurologic notes around the world. He has been so active there that the festive bacillus tuberculosis could not find further lodgment on his never-resting cerebral anatomy. I have before me a record of 103 contributions to the literature embracing every aspect of neurologic inquiry from diagnosis, pathology, physiology and treatment to the neural therapy of climate. His articles on retro anterograde amnesia, temporary abulic agraphia, symptoms of speech disturbances as aids in cerebral localization, on brain tumors and glioma, and chapters on insanity and feigned diseases, the latter in the "American System of Medical Jurisprudence," have commanded our attention.

Since American medical literature had its birth here and since we started our incursion here it is mete that we return. There are neurologic giants in Philadelphia whose measurements we have not yet taken. The contributions of Dr. James H. Lloyd embrace brain tumors, syringomyelia, diseases of occupations, the spinal cord in pernicious anemia, Friedrich's ataxia, etc. And here are some of the blows Chas. K. Mills has struck in opening the way to the high pinnacle on which American neurology stands today:

"The Relation of Infectious Processes to Mental Disease," *American Journal of the Medical Sciences*, November, 1894; articles in an "American Text-book of Diseases of Children," edited by Louis Starr; "The Naming Center," *Journal of Nervous and Mental Disease*, January, 1895; "The Localization of Lesions in the Pons and Pre-oblongata," *International Clinics*, vol. iii, fifth series, 1895; "Some Phases of Syphilis of the Brain," *Medical News*, vol. lxvii, 1895, p. 606; "The Diagnosis of Intracranial Tumors," *University Medical Magazine*, March 18, 1896; "Mistakes in Neurological Diagnosis," *Philadelphia Polyclinic*, July 25 and Aug. 1, 1896; "A Case of Cerebral Abscess Situated at the Posterior Part of the External Capsule," with Dr. William G. Spiller, *Journal of Nervous and Mental Disease*, September, 1896; "Cases of Aphasia Illustrating Especially Disorders of Pantomime," *Philadelphia Hospital Reports*, vol. iii, 1896; "A Series of Reports of Cases from the Neurological Department," *Philadelphia Hospital Reports*, vol. iii, 1896; and "Treatment of Diseases of the Brain," in an American Text-book of Applied Therapeutics edited by J. C. Wilson, 1896.

Dr. Mills has nearly completed the first part of a "Practical Treatise on the Nervous System and its Diseases," a volume of about 1,000 pages, which will be issued by J. B. Lippincott Company of Philadelphia, about the first of October of the present year, and every American neurologist will be proud of it. He is the author of too many neurologic monographs to be here enumerated; his articles, clinical and pathologic, include reports on many cases of brain tumor; numerous clinical lectures and reports on the affections of the nervous system; articles on hypnotism; medico-legal papers; the Toner "Lecture on Mental Overwork and Premature Disease Among Public and Professional Men," published by the Smithsonian Institution; articles on hysteria, hystero-epilepsy, catalepsy and ecstacy, in the "American System of Practical Medicine;" and in the same work, "Tumors of the Brain and its Envelopes" (with Dr. James H. Lloyd); numerous reports on cases of insanity and papers on cerebral and spinal localization, and "Cerebral Localization in its Practical Relations."

Besides these names those of Spiller and Marineso come to me, but a record of the work must now be deferred.

As I close this report I note that the leading articles in many of the latest issues of the leading journals of the country are on advanced neurologic subjects. Lewellys F. Barker in the *New York Medical Journal*, continues his interesting contributions on the nervous system and its constituent neurons; Allan Bonar in the *Record*, gives us new light on many disturbances in locomotor ataxia, and Henry Hun, who has contributed much in years gone by, gives an instructive study of analgesia, thermic anesthesia and ataxia, from focal softening in the medulla oblongata and cerebellum due to occlusion of the left inferior posterior cerebellar artery, further enlightening us on the course of the sensory and coordinating tracts in the medulla, and Henry M. Lyman of Chicago, in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for May 22d, elaborates the subject of nervous dyspepsia with proofs of the position taken on this subject (though he does not name them as such) by Brigham seventy years ago and referred to in the beginning of this essay.

During the past year there has appeared in my journal alone advanced neurologic articles on the following subjects: "The Anastomoses Between the Spinal Accessory and the Vagus," by Drs. D. Mirto and E. Pusateri; "Some Current Errors Regarding Insanity," by Dr. Arthur E. Mink; "A Case of Chronic Chorea, with Pathologic Changes Similar to those of General Paresis," by Dr. E. D. Bondurant; "A Note on the Treatment of Sexual Inversion," by Havelock Ellis; "The Advancement of Psychiatry in America and the Relation of Psychiatry to General Medicine," by Dr. Edward Cowles; "Abuse of the Bromides," by Dr. Harriet C. B. Alexander; "An Ataxic Paranoiac of Genius," by Dr. J. G. Kiernan; "Hysterical Analgesia," by Dr. C. C. Hersman; "State Care and State Maintenance for the Dependent Insane in the State of New York," by Dr. Carlos F. McDonald; "Nervous Shock and Disease of the Nervous System as a Cause of Pernicious Anemia," by Dr. James B. Herrick; "Differential Diagnosis of Insanity," by Dr. C. B. Burr; "Observations on the Histologic Development of the Cerebellar Cortex in Relation to the Faculty of Locomotion," by Dr. Aurelio Lui; "Scrivener's Palsy not Solely Pen Fatigue," by Dr. C. H. Hughes; "Are Americans Degenerates?" by Dr. Jas. G. Kiernan; "Sociology and the Realistic Novel," by Dr. Ingeborg Taustrom; "The Surface Thermometry of the Head in Diseases of the Brain," by G. W. McCaskey; "Syphilis as an Etiologic Factor in the Production of Locomotor Ataxia," by Dr. C. Travis Drennen; "The Psycho-Neural Factor in Medical Practice," by Dr. C. H. Hughes; "Psychical Hermaphroditism," by Dr. William Lee Howard; "Preputial Reflex Epileptiform Convulsions, with Report of a Case," by Dr. Alex L. Hodgdon; "Intemperance, Consanguine Marriages and Educational Overpressure, as Factors in the Genesis of Nerve Disease and Degeneration of the Race," by Sir Frederick Bateman, M.D.; "What is Meningitis?" by Dr. W. S. Christopher; "The Case of Sturgeon Young, a Question of Hypnotic Injury and Death," by Clark Bell, Esq.; "Encephalitic and Late Epilepsy," by Dr. J. G. Kiernan; "Psychoses of Old Age," by Harriet C. B. Alexander; "The Auto-toxic Origin of Epilepsy," by Dr J. Nelson Teeter; "Insane Heredity," Dr. H. P. Stearns; "Analgesia of the Ulnar Nerve in the Insane," by Dr. Arrigo Giannone; "Report of a case of Brain Syphilis Heroically Treated with Mercury, Followed by a Mercurial Neuritis and Recovery," by Dr. William C. Krauss; "Interaction of Somatic and Psychic Disorder," by Dr. James G. Kiernan; "Imperiative Conceptions," Dr. C. H. Hughes: "Defence of Modern Psychiatry," Dr. Wm. Hirsch; "Cyclone Neuroses," Dr. C. H. Hughes; and the Effect of Extirpation of the Parathyroid Glands," by Prof. G. Vassale and Dr. F. General; while the list for the past ten years is a complete record of neurologic progress.

It is thus that American neurology and psychiatry moves up to the mountain top. If you do not concede that it is already there, you see we are getting there. The labors of the past three decades, as well as the work of the pioneers, have won for us a place at least beside our worthy brothers abroad in the world's neurologic progress. We at least are lending a helping hand, of which we need not be ashamed, in making its history. We are moving up with the world and moving the world up with us.

NOTE—The author wishing to make the report complete would be obliged for further facts with accurate bibliographic references.

SOME OBSERVATIONS AND EXPERIENCE IN THE TREATMENT OF EPILEPSY ACCORDING TO THE METHOD SUGGESTED BY DR. FELIX VON NIEMEYER.

Presented to the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY MATTHEW WOODS, M.D.
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So much has been said and done within the past few years in attempted elucidation and cure of that complex series of phenomena commonly known as epilepsy or "fits," that the preparation of another paper on the subject might be deemed an impertinence, but for the fact that the disease and its treatment, judging from printed current opinion on the matter, is still as much of a problem as it was twenty years ago, and that the treatment I am about to elucidate produces better results than that of any treatment with which I am acquainted.

It is not the intention of this paper, nor is it at all necessary to my purpose to discuss the cause and nature of the disease—a sort of "Pigrogromitus of the Vapians" among diseases, no one seeming to know who or what they were—so of epilepsy. The old theories are familiar enough, yet so little still is known of its etiology and pathology, that correct classification of its various forms is almost impossible. The familiar terms, *grand mal*, *petit mal*, traumatic, central, idiopathic, peripheral, congenital, laryngeal, gastric, Jacksonian, post-paralytic, hereditary, acquired, imbecilic, genito-neuropathic, senile, nocturnal and the like, *ad infinitum*, are mere pedantries of nomenclature bearing but slight relation to its causation factors and throwing no light upon the origin of the disease. One of the many merits of the treatment, according to the effective way suggested by Niemeyer, consists in the fact that, combined with various adjuncts, it is about equally efficacious in traumatic and non-traumatic epilepsy, in the variety due to organic disease where the spasm is but a symptom, and also in what may be called true epilepsy, where, as far as we know, the convulsion *is* the disease.

It is not likely that any one is able to tell much that is new about the malady, except perhaps a few of the less conservative of surgeons who, by certain brilliant work and at infinite pains, have shown, as it would seem, the possibility of curing or relieving certain cases by certain surgical operations on the brain, but unfortunately at such a risk, that it seems a question if the rather meager results were sufficient justification for the great danger.

And yet the frequent failure of operation on the brain for the cure of otherwise incurable epilepsy, is not an argument against the operation itself, but rather a confession of the inadequacy of our knowledge of its pathology to explain its phenomena and characteristics. Surgical operations on other parts of the body have been a benefit to epilepsy, the cure probably being due to shock, just as shock will sometimes induce an epileptic attack, and I am convinced that the operation on the brain would have more frequently relieved the malady, if it had not been for the many dangers involved in the operation itself.

The normal contents of the cranium completely fill, we are told, the cranial cavity. Any foreign material, therefore, entering or developing in this cavity, such as tumors, projection of bone from a depression or fracture consequent upon a blow, extravasated blood, exudation of cicatricial tissue, accumulation of pus, lymph or serum, necessarily diminishes the containing capacity of the calvarium in proportion to their bulk, and consequently destroys the equilibrium between the brain and spinal cord. When an epilepsy therefore is known to be due to this sort of pressure, and there is no other remedy, and the last state of the man is not likely to be worse than the first, in consequence of the operation, it might seem as if an attempt should be made to remove the cause.

But are we ever sure that epilepsy is due to mere pressure alone, and that removal of the apparent cause, even when such a procedure is comparatively safe, will leave the patient well? Is there no foundation for the theory that epilepsy is a habit to be cured by moral suasion, diet and medicine, rather than by the knife.

Men have had tumors of the brain without epilepsy. Cranial exostoses consequent upon specific disease have existed without fits; patients with exceedingly thick skulls, a thickness not congenital and consequently diminishing the normal containing capacity of the cranium, are not necessarily epileptics. Depressions of the skull due to unskilful use of obstetric forceps and other accidents, such, for example, as a crowbar going through the brain, as is well known, are not invariably the cause of fits, while men with sound heads and free from depressions are sometimes victims of the disease.

Lord Byron, whose brain was so large in proportion to the cranium that the mental activity consequent upon composition caused pain, was not an epileptic, while Cæsar, Hannibal, Mohammed, Charlemagne, Napoleon, with none of the stigmata of degeneracy, at least as far as sculpture and painting have recorded them, evidently were at the same time hydrocephalic, and other idiots with enormously distended crania, and nothing much in them but water, are often subjects of epileptic spasm.

It would thus seem that the presence of certain conjectural causes in the brain are not in themselves sufficient to justify operative procedure when the danger of removal is so great.

I am thus particular to mention the surgical treatment of this malady, first, because that in the modified Niemeyer treatment I have been using so many years with such gratifying success, surgery sometimes forms an exceedingly important adjunct to the treatment by drugs, and, secondly, because too much importance has been attached to the brain as the seat of epilepsy, and pressure on the brain as its cause.

The Briggs case is one in point. The patient, an epileptic, had a depression of the cranium due to fracture and at the same time a tibia requiring surgical aid. "The surgeon first wisely operated on the shin-bone, leaving the skull, the more likely cause of the disease, untouched." For five years after the patient had not had an attack of epilepsy. An experience which might mean that in this case the seat of the disease was the shin, but it might imply also that *shock* had something to do in modifying that excessive reflex excitability, perhaps the principal medium of seizure, and that on that account, not because the operation was done on any particular place, the cure was effected.

The seat of epilepsy may be anywhere, perhaps there are some parts more frequently its site than others, and any treatment not recognizing its versatility in the matter of starting point, must often fail. Its origin may be the cerebellum, the convolutions of the brain, disease or injury of the cerbro-spinal centers or of their meninges. Its origin may be in the mucous membrane of the bowels, the stomach, the sole of the foot, the finger, the os uteri, or any peripheral or central part of the nervous apparatus where an irritant may exist, and if there is essential analogy between man and the lower animals, which the writer decidedly doubts, to justify conclusions beneficial to man on observations made on these sometimes lower creatures, we might be led to believe it possible for epilepsy to be induced by simple friction of the skin covering the ribs, and even by the swallowing of such a usually innocuous fluid as common writing ink.

We once had a maltese cat that developed unmistakable petit mal, epilepsia meteor, that is to say, loss of consciousness with the muscular contractions limited to certain sets of muscles, by merely stroking her sides; and a tame raven, a resident of our home and constant companion for a year, would be seized with a complete epileptic attack, epilepsia gravior, immediately after drinking ink, of which he was fond. In the raven's attacks all the symptoms of grand mal (except pallor) appeared in their natural order, including the "epiletic cry," in this case a croak, universal clonic convulsions lasting however only a few minutes, then cessation of the fit, coma, apparent fatigue and sometimes sleep, after which he would remain entirely well until he indulged in another drink of ink. I have allowed the bird to thus contract as many as three fits a day to gratify the scientific and idle amusement of friends, but finally stopped it because of apparent cruelty.

A dose of quinin given to a patient being cured by the proper administration of bromid of potassium, will bring on an attack, so also will a large dose of the bromid itself not sufficiently diluted in water. The administration of tinct. muriate of iron and of the scales in solution of the pyrophosphate of iron, will cause the return of epilepsy after the disease has been apparently cured.

The pain in the back so frequently complained of in anemia, and which our laparotomy friends usually ascribe to some obliquity of that modern scapegoat, the over-vilified womb and its unfortunate appendages, is perhaps mainly due to gastric spasm caused by undigested food, occasionally to uterine and ovarian disturbance acting in a reflex manner.

This hyperkinesis or abnormal motor activity of the muscular tissue of the digestive organs due to vicious diet is, I believe, a much neglected cause of epilepsy. Nocturnal attacks are frequently brought about by an undigested supper; and abuse of the digestive organs, the cause of so many other disorders, is perhaps largely to blame for epilepsy.

I have seen epilepsy cease with the cure of an endometritis, also twice with the repair of a lacerated os. I also saw a case apparently cured by an operation for a congenital epispadias, the operation an adjunct, like the above, to the Niemeyer treatment. The epispadias likely having but little to do with the epilepsy since it preceded it a number of years, the shock of the operation or the impression made on the mind by preparation for the operation so altering the excessive reflex power—evidently the cause of epilepsy—that the seizures ceased. I have also had an inveterate case of the disorder, one but slightly benefited by drug treatment, cured by having her hand so charred in a frying pan that it had to be amputated, after which she had no more attacks of epilepsy up to her death, which occurred four years subsequent from consumption.

I mention these experiences because to the lessons they have taught me in connection with the persistent administration of bromid of potassium in gradually increasing doses and in large quantities of water, the two conditions insisted upon by Niemeyer, I may ascribe the success I have had in the manage of this popularly supposed incurable disease.

I am convinced that the failure of this drug in the hands of so many physicians to cure most cases of epilepsy, and help all, except cases where there is congenital deformity, is due to the lack of persistence in its administration, to not recognizing the necessity of giving it largely diluted in water and according to a regularly graded increase in the quantity prescribed, and also because I am convinced that the failure of the drug in the hands of so many is due, not to its inefficiency, but rather to its improper administration—the importance of its dilution in large quantities of water not being recognized. Even such a one as Brown-Séquard is so careless as to say, in talking of epilepsy: Give 20 or 60 grains of bromid of potassium four times daily, as the case may be, omitting to mention the quantity of menstruum, not apparently knowing that the salt will bring on the attack, if given in concentrated solution, and that its efficacy in causing cure and amelioration is due to the attenuation in water that facilitates endosmosis and causes a non-irritating assimilation.

The amount given depends entirely on the severity and frequency of the attacks, from 10 to 60 or 90 grains from one to four times daily. The treatment should be continued for at least a year after the cessation of convulsions and in prescribing this drug it should be remembered that a faulty administration will bring about a recurrence of the attacks.

In addition to the treatment by the drug, resort to the surgeon should be had as occasion requires. Lacerations of the os and other ills of the male or female genitalia should be remedied; constriction of the prepuce in epileptics ought to be corrected; constipation should not be allowed to exist; difficult menstruation cured; suspicious cicatrices should be excised; indigestion should be avoided; the adoption of a suitable dietary is of the greatest importance, allowing but a limited quantity of animal food and but once daily. Epileptics ought to be employed out of doors when possible, and in employment bringing a reward. Distension of the stomach by undigested, fermenting food and impaction of the bowels are a prolific cause of nocturnal attacks. An important point in the treatment of the disease is attention to the mouth, as deformities of the palate, alveolar abscesses, necrosis and exfoliation of bone are rather frequent and demand care. All the natural functions should be carefully protected from abuse.

By attending carefully to the above details and others less important perhaps, that my limit precludes me from mentioning and by giving the drug strictly in the way I have indicated, joy, hope and health may be restored to many so-called incurable epileptics, at present abandoned to despair, and many whose existence consists merely of suspense and unconsciousness may be rescued to lives of useful industry, and protected from attacks against which they suppose medicine can oppose no barrier.

DISCUSSION.

Dr. H. A. **West** of Galveston, Texas—Just before I left Texas I saw a case of about the severest petit mal in a child which ever came under my observation, and I wish to refer to some unusual reflexes in that case. The child had a very long prepuce which I desired to amputate, but the parents would not allow it. In addition it had a persistent and long continued hemorrhage from the bowel. Thinking that this might have had something to do with the epilepsy, I directed the use of a solution of subsulphate of iron in the rectum, and also gave bromid of sodium and sulphate of codein. The father told me that the hemorrhage subsided and the number of epileptic attacks was reduced one-fourth or one third. It is evident the reflex disturbances had to do with the epilepsy in that case.

A CASE OF RENAL TUBERCULOSIS.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

BY J. DUTTON STEELE, M.D.
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The following case occurred in the wards of Dr. Joseph Hearn in the Philadelphia Hospital. I am indebted to him for the clinical history.

L. H., 23 years of age, a native of Ireland, white and married. There is no tubercular family history. She was admitted in October 1896. The patient had measles in childhood. Influenza five years ago which left her with a "weak right side." In January 1896 she was delivered of a six months fetus and since that time has been confined to bed continually. She has become much emaciated and has a profuse diarrhea. Examination of abdomen shows a large mass the size of a baby's head, in the right lumbar region. This is movable, and the skin is not adherent. The tumor is not painful except on deep pressure. A slightly tympanic note is heard in percussion over this mass. There is marked edema posteriorly in the lumbar region on the right side, extending up along the thoracic wall. The tumor appears to be distinct from the liver. There is no jaundice. There is no pain in the lumbar region. Micturition is frequent and sometimes painful. Urine: albumin $\frac{3}{4}$ by volume. There is much pus, no casts and no blood.

She was transferred to the surgical wards for operation, but this was deemed unadvisable. Her temperature then was 101 degrees, but soon fell to normal and remained subnormal until death. Her breathing was so shallow that physical examination was impossible. Now complains of some pain in the tumor. Is having many large green liquid stools. Examination of urine just before death showed albumin, pus, casts, but no blood. She died October 26.

The autopsy was made by the writer at the Philadelphia Hospital twenty hours after death. The peritoneal cavity is normal except that the liver is pushed forward and barely reaches to the costal margin. This is caused by a large tumor lying behind the peritoneum in the right lumbar region. The pleural sacs each contain a small amount of clear fluid. There is thickening of the pleura and adhesions at each apex. The upper lobes of both lungs show considerable consolidation at the upper portion. This is apparently due to a pneumonic process with scattered areas of caseous degeneration, especially about the bronchi. Considerable pus flows from these tubes on section and they contain caseous plugs. At the apex of the right lung is a cavity filled with purulent material. The left kidney is swollen and tense. The capsule strips readily, the cortex is swollen and of a green color, and the pyramids are congested. The pelvis and ureter are normal. The right kidney is found to constitute the tumor mentioned above. It is 25 cm. in length, 18 cm. broad and 15 cm. thick. The organ is surrounded by a considerable amount of fat that appears normal. On section the kidney is found to be extensively degenerated. The capsule is thickened and firmly adherent. The cortex measures 3 cm. in width, is dense and hard and of a chalky white color with numerous spots of extensive cheesy degeneration. The pyramids are represented by cone shaped masses, with central cores of cheesy material which empty into the pelvis which is filled with pus and caseous debris. The wall of the cones are dense and white; the walls of the pelvis are extensively infiltrated and its mucous membrane is ulcerated.

Microscopic examination of the right kidney showed hardly a trace of kidney substance. The capsule was greatly thickened and there was an increase of connective tissue in the walls of the masses that represented the pyramids. Around the margin of the degenerated area were collections of round and epithelioidal cells and occasionally giant cells. A number of sections were stained for the tubercle bacillus but without success. However, the diagnosis of tuberculosis was made upon the characteristic picture presented by the collection of cells, associated with the extensive degeneration.

The wall of the ureter is also much thickened. This infiltration extends downward along the whole length of the tube and involves the bladder wall around the orifice of the ureter. The epithelium from the pelvis to the bladder is degenerated and replaced by caseous material, but the lumen does not seem to be obstructed. The epithelium of the bladder has apparently entirely escaped the inflammatory process.

The internal genitalia are perfectly normal. The lymphoid tissue throughout the body is apparently entirely normal. Nothing else of interest is found in the body.

Section of the left kidney revealed much fatty degeneration and chronic parenchymatous nephritis.

After a study of numerous cases reported in the literature of the subject, it seems possible to make three divisions of tuberculosis of the kidney.

1. That which occurs as a part of a general eruption of tubercle, either as a manifestation of acute primary miliary tuberculosis, or as the terminal stage of tuberculosis elsewhere in the body. This condition can not be considered to be more uncommon in the kidneys than in the other abdominal viscera.

2. In the so-called primary renal tuberculosis, the process either manifests itself in the kidney alone or this organ is undoubtedly the primary focus. This form may be either of the miliary or of the chronic caseous varieties.

3. A form in which the priority of the process in the kidney must be doubted, but in which the disease manifests itself more intensely here than elsewhere. It is associated with foci of tuberculosis in other parts of the body, apparently most often in the bronchial glands, bones or lungs. Under this division must be classed most of the cases of urogenital tuberculosis that have furnished so much discussion concerning their pathogenesis. The difficulty of accurately determining the primary seat of the disease, even in those cases formerly classed as primary in the kidney, is much increased by the possibility of there being some obscure focus of the disease in the body that escapes any but the most careful observation at the postmortem examination—a fact whose importance has been unrecognized until the past decade. Tuberculosis may exist, unsuspected, in the various lymphoid tissues, as the bronchial glands or as lately shown by Dieulafoy and Krückmann in the tonsils.

The authorities on the subjects unite in the statement that the process when once started in the kidney is extremely rapid, and it could only be by most rigid clinical study that it could be determined whether, for instance, pulmonary or renal symptoms were the first to occur.

Senator, in Nothnagel's system, who may be considered to represent the most recent ideas on the subject, doubts whether a strictly primary renal tuberculosis ever exists; but would put all cases under the third division that I have made. He is supported in this view by Steinthal.

Age and sex appear to be predisposing factors in the causation of the disease.

All authorities state that the condition is much more common in adult life than in childhood. Carr found but two instances in 120 autopsies upon children; 16 per cent. of Facklam's cases occurred under 20 years. The disease is very rare in infancy.

Males are affected about twice as often as females as shown by the statistics of Ebstein and Roberts. Osler, Rosentein, Senator and Birsch-Hirschfeld also state that the disease is more frequent in the male sex. However in Facklam's series of 106 cases there were 79 females. Hamill's list gives three times as many boys as girls.

The condition almost invariably commences as a one-sided affection, and in about one-half of the cases the other kidney is involved before death. This furnishes an argument for early operation. The disease does not appear to show any tendency to affect one side oftener than the other. The miliary form commences in the cortex, and the chronic in the medulla. The first may lead to extensive caseous degeneration, but the chronic variety is the one that produces the most extensive necrosis. Occasionally the process commences in the pelvis but usually this escapes until the later stages. The diagnosis from examination of the urine is often difficult as with the pelvis intact the discharge of cheesy material and tubercle bacilli may be entirely prevented. The ureter is usually affected. Its walls are thickened and its epithelium degenerates with the formation of ulcers. The mucous membrane of the bladder very often escapes but its wall is thickened and there are often superficial ulcers upon the trigone. The tubercle bacillus may be found in the tissues in the earlier stages, but at the autopsy the process is commonly too far advanced.

When the kidney is alone affected, most authorities consider the process to be one of hematogenous infection. The best explanation for the presence of the bacilli in the blood stream in the purely primary form, if such exist, is that the microbes have entered through the mucous membranes of the intestinal or respiratory tract without lesion, or in other words by cryptogenic infection. But, after study of a number of reported cases, the writer is satisfied that there is often a cheesy lymph gland at the root of the lung or in the mesentery, that is the means of entrance, for the bacillus to the general circulation.

Meyer of Göttingen, in 1892, described several cases in which a kidney showing chronic tuberculosis, by serial sections, he demonstrated local tubercular foci in the urinary tubules that had not extended from above or below, and which could not have come by penetration of the wall of the tubule, as its membrana propria remained intact. He explained this by the assumption that the bacilli have been secreted from the blood by the vessels of the glomeruli, found their way along the tubule in the urinary stream and lodging on its wall set up their specific inflammation. He calls this form of infection "Secretion Tuberculosis." He quotes, in support of his theory, Reisser and Orth, who have demonstrated the same process in pyemic abscess of the kidney, and have shown that bacteria and even foreign bodies, as drops of fat, can be secreted through the glomeruli. Borrell, in this experimental production of renal tuberculosis by the injection of the bacilli into the aorta, has demonstrated their presence in the walls of the vessels of the glomeruli, unaccompanied by inflammatory change. Thus there is a second way in which the bacillus in the blood may produce renal tuberculosis.

Time is not given for the consideration of urogenital tuberculosis though the review of the subject does not seem complete without some mention of this form, and the discussion which its pathogenesis has occasioned.

In this variety the kidney, ureters, prostate and testicle in the male, and the tubes and ovaries in the female, are oftenest affected, much more rarely the bladder. This form of the disease is, as is natural, much more common in the male, and indeed is very rare in females.

Rayer, as early as 1837, showed that a healthy bladder may be an intermediate between a tubercular testis or prostate, and a similar condition of the kidney. The experiments of Alberran, in which by ligation of one ureter and injection of tubercle bacilli into it above the point of ligation, he proved that the disease may ascend along this tract, is conclusive, but is significant as being the only instance, in many experiments by different observers, which was successful. The ascending form is favored by Rokitansky, Lancereaux, Klebs, Steinthal, Guyon, Duret, and Virchow. Later writers, while acknowledging the possibility of an ascending form, incline to the greater frequency of the descending. So Ziegler, Birsch-Hirschfeld, Senator, Carmargo, Dickinson, Roberts, Casper, Hamill and Israel are more or less positive in the opinion that while tuberculosis may ascend the ureter, it is oftenest primary in the kidney.

The case reported belongs to the chronic variety of renal tuberculosis. The sequence of events is doubtful, and the case might reasonably be regarded as one of the rare instances of renal tuberculosis secondary to cryptogenic infection through the mucous membrane of the intestinal or respiratory tract. However, the adhesions at both apices, and the cavity on the right side, together with the fact that the lesions of the lung is of the type of an infection by inhalation, suggests that, probably the disease was primary in the lung, and that the older lesion was masked by a sudden extension of the process about it, at a comparatively late period, and shortly before death.

The histologic portion of the above report is from the Pepper Laboratory of Clinical Medicine.

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The Woes of India.—The N. Y. *Sun* correspondent writing from Jhansi, India, June 22, concludes thus: The close of the sixtieth year of the Queen's reign will be remembered in India for its long death roll, its woes, and its disasters.

IS MALARIA A WATER-BORNE DISEASE?

Presented to the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY JOHN M. BATTEN, M.D.
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Malaria may, to some extent, be a water-borne disease, but that the malaria plasmodium or poison gains admittance into the system wholly by way of the stomach, we think we have ample evidence to lead us to doubt. The plasmodium malariæ or malarial poison certainly gains admittance into the system through the respiratory organs as well.

I will give a hasty review of the disease as it came under my observation in 1864 and 1865. The *Valley City*, to which I was attached, had a roving permission to cruise in the sounds of North Carolina and up the rivers that empty into these sounds. The water of the sounds at times is brackish, as it has connection with the ocean through Ocracoke Inlet. The intensity of the disease and the number of cases that occurred increased in the following localities in the order named: 1, the region of the Pamlico River, upon which Washington, N. C., is situated, is rather free from malaria, though cases occur there; 2, the region of Chowan River, Blackwater River, Meherrin River, and 3, the regions of Roanoke River and Neuse River. Again, on Roanoke Island there is no vegetation, except in the northern part of it, where there are a few scrub oaks. The island is sandy and barren. Yet, one day on that island, with Dr. Walton of the 103d Pennsylvania Regiment I saw a hundred cases of malaria, but many of these cases may have been transferred from other localities. The water used there for drinking and cooking purposes was boiled water taken from the wells on the island.

The water for drinking and cooking purposes on the *Valley City* was either boiled or distilled, taken from the boiler, cooled and kept in a covered vessel for that purpose. Now, when the *Valley City* was for a long time up the Roanoke River or other rivers, the cases increased in number and intensity, according to the locality in which she cruised. When cruising up the Roanoke River for a long time the treatment of the disease in many instances would be of no avail, but afterward, when cruising in the sounds or the Atlantic Ocean the disease would respond to treatment, so that there would not be a single case of malaria on board. Afterward, cruising up any of the aforesaid rivers the number of cases and the intensity would increase according to the locality. In the region of the Roanoke River it was intensely malarious; as forest swamps and fogs prevailed there, and many places in this region were impenetrable to man or even the wild beasts of that locality. Why was there a difference in the type of the disease and also the number attacked while in these different localities? It was not the water we drank nor the food we ate, for the water we drank and used for cooking purposes was boiled or distilled. The boiler received its water by pumping from the river, sounds or ocean. Therefore the malarial poison must have been taken into the system through the respiratory organs.

In the fall of 1865, at Cairo, Ill., following a very hot and dry summer, the months of September and October were exceptionally dry and hot. I reported for duty on the United States monitor *Oneota*, lying off Cairo on the Ohio River, Oct. 6, 1865. Malarial fever was prevalent everywhere in that vicinity. A large barge moored to the *Oneota* was filled with cases of malarial fever of a pernicious type. We used water for drinking and cooking purposes that was boiled or distilled as on the *Valley City*. What I want to show particularly is, not only that malarial fever prevailed notwithstanding that the water for drinking and cooking purposes was boiled, but that it is not necessary to have a wet season follow a dry and warm summer to produce malarial fever or the plasmodium malariæ. Up to Oct. 6, 1865, there had been no rain. The Ohio and Mississippi Rivers were very low, and along the banks of the Ohio in the vicinity of Cairo there was a green scum on the surface of the river, extending some distance from the shore. Yet, as I have said, there was malarial fever prevailing everywhere in that locality.

Again, in the Western States and in Pennsylvania malarial fever has been actually plowed out of existence. The agriculturist who, for the first time, turned up the soil, suffered the most from malaria, but as the soil was more and more stirred up the less severe and the less frequent would be the attacks, so that today in many localities where the disease was most prevalent, there are no cases of malaria. Was it the water that these early settlers drank, the food they ate, or was it the air they breathed by which the plasmodium malariæ or malarial parasites were conveyed into their system?

I hope I have made myself plain on this subject. It is only by observation and experience that we can arrive at a true understanding in regard to this matter. The more plasmodium malariæ that is taken into the system, the oftener the paroxysms of fever will recur, as every day, every second day, etc. Pernicious fever occurs in localities in which the plasmodium malariæ or malarial poison is most intense and most concentrated.

CONVERGENT STRABISMUS.

A CLINICAL LECTURE DELIVERED IN RUSH MEDICAL COLLEGE.

BY ALFRED HINDE, M.D.
CHICAGO, ILL

I. ITS ETIOLOGY.

We have read that a child's education ought to be started before its birth; and, in our opinion, the consideration of strabismus is incomplete unless we remember that the ancestral history of these cases often contains an account of one or more persons where the visual line of one eye deviated from the object looked at with the other eye. Such predisposition undoubtedly tends to the production of squint in the offspring. The young of all animals remain with closed eyes for a variable period after birth. The human offspring is no exception. Whether this is due to a sudden change from darkness to light, or because the retinal functional development is inadequate for useful purposes, or because the brain itself is dormant, or because of all these several conditions combined, is unknown. The baby automaton has not yet awoke to the necessities of vision. Its functions are of the lowest forms of life. Its brain, as such, is yet a blank. The first promises of intellectuality are evident when it opens its eyes about the eleventh day (Petersen) and peers around. For some time afterward its vision is general and not special. Its rolls its eyes around regardless of any single object and its attention can not be arrested for a moment by ordinary objects. The center in the brain is then awakening and its anterior prolongation, the optic nerve and retina, is becoming aroused to active life, but as yet the perceptive visual centers of the brain are not alive to the requirements of binocular vision. The eyes roll according to the uncontrolled nerve explosions sent to the external ocular muscles. The complicated government of visual center over motor center is not yet completed, and will not be until the higher center can receive and appreciate the image of an outside object formed on the retina of the observing eye, in short, until the occipital cortex has grown into a *sentient* perceptive center and asserted its control over the motor centers of the muscles of the eye. The greater the illumination of an object the more quickly it arrests the infant's attention; hence a bright light possesses a first charm to the steady gaze. The retina and entire visual tissue need a strong impulse to whip them into useful activity. By continued practice the function of vision is developed and at last the perceptive visual centers can value at its true worth binocular single vision, and they control the motor centers of the nerves that pass to the eye muscles and so regulate their nerve explosions that the visual line of each eye accurately meets at the object looked at. Briefly, the cerebral function of binocular vision is established "by the end of the second month (Petersen) and we will assume at the same time that the acuity of vision of each eye is alike and perfect. In such a subject there is no likelihood of strabismus and it can only occur from acquired pathologic changes in the ocular tissues. Animals' eyes have a hypermetropic refraction and the newly born human eye is no exception. It is undersized until puberty[1] is reached and even then the majority of human eyes are slightly far-sighted.

The infant's eye being unduly short in its antero-posterior axis the vision of such an eye, in a condition of rest, is imperfect according to the extent of this shortening. In order to focus parallel rays from distant objects accurately upon its retina it must needs exercise its accommodation, because its dioptric system, unaided, has an insufficient refractive power for such rays. Such an eye is adapted only for convergent rays and these are not found in nature. Therefore this hypermetropic eye must either be contented with insufficient focal power, associated with a blurry retinal image and imperfect vision of an outside object, or it elects to use its ciliary muscle to relax its zonula and lens, so that the added refractive power thereby gained is adequate for punctate union of luminous rays entering its pupil. Within a limited range this function of accommodation can be exercised alone or without any associated convergence, and it is by such means that youthful far-sighted eyes can add to their established binocular vision the power of seeing distant objects clearly. With binocular fixation, therefore, and normal acuity of vision such eyes are free from the probability of strabismus. The infant considers only distant objects and in predisposed cases strabismus does not occur until the child's curiosity has called forth the desire to observe near objects. This intellectual accomplishment is not reached earlier than the second year of life and it is during this period[2] that our squint cases begin to develop. They increase numerically up to the sixth year and are of the convergent variety.

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[1] Twelve to eighteen years of age. Landolt, "Accommodation and Refraction of the Eye," p. 411.

[2] According to Petersen (Amer. Journal of Insanity, July, 1896), a normal child begins to distinguish colors correctly about the age of two years.

We see that it is not the distant object that brings out the strabismus, but the nearer object. We have averred that parallelism of the visual lines was consonant with distant vision. The two visual lines were accurately fixed upon the far away object, we had no strabismus.

The near object has called forth a new function, viz., that of convergence of the eyeballs. The function of accommodation and convergence, save within narrow limits, act together. The eyes we have mentioned as seeing accurately at a distance without either of them deviating were somewhat hypermetropic, but the license existing between accommodation and convergence was enough to permit of sufficient exercise of the former for distinct vision, without calling forth the latter faculty. This amount of hypermetropia has been called *facultative* (Donders), and in amount, in our example, is insufficient for the development of squint.

A higher degree of far-sight can not thus be neutralized. The link of union between accommodation and convergence is now put upon the stretch and accurate vision, *i.e.*, punctate focusing of rays upon the retina, can only be done by a greater refractive power of the observing eyes, while this can alone be accomplished by still greater contractions of the muscles of accommodation, and this stronger nervous impulse can not be exercised singly.

In the posterior part of the floor of the third ventricle of the brain and in the floor of the aqueduct between the third and fourth ventricles are several groups of nerve cells that give rise to separate groups of nerve fibers. The nerve fibers are gathered together into the third nerve trunk, but these separate groups of nerve cells give off nerve fibers that have separate and distinct distribution to the motor apparatus of the eyeball. Three of these central nuclei lie side by side and undoubtedly have intercommunicating fibers for the functions of the distal structures of distribution, save within narrow limitations, are always exercised together. I refer to the nuclei giving origin to fibers going to the ciliary muscle, the most anterior central group of cells; to the sphincter of the iris, the group equally forward and to the outer side of the ciliary muscle group; and to the internal rectus muscle, the group of cells in the median line immediately behind the ciliary muscle group. Neither does the proximity of origin of the these fibers terminate the close relationship of function, because they travel side by side in the third nerve trunk and only separate where its lower division within the orbit gives off the short motor root of the lenticular ganglion. From this point the motor fibers to each internus travel alone and the fibers to the intra-ocular muscles after filtering through the ophthalmic ganglion travel together in the short ciliary nerves to within the eyeball and are supplied from the same plexus within the ciliary body, though they are not completely inseparable, as shown by numerous cases of separate paralysis of either the sphincter of the pupil or of the accommodative muscle alone.

Thus we see the close anatomic relationship of the functions of accommodation and convergence and find at the same time the reason for their almost[3] simultaneous activity.

It is undoubtedly a fact that each of these nerve groups can transmit an independent amount of nerve force, but this is of limited degree and the function of the three centers is practically an associated one.

Now we will suppose that our child, who is beginning to observe near objects, possesses a medium amount of hypermetropia (2 to 6 D.) and has established the faculty of binocular vision for distant objects. He may apparently see objects in the distance distinctly, for he does not deviate either eye from its proper line of direction. When he looks at the near object, however, the inaccuracy of his vision is of such a high degree for these divergent rays that he must needs contract to a still greater extent his accommodative muscles, and in doing so he oversteps the bounds of independent action of the ciliary groups of cells over those of the interni, and this excessive effort at focusing becomes associated with an excessive effort of convergence, with the resulting deviation of one eye; a sacrifice of binocular vision, but gaining a more accurate focusing of the object with the other eye alone. In short, a strabismus convergens is instituted, and seeing that it occurs only when looking at a near object it is called a *periodic strabismus*. At first this squint may not be constant for near objects, if the latter are large enough and well illumined. Its frequency of occurrence, however, usually increases until for near it becomes permanent and soon it occasionally appears for distance, while later it becomes a fixed condition for objects at all distances.

It may be observed that the squint changes from one eye to the other, either eye fixing the object. This variety is known as *strabismus alternans* and the vision of each eye is usually equally good. In the majority of cases however the eye that first deviates inward is the eye that continues to squint and sees less well. This is known as *strabismus concomitans*, because the squinting eye follows its fellow and the angle of deviation is always the same. In this latter variety of squint the vision of the two eyes may at first be equal, and in this as well as in other forms of strabismus when vision is present in the two eyes, a diplopia occurs, because the two lines drawn from the maculæ through the nodal points of the two eyes do not meet on one and the same object. The eye whose visual line is properly directed has upon its most sensitive retinal area, the macula, an image of the object looked at, more distinctly perceived than the image of the same object that falls to the inner side of the macular region of the deviating eye, upon a portion of the retina with fewer cones and hence less sensitive in perceptive elements. Thus you see that the images cast upon the two retinæ do not fall on corresponding areas, hence double vision exists and the nearer these images are together, with retinæ equally percipient, the less the difference in distinctness and the greater the annoyance this diplopia causes the patient. But strabismic children, if they realize its presence, do not complain of or mention this double vision.

If there exists in our little patient a still higher degree of hypermetropia (above 6 D.), together with binocular vision, the vision for distance may be so poor and the knowledge of the value of more perfect vision so little appreciated, and the efforts of accommodation so unavailing or unused, that the child appears to rest contentedly with the vision that exists, together with a condition of relaxation of its efforts of accommodation and convergence. In short, it retains its binocular fixation and is satisfied with its poor vision until the prolonged efforts of an insufficient accommodative power result in subjective symptoms of eye distress and headache, associated with positive inability to see small near objects in school work. The oculist is then appealed to, not because of the deformity of strabismus, for this is absent, but because of the eye distress and the insufficiency of useful vision. Convex lenses are prescribed that are an accurate measure of the deficiency and when worn the symptoms cease and the required studious work goes on satisfactorily, though usually with subnormal vision, because these eyes are not only illy formed, but also histologically imperfect.

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[3] In point of time the contraction of the pupil occurs later. (Donders.)

In the foregoing illustrations we have seen that in the hypermetrope of low degree the accommodation was sufficient for perfect vision, without calling upon the aid of convergence, and binocular vision was maintained, with no strabismus resulting.

In our hypermetrope of medium amount the accommodative effort was so extreme for accurate near vision that it could not be exercised without calling forth an effort of convergence in excess of the requirements of binocular vision. Briefly, a deviation inward of the visual line of one eye had occurred, a strabismus was instituted and binocular vision was sacrificed upon the altar of more accurate focusing.

In the highest degrees of hypermetropia we have shown that binocular fixation is retained and accurate vision correspondingly suffers, although squint does not always occur. The preceding illustrations are the rule, but not the invariable rule.

In all, hypermetropia was present, and this error of refraction occurs in three-fourths of all the cases of convergent strabismus. The cause of the remaining one-fourth of the cases of converging squint remains to be explained. An eye with a normal refractive power, an eye that in a condition of rest of its accommodation, has the power of punctate focusing of parallel rays upon its retina; an eye whose dioptric system unaided has sufficient refractive power for perfect distant vision, an emmetropic eye, may be the subject of strabismus. Binocular vision may have been inaugurated but inevitably lost because of a loss of balance of the lateral eye muscles (Schweigger), a congenital weakness of the externi or a superabundant power of the interni, either congenital or acquired. This condition explains the cause of a majority of the remaining cases of inward squint, and the above muscular conditions combined have a very important bearing in the causation of the ordinary cases of hypermetropic squint, as we shall see when we consider the operative measures necessary for their cure.[4]

Again, a muscular weakness in the interni, usually congenital, but occasionally acquired from the exhaustion of overwork, even with a hypermetropic refraction, may permit of a divergent squint. The opposite is occasionally true with a myopic refraction, a refractive power that is relatively too great, an antero-posterior axis of the eyeball that is excessive, so that parallel rays entering the eye are brought to a focus in front of the retina, we may have a convergent strabismus, and this is due either to a superabundant power of the interni muscles or a deficient power of the externi. The adductive power of convergent strabismic eyes is commonly too great, may be congenitally so, may be acquired from constant effort at convergence with accommodation. The shortened distance between the origin and insertion of the internus as a constant quantity results in a permanent shortening of this muscle (Hansen-Grut's theory) and also of the superior and inferior recti.

Lastly, the more anterior insertion of the internus tendon—six millimeters from the cornea—gives it a a great advantage over the weaker externus, whose tendon is usually eight and occasionally ten, or even twelve millimeters from the outer limbus corneæ. Moreover, the position of rest of the entire ocular muscles is one of slight convergence of the visual lines.

Other causes of convergent squint are found in a congenital amblyopia of the squinting eye (Schweigger 30 per cent.) whose vision is too poor to exercise any efforts toward the establishment of binocular vision. It permits itself to be rolled inward by the stronger internal rectus, and so remains. Even in eyes where one has a greater error of refraction than the other, so-called, *aniso-metropia*—the one with the greater error, hence the poorer vision, has the least hold over the binocular fixation, and occasionally gives it up altogether and permits the internus to sway the eyeball inward. It is the rule in concomitant strabismus convergens for the eye with the greater error to be the deviating eye. Again in spasmodic conditions of the interni, produced by central, distal, or general causes, a convergent squint occurs, stays for a variable period, may recur, and happens generally after strabotomy, or in the constitutional conditions of children. This form is known as an *intermittent strabismus* and is infrequent.

Lastly, young patients are prone to squint where an acquired permanent opacity occurs as the result of some preceding inflammation of the cornea. Binocular vision, if instituted, is surrendered because of the inaccurate vision of the affected eye and the strongest muscle turns the eye inward or outward according to the relative strength of the individual muscles.

There are exceptions to the rule in strabismus, as elsewhere, and a few examples of this condition do not conform to the foregoing causative explanations. We occasionally see a case of squint, where only a lower degree of hypermetropia is present; where distant vision is accurate; and where the only deficiency we can find in the case is one of markedly diminished amplitude of accommodation for the age of the patient, an excessive convergence is instituted to increase an insufficient accommodation.

One of these cases I have lately had under my care where a patient, age 16, had an alternating convergent strabismus of 60 degrees with 20-20 vision in either eye without glasses, and who developed under atropin-paralysis only a total hypermetropia of 1 D. with the right eye, and 1.50 D. with the left, and who, after the atropin effect had entirely passed off, read with these glasses, either eye alone, 0.60 type of Snellen at a near point of eight and three-fourths inches (22 centimeters), showing an amplitude of accommodation of only 4.5 D. whereas it ought to have been about 11.5 D. at that age. We had a deficiency of 7 D., in short, the accommodation of a person of 40 years old. An advancement of each externus, with the requisite glasses for distance and near, resulted in a complete removal of the deformity. Another instance, where, with a high degree of hypermetropia, we have deviation inward, an example of this kind I have recently shown you in a hypermetrope aged 7 years with a Ht each eye of 7 D. Again, where, with a difference in the amount of the error of refraction in the two eyes, the one which has the lesser degree is the strabismic eye. The child recently before the class furnishes another, or central etiologic cause. She fell several feet one and a half years ago, and injured the occiput. This was followed by intra-cranial symptoms and intense headache, and soon afterward a concomitant strabismus inward and upward of the right eyeball, developed and has remained. The lateral deviation measured five millimeters and the ophthalmoscope showed a secondary optic atrophy most advanced in the right eye. As an observation, the retinoscopic test gave a total hypermetropia (under atropin) of the right eye, of 2.50 D., whereas in that of the left, straight eye, the amount was 3.50 D. Whether this error of refraction had any bearing on the production of the squint is a question. The more probable cause is the poorer vision of the right eye permitting the suspension of binocular fixation, together with the excessive action of the right externus muscle. The child is in her eighth year and was taken from school because of her failing eyesight.

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[4] The last case of convergent squint I showed you was due to a combination of hypermetropic astigmatism, amblyopia and a lack of balance of the lateral muscles of the squinting eye. The patient, a girl of 18 years, had had a tenotomy of the left internus when 12 years of age, but objected to the use of glasses afterward. She appeared with a still present but very variable convergent squint. A parallelism for the distance but at 5 inches now, a deviation inwards of 15 degrees, and again 30 degrees, and still again an associated movement of the squinting eye outward, a divergence in fact being present. Yet in extreme abduction the left or squinting eye failed to roll out nearly as far as the other eye, even though a tenotomy of the opposing internus had been done six years ago. Here was present a marked weakness of the left externus muscle. The vision of the straight right eye was 20-40—; that of the left 20-200, while under atropin-paralysis that of the right eye was 20-200 and of the left eye 8-200. With each eye -3.50 D S $\frown$ -1 D cyl., axis 90 degrees, the right eye had 20-30 and the left 20-200. Therefore the best vision we could get with the straight eye was only two-thirds normal, and with the deviating left eye only one-tenth normal, yet the refractive condition of the two eyes was the same. The squinting eye was very amblyopic and besides had an anomalous muscular condition causing an ever variable direction of the eye, and the principal annoyance of which the patient complained was a constant diplopia. Further operative procedures were inadvisable and the above glasses were given to be worn constantly.

One other case, is of retinal pathologic causation, and, in point of time, the lesion that was the immediate cause of the strabismus convergens was congenital, yet the squint did not show itself until the second year of life, when the continued functions of accommodation and convergence were established for near objects. The cause of the squint in the left eye is due to a macular destruction of the retina from a subjacent choroidal atrophy. The latter of small area, sharply defined, single and due to a prenatal circumscribed choroiditis. This boy, now about 8 years old, always closes the squinting eye when looking at near objects, because of some interference with accurate vision of the other eye, and though he can not explain it, it is most probably due to the recognition of the false image of the misdirected eye, a diplopia. The refraction of the eyes is emmetropic; therefore, the only explanation of the squint is that of the macular lesion of the affected eye, and the latter permits itself to be dragged inward by the stronger internus muscle.

There are also other exceptional causes of strabismus but all of these together do not invalidate the foregoing teaching. They only place us on our guard in our investigations; perfect our methods; and make of us more accurate observers. A consideration of the etiology of strabismus convergens would be incomplete without paying homage to that master-mind of Donders, of Utrecht, who thirty-three years ago, in his immortal work: "Accommodation and Refraction of the Eye," gave to the medical world the first clear conception of the causation of convergent squint; stated that 77 per cent. of the cases were due to hypermetropia; and placed the proper value on the use of convex lenses for the correction of the anomaly.

II. ITS MANAGEMENT.

When considering the etiology of strabismus convergens we concluded that there were three quantitative degrees of hypermetropia that especially required our attention, and that the cases of medium amount (2–6 D.) of this anomaly furnished three-fourths of our cases of squint. The possessors of a low degree (up to 2 D.) of far sight, are often not seen in practice until the middle period of life, when near work becomes tedious and subjective eye symptoms force the patient to wear glasses some years earlier than the usual presbyopic time.

Those children who have the highest amount of hypermetropia (over 6 D.), are dismissed from school because they can not see the markings on the blackboard and appear mentally dull. They are advised to see an oculist, glasses are fitted and they return to their studies. What are we going to do with our young hypermetropes who squint? Estimate the amount of their error under atropin and give fully correcting glasses, to be worn constantly during the waking hours, together with the use, for a time, of atropin daily to annul accommodative efforts and break off the formed habit of over-convergence previously needful for accurate vision, especially of near objects. If we can demonstrate an amblyopia of the deviating eye, supposedly due to non-use, we stop using the atropin first in this eye, and advise[5] the practicing of its vision alone for a time, thus giving this eye an advantage for near use. Later stop using atropin in the good eye and still practice with the weaker eye, twice daily for an hour or more, the good eye being covered at the same time.

The amount of error is estimated usually by means of retinoscopy (skiascopy), this plan being more accurate than the ophthalmoscopic measurement, and even where our patient is able to read type, the subjective test is less reliable than by the first objective method mentioned.

The glasses given are changed as needed and are worn faithfully, until we are assured that they will not alone avail for the cure of the deviation, and until the patient is old enough for the operative procedure. In cases of supposedly spasmodic squint it is well to defer operative procedures indefinitely, also in cases of alternating strabismus, and in cases where repeated measurements give variable amounts of deviation, be slow to operate.

In squint cases where the error of refraction, on reexamination, is decreasing, and in families where strabismus has been known to continuously disappear, do not operate until after puberty or full growth of the eyeball. The correcting spectacles, without or with operation, must constantly be worn to avoid recurrence due to the still present hypermetropia. Now we have remaining the cases of squint where intracranial or retinal causes produce the deviation indirectly by the resultant poor vision. If operation is decided upon in these cases it is solely for the cosmetic result. Here we can not expect to institute what has never before been established, viz., binocular single vision. In fact, in those cases that we have still left as suitable for operation, we can not expect to regain this great desideratum—the aim of all of our surgical procedures—in more than 10 to 20 per cent. We may get parallelism in 50 per cent., and we expect satisfaction in 80 per cent., or, by our present methods, a success in practically all of our selected cases. That the subject of the operative management of strabismus is still unsettled in its entirety, is evident from the continued discussion of the subject in the journals and in the special medical gatherings throughout the world. Even as lately as the meeting of the Ninth International Medical Congress (Washington, D. C., 1887), several members admitted that the correction of strabismus was not a satisfactory operation.

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[5] *Blindfolding the sound eye and practicing the deviating eye was* ninety years ago one of the successful methods of correcting strabismus, and Mackenzie quotes (Amer. Ed., 1855, p. [illegible]) the case of Professor Roux, who thus cured strabismus in himself of thirty five years' standing. Beer (loc cit.) was in most cases successful "by binding up the sound eye every day even for a couple of hours only."

The first operation on an ocular muscle was done by Stromeyer in 1838 on the cadaver (Mackenzie, p. 369, Amer. Ed. 1855). "Pauli was the first to attempt it on the living, but the eye was unsteady; he divided the conjunctiva but could not divide the muscle" (Mackenzie, pp. 369, 370).

Later, in 1839, Dieffenbach operated on a living patient, cutting through the belly of the muscle. The posterior half of the muscle then retracted, so that no reattachment to the eyeball could take place. The complete paralysis of the cut muscle was followed by a divergent squint. Such result was observed to be invariable after this method of operating, and the procedure fell into great disrepute (Fuchs, p. 710). Böhm then suggested a section of the tendon of the deviating muscle, and such method has been continued ever since.

Von Graafe improved the technique of the operation, showed how to increase and diminish the effect, and instead of cutting the tendon, when in the grasp of forceps, he introduced his hooks and the section was made on these. Both of the latter methods are still in use. The résult from the Dieffenbach operation was so disastrous that the subjects of it presented erial for further corrective procedures, and Jules rin, in 1849, operated on these cases of divergent it with the view of advancing the attachment of the cut internus toward the cornea. He dissected from the inner portion of the sclerotic all the superjacent structures—conjunctiva, Tenon's capsule, internus, and far back toward the equator of the eye. He then placed a thread *through* the sclerotic on the external side of the cornea, and by drawing on both ends of the thread he rotated the eyeball inward to the desired extent, and fastened the thread ends, by strips of plaster, to the skin of the nose. In this way it was hoped that a more anterior attachment of the severed internus would take place. The thread was left *in situ* several days. but it was observed to cause serious inflammation in some cases, now known to be due to a traumatic cyclitis, because of the depth of insertion and the location of the thread.

Now the ingenious von Graafe came to the rescue, and proposed the so-called *thread operation*, which differed from Guerin's plan only in that the internus was not severed from the sclerotic immediately at its insertion, but a short distance behind it, so that a stump of the tendon was still adherent to the sclera. Through this stump the thread was passed and the eyeball guyed in and fixed, as before, in the desired position.

Since then thread methods of advancement have been greatly improved, and several plans have been followed—some consisting of three threads, some of two threads, some where a single thread is advocated. They all agree in attaching the thread or threads directly to the severed tendon of the muscle to be advanced, and stitching the forward end or ends to the eyeball in front, where traction on the thread draws forward the muscle and tilts inward the eyeball to the requisite extent, and so retains the two fixed points for the necessary days required for the cicatrization of the wound at the site of the tendon of the advanced muscle.

From this history you will see that we have established two procedures, one of tenotomy of the insertion of the tendon of the internus in cases of convergent strabismus; the other of advancement of the retracted muscle subsequently to a former tenotomy of it, in order to correct the opposite deformity, a divergent strabismus. These operations on the internus tendon are equally applicable to that of the externus, though rarer; also to those of the other straight muscles of the eye—the superior and inferior recti—though operations on these tendons are still less frequently required.

We are considering a convergent squint and its correction, and we want to lessen the over-effect of this internus muscle on the deviated eyeball. As we have seen, when considering the etiology of squint, that this muscle usually possesses a superabundant strength, when compared with the often congenitally weak externus, and that owing to a continuation of the deviation a permanent shortening of the distance between the origin and insertion has occurred. Besides, its anterior attachment to the sclera is always further in front of the center of rotation of the eyeball than that of the less favored externus.

The indication is then plain; we must increase the distance between the origin and insertion of the internus muscle, or weaken its strength, or both, in order to destroy its over-effect on the deviated eyeball.

How are we going to do this? 1. By displacing backward the anterior attachment of its tendon to the required extent. In cases where the deviation does not exceed three millimeters, a careful section of the tendon of the internus at its insertion is usually sufficient to correct it. In cases of four to five millimeters, if tenotomy of the shortened internus insufficiently corrects, the teaching has been to free the lateral expansions of the tendons that are derived from the capsule of Tenon, where the muscle passes through the latter, near the equator of the eyeball. These connective tissue fibers on each side of the tendon are cut to the requisite extent. If the eye then fails to roll outward sufficiently, a guy suture is inserted vertically through the conjunctiva, just beyond the outer margin of the cornea, and one end passed through the outer commissure of the eyelids. The two ends are then tied, with traction sufficient to drag the eye outward to a correct position. This traction results in a displacement backward of the cut tendon, and the thread is left in from a few hours to two days.

Where the strabismus measures five to six millimeters, the cutting of one tendon is insufficient for correction without displacing backward the muscle so far that the resulting loss of motion inward impairs the future usefulness of the eye. when observing objects situated in the extreme nasal field of this eye. The operated eye then fails to follow the other eye, and binocular fixation does not occur. Hence, the operation effect has to be divided between the two eyes. The deviating eye is tenotomized in its internal rectus, and after waiting a couple of weeks the remaining squint is removed by a sufficient operation on the internus tendon of the other eye. Thus the inevitable loss of motion that follows all successful tenotomies is divided between the two eyes. Where the strabismic deviation reaches eight millimeters the last directions are carried out, except that the lateral expansions must also be invaded with the scissors, in order to get a sufficient result. When the deviation is over eight millimeters, the teaching has been, and still is in many quarters, to make a simultaneous and very free tenotomy on each internus, and if the effect, after healing, is still insufficient, to again cut the internus of the eye that retains the best motion inward. Sometimes this extreme procedure proves insufficient and both muscles have been tenotomized a second time, and such eyes may then possess a parallel position for distance, but too often their power of convergence is so reduced, that for near use they are a source of great trouble and anxiety to their possessor, if indeed they do not later give up the fight for binocular single vision, one eye making an associated movement while the other fixes—briefly, a divergent squint occurring as the final result of over-operation. The latter effect may occur at any time from one to two years after operation, and though often seen after excessive operative procedures, yet it occurs very frequently after ordinary and legitimate tenotomies. Unfortunately, we have no positive means of foretelling its occurrence in the latter cases. Tenotomy of the lateral ocular muscles is a very simple operation, so far as finding and cutting the tendons is concerned. Very little anatomic knowledge, steady hands, a forceps, scissors and, if you wish, a pair of hooks, a blepharostat and a solution of cocain, are all that are required. We can not foretell positively in any case the results we will accomplish by such cutting.

The first internus tendon I ever cut was in a boy of 14, and without the slightest immediate change in the direction of the eye. I inserted into the wound made the smaller von Graafe hook, and made excursions clear back to the equator of the eyeball, and laterally in both directions, thus breaking down and cutting all the loops of tendon and connective tissue brought up on the hook, but still the deviation remained unchanged. I was nonplused, and felt confused, for others were present, so I stopped, knowing that there were matters in squint that were either not in the text-books, or I had failed to read them. My case was not a paralytic squint. The boy disappeared, without a correction, and I went to further observation and soon saw the same thing occur in the practice of the best men, two of whom had one case each where, after a tenotomy of each internus, there was no effect, and one put on guy threads and the other stopped operating and said nothing. A second head of insertion uncut and far back is not a sufficient explanation in these cases, for often we can not find it after prolonged search. Paralysis of the externus is excluded, as the eyeball is rolled directly outward. A shortening of the superior and inferior recti muscles is the common cause that keeps the eye from rolling outward. For the latter reason, the backward displacement of the cut internus is also limited, and besides a tenotomy of it, we need an opposing force to the other shortened and uncut structures. We have mentioned a guy thread, but this cuts out and is of only temporary use, while it is a bungling method of correction.

2. When considering etiology, it was seen that the more posterior attachment of the externus tendon, together with the relative weakness of this muscle, placed it at a great disadvantage; besides, when the distance between its origin and insertion is increased by the deviation of the eye inward, in convergent squint, it can readily be seen that, next to the cutting of the shortened tendon of the internus, a strengthening of the effect of the externus on the eyeball ought to be accomplished. As a matter of physics let us shorten the distance between the origin and insertion of the externus by cutting its tendon at the sclera, removing two to four millimeters of it, and reattaching the remaining tendon as far forward on the sclera toward the cornea, as the requirements of the case demand.

These two operations—a careful tenotomy of the shortened internus, together with a simultaneous shortening and advancement of the externus—have scored a great advance in the more certainly beneficial results of strabismic operations.

This combined operation was first advocated only in cases of divergent squint, where a tenotomy of the externus alone never exceeds a correction of over three millimeters, and where such section is wholly insufficient for a satisfactory correction. Of late years, more especially under the able advocacy of Landolt, this procedure has been applied to convergent squint, and has grown in favor so rapidly that at present it promises to soon be the only procedure for the correction of squints of over three millimeters in extent. The results are positive and can be more accurately calculated, but in the cases where it is most used it is found necessary, for a thorough correction, to advance the externus of both eyes—not simultaneously, but on the second eye after an interval of two weeks or more.

The objections to tenotomy are its uncertainty of results, the opposite deformity occasionally occurring, and the loss of motion invariably following the successful correction of the deviation. These conditions are absent after advancement; in fact, the eyeball retains its position in the orbit, is directed permanently correct, and its motility is greatly improved.

Most modern ophthalmologists consider that tenotomy ought to be limited to cases of motor insufficiency, latent squint, and to the slighter actual deviations, but Landolt believes that in all these cases advancement offers greater advantages, and he claims that in his hands it has never caused an over-correction.

There are advocates of an advancement of the antagonistic muscle alone; the externus in convergent, and the internus in divergent squint, without a simultaneous tenotomy of the deviating muscle. There are others who believe in a partial tenotomy of the shortened tendon, leaving a few strands of the tendon proper at its upper and lower border, associated with an advancement of the antagonistic muscle, desiring to only temporarily weaken the deviating muscle until the advanced muscle gains a firm reattachment (Beard). In the two latter procedures an increase in motility of the operated eyeballs is very marked, but the certainties of full correction are less assured.

Modifications of the foregoing procedures, in different cases, are carried out according to the dictates of the various advocates, and no consensus of opinion has yet limited different methods to special conditions. One certainty is accomplished because of the better results achieved, viz., that the champions of advancement are increasing greatly, and the cases where tenotomy is alone required are rapidly disappearing from our observation.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

X.—ENGLISH SURGERY. JOHN HUNTER.

(*Continued from page 284.*)

Hunter had attained the height of his glory in the middle of the eighties. He enjoyed the confidence of the public, had a very large practice and made a sensation through a few operations. In spite of the mass of business in which he was involved, he showed himself equal to it all. In 1790 he assigned to Home, who at his request a few years previously had been substituted for him in St. George's Hospital, all lectures, because they cost him too much time, and he wished to put his writings in order. His health had also suffered a severe shock, so that he no longer went to patients at night, and he never operated without the assistance of another surgeon. He had no lack of external honors, having been made surgeon-extraordinary to the king, first surgeon general in the army, and inspector general of the military hospitals. He became a member of the Royal Society of Sciences in London and Gothenburg, of the Académie de Chirurgie and the Royal Society of Physicians in Paris, of the American Philosophical Society, of the College of Surgery in Ireland, and last of all a member of the Medico-Chirurgical Society in Edinburgh. Besides occasional attacks of the gout, during the last twenty years of his life he suffered much from angina pectoris. Often he saw everything aslant (which he declared, was caused by an excessive contraction of the oblique muscles of the eyes, which drew both eyes about thirty or forty degrees from their natural position); his memory became weaker, and the asthma grow worse. On Oct. 16, 1793, he went into St. George's Hospital become violently angry, and fell to the floor, dead. They found a defective valve, with enlargement of the aorta. Only a few of his oldest friends accompanied the body to the church of St. Martin in the Fields.

John Hunter was, as his brother-in-law relates, small and compact, but strong; his countenance animated and open, in later years contemplative. As a young man he was very lively and given to pleasures, later on account of a difficulty in his chest he could drink no wine, and for the last twenty years drank nothing but water. He needed little recreation; he slept only five hours. Passionate by nature and easily aroused, he was pacified only with difficulty. His mind was extraordinarily active and showed a natural disposition for investigation. His practice had grown but slowly at first, for his love of independence lead him rather to devote himself to his favorite pursuits, than to widen the sphere of his public activity. Only when his great talents attracted general attention did his income increase considerably and amounted in the last years of his life to five or six thousand pounds. But he valued money little, and devoted everything to collections and investigations, by which the interests of himself and family suffered. Very open hearted in private practice, he always expressed his opinion without reserve, but was at any time ready to acknowledge a mistake. An enemy to all deceit and falsehood, he, in going about, spoke almost too freely and often harshly of his colleagues, by which he made many enemies. History places little value upon such weaknesses of great men, but their contemporaries often have to suffer severely from them. If Hunter did not do justice to the merits of others, it was not due to envy nor jealousy, but to the conviction that surgery was still in its infancy and he himself only a beginner in it. Therefore, in his effort to perfect the science, he undervalued those whose activity did not equal his own.

When John Hunter, in the twentieth year of his life, went to England, where facts were valued most highly and practical effort everywhere prevailed, he began with admirable industry to make experiments and to collect observations. This was the most important feature of his life. His investigations included the whole animal kingdom, from the smallest insect to the elephant, in the course of which he dissected more than five hundred different species, and made a great number of discoveries. He found that bees do not collect the wax but secrete it; discovered the ability of the mollusks to absorb their shells, the true nature of the circulation of crustaceans and insects, the organs of hearing of the cephalopod, the semi-circular canal of the cetacean, the lymph glands of birds and the air cells in their bones. He wrote concerning the electric organ of the torpedo, the organs of hearing in fishes, the maw of the salmon, and on wall-fish. Young animals were fed with madder, and in that way the laws of growth and bone formation were ascertained. He furnished the information that the wolf, jackal and dog, belonged originally to one species, and by the incision of an ovary made researches in regard to the number of young. In the human body, he discovered the muscular membrane of the arteries and iris; he found that a few branches of the n. olfactorius came from fifteen cranial nerves; he traced the arteries of the pregnant uterus to the placenta, described the depression of the testes in the new-born child, by means of the gubernaculum called after him, and asserted the digestion of the stomach after death, through its own gastric juice. He also showed that the red corpuscles later form other constituents of the blood. Then he turned to the plant world and wrote on the power of plants and animals to generate heat; and there followed investigations in minerals and crystals. In short, Hunter wished to unite all branches of natural science, in order to advance from the simplest to the most highly developed forms; he asserted that nature observes a regularity even in her variations, and that under certain conditions a variation is a part of the law of nature.

His physiologic principle was "vital power," which held sway, even to the time of Johann Müller. The theory of the vitality of the blood did not originate with Hunter, for Harvey had already asserted it, but Hunter sought to give it a firm foundation and his opponents at that time were not able to expose the fallacy of this theory with sufficient reason. That this theory could have been held so long, came about as it so often happens, from the fact that the ideas of great men are so very seldom examined with attention, and tested. He said, "to conceive that the blood is endowed with life while it circulates, is to make the utmost demand upon the imagination; the difficulty arises from the fact that the blood is a fluid and we have not been accustomed to think of fluids as living. Disease manifests itself more clearly in the blood than in any other part of the organism, and all this is said to proceed from a dead animal fluid, upon which a disease of the solid parts makes such an impression! That is to attach too much importance to the solid parts and too little to the fluid. When one reflects upon all that concerns the blood, then the idea that it is living is not so difficult to grasp, and when he has once seized it, I can not conceive how one can think any other theory possible, so soon as one considers that all the parts are built up from the blood, that we grow by means of it, and that if it does not already possess life before this operation, it must receive it during the process of formation, since the parts, when they are once formed, possess life, and of that we are all agreed. William Hunter was the first to point out the fact that a callus is endowed with life as well as the bones. The vital principle of the blood, which is similar in its action to the vital principle of the solid parts, owes its existence to the same matter from which the latter is derived, namely the materia vitæ diffusa, which is equally diffused through all the solid and fluid parts." Hunter had an aversion to definitions, and instead of giving one for life, he stated its properties, saying that the first and simplest conception of life is, that it is the principle of self-maintenance and then the principle of activity. Though Haller has the credit of having first separated the human body into its anatomic elements and specified the physiologic characteristics of each, Hunter (who has left behind him ten folio volumes of physiologic notes) endeavored to apply these studies to pathology. The connection between physiology and pathology underlay all his theories; when he adduced the laws of life and applied them to the explanation of disease, he found a new method of inquiry.

In spite of his great accomplishments in physiology, the sick man was always to him the favorite object of investigation. They were accustomed in England to proceed by the induction method, while in Scotland the conclusions proceeded from general principles to particular cases; in Scotland a great logician was considered a great man, in England only when he had proven his position by experience. Buckle said that Scotland, where Hunter spent his youth, implanted in him the deductive method, and England, where he lived for forty years, gave him the inductive method. When his mind was divided between the two methods a certain obscurity marked not only his words, but also his thoughts. That was his error. Both methods are most clearly evident in pathology. With his inclination for deduction he endeavored, among other things, to introduce the idea that all diseases develop more readily on the skin than in the internal parts, by virtue of a latent impulse, which also impelled plants to approach the surface of the earth. Another deductive proposition was the following: "Since I regard every process in the organism as an action, whether it be general or local, it seems to me without doubt, that two different actions can not take place in the same constitution, or in the same part, at the same time. From this principle it follows that two different fevers could not appear in the same constitution at the same time, nor two local diseases in the same part." With this inclination of mind, Hunter roughly opposed the traditions of the English. However, a large part of his investigations were, as far as possible, inductive. He neglected no opportunity to make a dissection, anticipating that the progress of medical science would depend on the general introduction of dissection. He made pathologic anatomy at home in England and gave it an immediately practical direction, and was. therefore, perhaps even more influential than Morgagni's works.

He especially endeavored to make the knowledge which he gained of value in the perfecting of surgery. A large part of the surgical improvements which were introduced during the next decade after his death can be traced back to him; even his expressions were for a long time common in the English schools and exercised an influence upon the style of the new surgical books. The most important among his surgical works, which we will later enter upon more particularly, is "A Treatise on the Blood, Inflammation and Gunshot Wounds (1794). In this work, which, like all products of genius, exercised an inexpressible charm, there was, properly speaking, a new method of investigation in surgery laid down. The treatise on inflammation, which was first outlined in 1762 after the retaking of Belle Isle, and arranged from observations which Hunter had made during twelve years in London, was from that time forward considered by the public as his chief work. In the course of these investigations he frequently allowed himself digressions which have a remote connection with the main subject, while he perplexes the reader by his lack of form. But a part of his obscurity is explained by the fact, that at that time he was often sick and depressed, and he died while engaged upon the complete correction of the work. In order to offer as complete a book as possible, he had long delayed the publication of it, and hoped that it would enable others to work upon a subject of which they had previously known nothing at all. He, himself, regarded this treatise as a new building put together out of crude materials, whose defects were not unknown to him. Further, we owe to Hunter the first knowledge of phlebitis (1793), investigations in varices, aneurysms and with this the ligature of the arteries above the sac (1785), the forerunners of subcutaneous operations, clear-sighted treatises on syphilis (1786), the "Structure and Disease of the Teeth" (1771), intussusception, anuresis, etc. He was the only one who comprehended the first ideas of vaccination of his pupil Jenner, and mentioned them in his lectures as a matter that deserved further research. When his operations failed, he sought for the causes with the utmost care, and in this way discovered many imperfections. The successful extirpation of exceedingly large tumors in the neck testifies to his operative skill; in one case, one of the best surgeons in England had declared that only a fool or a lunatic would venture to cut out the tumor. His skill in diagnosis, for that time very great, was shown, among other ways, in a case of a gunshot wound in the abdomen, where the others ascribed the tension of the abdomen to the flow of blood, while he convinced himself by "percussion," that air was the cause of it (1783). He also diagnosed an organic defect of the heart and found, on dissection, that the valve of the aorta was thicker, harder and very much contracted; the symptoms explained this to him, since at every contraction the blood must flow back into the ventricle. His complete works were printed by Palmer in 1834.

Hunter's greatness was not recognized by his contemporaries. He valued ideas for their own value, quite independent of all other considerations, for which the English had no inclination so long as no definite result appeared. Shrewd, but short-sighted, they were unable to comprehend [illegible] -reaching ulations. According to their opinion Hunter was little more than an innovator and fanatic, and even his practical improvements met but a cold reception. A secret antipathy to minds which far surpass our own everywhere lurks in human nature. The epoch-making work on inflammation, in which the subtlest and most difficult subjects in nature were treated, could gain no popularity for Hunter, because there were so few physicians who were able to follow him on this path. "The great Scotchman, thrown among a people whose mental habits were so unequal to his own, had," as Abernethy says, "a solitary and comfortless place by reason of his transcendency." They so little understood him, that during the four years when he lectured in London on anatomy and surgery, his hearers numbered twenty. If his own countrymen did not appreciate Hunter's greatness, what wonder that the same was true in Germany! A. G. Richter considered that in the work on the blood and inflammation, which did not reach his expectations, Hunter was, indeed, a clear-sighted observer with many new ideas; but he found that experience was often strained in order to conform it to theories. He had proven himself an excellent master of the art of expanding really useful, practical matters into a mass of empty theories, and of so analyzing every-day affairs that they became quite unrecognizable and were readily regarded as something altogether new. He could not write concisely and his prolixity and repetitions would tire even the most patient reader; he showed also, with his vigorous imagination, a great effort to present singularities. Richter would not contradict his experience with phlebitis, but he had never seen anything which seemed to confirm it, and did not consider it proven. But he had the greatest appreciation of the works on the teeth and on syphilis, although here, too, it seemed to him that Hunter had a great love for singularities, in that he often contradicted himself. Baldinger found the chapter on anuresis paradoxic. The translator, Hebenstreit, likewise emphasized the tendency to paradoxic statements; and found a reason for the lack of connection in the fact that Hunter had not enjoyed a liberal education in his youth, and only became a writer late in life(!). The article on the digestion of the stomach Tode considered a droll dream, and hoped that the English devisers of theories would gradually protect us from the prevalent anglomania. His work on the teeth was horribly dry and much in it was old; and for heaven's sake, let no one dare to confuse John Hunter with the celebrated William, for the former was a veritable Nimrod in hypotheses, as is well known. John Hunter was too far ahead of his time.

Only in passing will we cast a glance at the *surgeons in other foreign countries*, since most of them were greatly inferior to the French and English, and being little or not at all known in Germany, could not in the least exercise an equal influence on German surgery.

About the middle of the century a more active life began in the northern countries; they built hospitals and lying-in houses. *Sweden* at that time possessed the "northern Desault" in *Olof Acrel*, professor in Stockholm. Trained in Paris and in the French army, he first brought scientific surgery into his fatherland, and did an extraordinary amount for the improvement of the hospitals whose director-general he was. His "Surgical Cases" (1775), into which a large experience is gathered, was the first fruit of the new hospitals in Stockholm. He banished excessive warmth from the wards and strenuously opposed the many superfluous instruments, and the misuse of salves and plasters. *Bierchen* became known through his researches in cancer, wherein he sought to establish the diagnosis of scrofula and syphilis; *Martin* was known through his thermometric measurements; *Schutzer* and the oculist *Odhelius* may be mentioned.

Denmark was not backward. Copenhagen built its Friedrich's Hospital. A society of physicians and surgeons was organized in 1772, under Tode, which, elevated to a royal society, began to publish the "Soc. med. Havniensis Collect." Although a surgeon at a salary of 150 thalers was maintained at that time in each district of three to six (German) miles, yet the standing of the profession was low, and it is related as something extraordinary that a Count von Reventlow made the surgeon of his county his physician, entertained him at his table and at his social parties. King Christian VII. took the most important step in the advancement of surgery when he founded a Royal Academy of Surgery in Copenhagen in 1785, in order to train better surgeons for the country and the army. They took the new academy in Vienna as a model, and here also, as was the case in Vienna, they involved themselves in a quarrel with the sorely offended physicians, which was continued for several years, and on the part of the surgeons in a very stormy manner. The academy was independent of the university and of the collegium medicum; its professors (three ordinary and four reserve surgeons) enjoyed the same rank as the university teachers and belonged to number eight of the fifth class, where they stood on a level with the gentlemen, between major and captain of horse. The lectures were given free, and in the Danish and German languages. The most eminent Danish surgeon was *Callisen*. He had risen from the barber shop and had served as steward and in Friedrich's Hospital, had then studied in France and England for several years, and had finally become professor, chief surgeon of the Danish fleet and director-general of the academy. Beloved as a teacher and popular as a practitioner, he deserves great credit for improvement in the medical system, and with his "Institutes and Principles" (a systematic treatment of surgery), won much applause. The learned *Heuermann* wrote a good manual on operating, and Professor *Scheel* a great work on the transfusion of blood and injection of drugs, giving his own experiments.

The time of the great Boerhaave had aroused a general scientific interest in *Holland*, and had brought about a more intimate connection between surgery and medicine than was the case in other countries. Therefore, the best Dutch surgeons of the seventeenth century were at the same time good physicians, and showed more interest in the pathologic bearing in surgery than in the mechanical part. For the rest, even until the middle of the last century, the same altercations between physicians and surgeons as to the limits of their respective departments took place, as in Germany and France. The Dutch authorities decreed, among other things, that no physician, but surgeons alone, should practice obstetrics. Along with the anatomist Albinus, above all others ranked the genial *Peter Camper* (1722–1789), who was equally celebrated as an anatomist and physiologist and as a surgeon. At school, he employed his leisure time with architecture, optics, the turner's trade and cabinet-making, and after completing his studies, became on the same day Doctor of Medicine and Doctor of Philosophy. Repeated travels to England, France, Switzerland, and Germany brought him in contact with the most illustrious men of his time. In 1750 he first became professor in Franecker, then engaged in anatomy and surgery in Amsterdam, later in Gröningen, where besides these sciences he taught botany and medicine, but between his courses always went back to his estate in the country. Finally he settled in The Hague, where as a common councilman he died. Camper showed unlimited intellectual penetration; he was a master in drawing, painting in oils, copper engraving, turning, wood carving, and to all this he added a great knowledge of mathematics. When the war in Holland incited him to a study of fortifications, the Dutch canals were strengthened against the sea according to his plans. He also mastered the literature of every department of knowledge, especially the history of art, and was acquainted with both ancient and modern languages. He was a patriot in the noblest sense, was always ready for pleasure. and on the whole a very amiable man. Camper's scientific activity covered all branches of natural science, especially anatomy and zoology, in which, for example, he spared no expense to have a rhinoceros brought from Africa or a whale's head from Greenland, in order to study the anatomy of the hearing organ. His most important works in surgery were his "Demonstr. anat. pathol." (2 Vols, 1760–1762). He wrote on the diseases of the arm and pelvis, separation of the os pubis, cancer of the breast, lithotomy, fistula of the anus, prolapsus of the anus, bone callus, causes of lameness in children, fracture of the patella and of the olecranon, and congenital hernia, and made drawings of intestinal rupture. Few scholars have written so many prize essays as he; the Académie de Chirurgie in Paris five times awarded him a gold medal for his works on the misuse of salves and plasters, the best form of truss, the influence on surgical diseases of different kinds of air and of waking and sleeping. He wrote an original work on the best shape of shoes (1781), which showed the anatomic disadvantages of a high heel and was translated into various languages. There was no other Dutchman who approached Camper. *Van Gesscher* defended the necessity of amputation against Bilguer, and wrote on curvature of the spine. Professor *Bonn* in Amsterdam wrote on callus, luxations, bladder incisions (which he recommended to be made above the os pubis), and was also the author of "de continuationibus membranarum," from which Bichat borrowed a great deal, word for word, without giving credit. *Van Der Haar*, and *Ten Haaff* the ship surgeon, and *Van Wy* the lithotomist of Amsterdam, should be mentioned.

In *Italy* the last century produced a few good surgeons, but no epoch-making ones, until the last two decades, when A. Scarpa taught. When in the middle of the century the Italian language was so popular in protestant Germany that students in Halle had their theses printed in Italian under the direction of their language teacher, medical and surgical writings began also to be accessible through translations ("Eschenbach's Choice of Best Essays," 1783, "Kühn & Weigel's Bibliotheque," 1793). To the Italians as well as to the Germans of that time Paris and London were the El Dorado of all science. Among those who are still remembered was *Guattani* in Rome, who through his monograph on aneurysms ("De Externis Aneur." 1772) is erroneously regarded as the actual author of indirect compression (see Leber); he wrote the first accurate introduction to esophagotomy, giving experiments made on animals. The name of *Vacca Berlinghieri*, director of the surgical clinic of Pisa, is attached to this operation through the discovery of a special knife. Professor *Bertrandi* deserves credit for the reform of medical study in the Sardinian States; he wrote a manual on operating. In operations he laid stress upon accident, which sometimes made the most difficult ones a success and the simplest a failure. In Naples Professor *Cotunni* discovered the water passages in the interior of the ear (1761), gave exudation of the lymph in the walls of the N. ischiadicus, or the N. cruralis as the cause of ischias and recommended, accordingly, a strong vesicant along the nerve (1764). *Pajola* was considered a skilful lithotomist in Venice, as was also the Papal body-surgeon, *Flajani* in Sassia, whose collection of bladder-stones was one of the finest in Europe. In Florence lived *Benevoli*, *Palucci* (later in Vienna), *Cavallini* and *A. Nannoni*, who introduced a milder and less painful treatment of surgical diseases into Italy (1761), and also contended sharply against the abuse of salves and plasters. In the hospital in Milan worked *Paletta*, *Monteggia* and *Moscati*, later body-physician of Viceroy Eugene, and who became known through his assertion that man was intended to walk upon four feet. Vrolik in Amsterdam wrote a special dissertation to combat this evolution view. *Nessi* was trained in Pavia and was the author of a handbook on surgery, translated into German; and Pavia produced the most famous of all the Italians, *Anton Scarpa.* He was a pupil and assistant of Morgagni when the latter became blind; he was professor of anatomy and surgery in Modena and after 1784 in Pavia, where he established a surgical clinic. Napoleon, as king of Italy, appointed him body-surgeon and until 1812 he conducted the clinic; then on account of weakness of sight, being otherwise very vigorous (which he attributed to hunting), he retired. He died highly honored at the age of 85 in the year 1832. His greatest service was the development of surgical anatomy, which gave a characteristic stamp to all his works; these were provided with the most excellent drawings. We owe to him a so-called boot for clubfoot (with which the patient could walk, 1803), some excellent works on aneurysms (1804), hernia (1809) and diseases of the eye.

The most important occurrence in *Spain* was the founding of an academy of medicine in Madrid (1732) and of a separate college of surgeons (1741). At the end of the century there were sixteen medical and three surgical schools (Madrid, Barcelona and Cadiz). The study of medicine, for which no great preparatory knowlege was demanded, was mostly theoretic; the professors lectured and were commanded by the Castilian council to expound the institutions of Boerhaave. After a surprisingly easy doctor's examination a still further examination in Madrid, costing sixty thalers, was required for permission to practice. A supreme court placed over all Spanish physicians ruled with a despotism which debased their position; without assigning reasons it imposed fines and revoked the license to practice. The consequence was that only people from the lower classes, without means or education, studied medicine. Nevertheless, the number of physicians was very large: every village possessed a young Æsculapius (in Madrid, with 160,000 inhabitants, there were 135) so that almost all were poor and very few could support their families. Frequently they went as beggars, on foot, from place to place and begged at the doors of monasteries for some soup and a little alms. Under such conditions it could be no great triumph for the surgeons when they, through their influence at court, obtained political equality with the physicians made evident externally by being allowed the Spanish cockade and lace-trimmed clothes and receiving military rank. In 1795 a medical school was established in Madrid with better principles of instruction and entrance was made dependent upon a better elementary education. From that time on everyone who wished to practice in Madrid had to be a doctor and pay 300 thalers. One of the most distinguished among the Spanish surgeons, who were chiefly educated in the French schools (des Nähere bei Ullersberger, *Deutsche Ztschr. f. Chir.*, ii, 2[illegible]3, 1873), was *Anton de Gimbernat*, who first discovered (1793) the cause of the strangulation of the crural rupture in the part of the crural arch called after him.

(To be continued.)

PRACTICAL NOTES.

Congenital Teeth, according to Dr. Ballantyne of Edinburgh, Scotland, as being ill developed and serving no normal purpose in the economy, are best removed soon after birth. These exceptions are exceedingly rare conditions, for out of Magitat's 500 cases in which the eruption of the first tooth was noted, in only 1 case were there teeth at birth. Further, it is recorded that out of 17,578 new-born infants at the Paris Maternity, in ten consecutive years, only 3 had teeth, or not much more than 1 in 6,000. These teeth, as may be foreseen, have little or no significance as regards the bodily or mental vigor of the infant carrying them. Certainly we may add they are not stigmata of a degeneration into savagery and are not to be regarded as freaks of development. Probably Shakespeare had much to do with fixing the superstition of a monstrosity in the popular mind by one of his best-known dramas.

An Epidemic of Infantile Paralysis.—Dr. W. Pasteur of London, before the Clinical Society of that city, read a paper on an epidemic of infantile paralysis occurring among children of the same family. The epidemic was limited to this household. Every one of the seven children in the family were attacked in rapid succession, within the space of three weeks, with fever of moderate severity, accompanied by severe headache. In three of the children, aged 11, 9 and 5 years respectively, paralytic symptoms supervened within seven days of the commencement of illness. The type of paralysis varied in the different cases. In one there was flaccid paralysis of the left arm; in another right hemiplegia with marked and persistent muscular rigidity of the arm and the leg, with more transient paralysis of the face and soft palate on the same side; while, in the third case, there was paralysis with rigidity limited to the left lower limb. In two more the primary fever was followed by tremors lasting a few days, while in the remaining two the primary fever was not followed by any nervous disturbance. As regards the cause of the outbreak, it was possible to exclude the acute exanthemata, diphtheria and influenza. The points of resemblance to infantile paralysis were held to justify the diagnosis in spite of the remarkable characters of the paralysis. The cases prove that a poison giving rise in one instance to a paralysis indistinguishable from the acute atrophic paralysis of childhood is also able to determine lesions in other parts of the nervous system. They further strongly confirm the growing impression that infantile paralysis is an acute infective disease.

Acetanilid and Boric Acid as a Surgical Dressing.—Dr. Fallas writes (*Medical News*) that he had been led to seek for a combination with acetanild which would fully inhibit suppuration. He first tried boric acid, acetanilid and carbolic acid, but the powders were not sufficiently absorptive, and the compound was too moist and pasty. After many trials he used this: Powdered acetanilid, 48 per cent.; powdered boric acid, 15 per cent.; powdered starch, finely sifted, 35 per cent.; carbolic acid, liquid, 2 per cent. This compound, though slightly moist and adhesive, has all the effect of a dry dressing; in fact, upon a wound it is, or becomes, perfectly dry. Its absolute comfort leaves nothing to be desired; under its use there is not from first to last the least discomfort, except a momentary smarting on the first application, too trivial to be worth mentioning. The most exquisitely sensitive sore can in a few days be handled with impunity. There is no odor, even of the carbolic acid. It absolutely inhibits suppuration where it can reach the wound surface, and it checks and quickly abolishes suppuration if that be already present. The powder should be changed twice a day, as long as there is a discharge to moisten it; soon, however, the wound becomes absolutely dry, and the powder may be left undisturbed for many days, and will still be found as dry as when applied, unless there is a pocket from which pus may come. Cicatrization is rapid and satisfactory. Obviously, this powder would be unsuitable for introduction into a cavity, unless it was intended that the cavity should granulate from the bottom; and in that case the possibility of easy removal of the masses formed by the pus soaking into the powder before the wound becomes dry, should be considered. On an accessible granulating surface and upon a sutured wound, it comes very near to being a perfect dressing.

Placenta Previa at the German Congress of Gynecology.—This subject was the question of the day at the recent Congress and Kustner stated that he had delivered eleven living infants out of sixteen cases of placenta previa treated with the colpeurynter. He adds that 500 grams are enough to distend it, and hoped that some instrument would be devised soon to perforate a "central" placenta without injury to the large vessels or to the child. Several observations were described which prove the existence of a cervical placenta previa. Schatz observed that if there is a connection between placenta previa and endometritis, as seems probable, the latter should receive careful treatment whenever it occurs, and the former would then be less frequent. If it could be diagnosed in the early stages, then artificial abortion and curettement would be indicated, but it is scarcely possible to diagnose it at first, although with skill and experience it can be detected at the third month. He orders repose, morphin and viburnum prunifolium, in case of hemorrhage during the latter months, continuing the last a long while. If hemorrhage persists, he tampons the vagina until able to practice the Braxton Hicks version. He does not rupture the bag of waters until the head is engaged in the pelvis or podalic version can be effected. He has not found the colpeurynter useful except after the rupture, when he inserted it into the uterus, with gentle traction on the tube. He tampons the uterus finally, if it does not contract sufficiently. Hofmeier remarked in his address that persistence of the hemorrhage after rupture of the waters is an indication in favor of a normal placenta prematurely detached. He disproves of leaving the vagina tamponed several days, and ruptures the bag as soon as labor has commenced, as the fetus pressing against the cervix will compress the bleeding parts. He follows it immediately with combined version and drawing down the feet. He recommended also the Braxton Hicks method, using the colpeurynter if the dilation is insufficient. The strength of the patient must be sustained with subcutaneous injections of salt solution, ether, or camphorated oil, injections of stimulants, etc. When impossible to reach the edge of the placenta, rupture of the bag and podalic version by tearing the chorion and amnion is the only resource. The child has usually to be sacrificed, but there are scarcely any means to save it in these conditions.

The Value of an Exclusively Meat Diet in Certain Cases of Chronic Gout.—At a recent meeting of the Medical Society of London, Armstrong (*British Medical Journal*, May 1, 1897) related that during the last few years he had given trial in various cases of gouty arthritis and recurrent renal calculi to a method of treatment based on the prolonged administration of only red meat and hot water. Very marked improvement had resulted, which had persisted in spite of gradual return to an ordinary dietary. His own observations on auto-intoxication in relation to the causation of gout and rheumatoid arthritis, had led him to believe that it is the complex chemic changes brought about by the admixture of red meats with carbohydrates and sugar that causes the excessive formation of uric acid. His plan is to give the patient a daily allowance of from one to four pounds of lean beefsteak, minced and cooked in various ways, the patient drinking from one to five pints of hot water, and avoiding all starchy, saccharin and fermentative articles of food. The effects observed are rapid diminution in abdominal girth, loss of fat and flabby tissue, increase in the quantity, and ultimate disappearance of urates, alkaloids and toxins from the urine. The joint-swelling greatly diminished, the aching and pain became much lessened and the mobility of the joints was considerably increased. The capacity for work, mental and bodily, was enhanced and the symptoms of mal-digestion and disassimilation disappeared. This treatment is indicated in obstinate chronic gouty arthritis, in recurrent uric acid calculi, in frequent and intractable migraine, and in cases of persisent gouty dyspepsia. It has proved especially useful in the presence of symptoms of amylaceous and intestinal dyspepsia and of excessive formation of hydrogen sulphid, urates, indican, skatol, creosol and other toxins. The carbohydrates, by their affinity for oxygen, interfere with the due oxidation of the tissues. Under the plan of treatment proposed, digestion is more complete and the processes of fermentation and putrefaction are kept within narrower limits, oxidation being more perfect and less waste being consequently left in the system. Whatever poisonous matters remain in the system are readily eliminated by the taking of the hot water, which also flushes the stomach, liver and kidneys. The treatment is irksome and trying, and must of necessity be carried out with great strictness; therefore its use should be confined to the more difficult cases. It should be prescribed but rarely and then only under the most careful supervision in cases in which the heart or kidneys are diseased. Used with due care it is a most efficient and brilliant addition to the therapeutic measures. In the discussion Haig admitted that certain cases of gout are benefited by a meat diet, as a result of its stimulating qualities. When it fails to act as a stimulant it is likely to prove dangerous.

Case of Fibrinuria.—The *British Medical Journal* quotes Dr. A. Klein's report, in a Vienna journal, of one of these rare cases in which fibrinous clots are passed in urine. Klein first analyzes the four recorded cases that had been previously recorded regarding this condition. The author's case was that of a male, aged 52 years, who had been ill for fifteen months with cough, headache and dyspnea on exertion, to which had recently been added swelling of the extremities and rigors. Examination led to the diagnosis of Bright's disease; the urine was acid, of specific gravity 1013, and contained a large quantity of albumin, with numerous hyaline and epithelial casts. Treatment consisted in hot baths and milk diet, and the patient improved considerably, the edema almost completely disappearing. Ten days after admission it was noticed that the urine, which was slightly alkaline, contained a large number of grayish-white clots, some rounded and others flattened, and varying in length from half an inch to four inches; some were as much as two inches thick. These, if allowed to stand, settled to the bottom, and the supernatant urine sometimes showed a further curious phenomenon in the shape of fine threads, which formed a network extending throughout the fluid. On shaking, this became detached from the sides of the vessels and formed a well marked clot; the urine had thus clotted just like a serous fluid. The amount of deposit remained constant, except just before a rigor, when it diminished to return to its former amount with the subsidence of the temperature. If the clot were allowed to remain in the urine for a few hours it disappeared entirely, probably by a sort of process of self-digestion. Chemic examination proved the clot to be composed of fibrin. The urine from which it was deposited showed, as compared with that at other times, alkalinity, much diminution in solid content, an especially minute amount of phosphates, but an enormous quantity of albumin. There could be no doubt as to the renal origin of the fibrin, but it was very hard to define its pathologic cause. Evidences of nephrolithiasis, kidney abscess, etc., which had been present in former cases were here wanting; nor did hematuria ever appear. Klein attributes the coagulation to the alkaline reaction, the large quantity of albumin, and the almost complete absence of phosphates; it bore also, no doubt, some relation to the sudden rigors and rises of temperature. Some time after the completion of the experiments the patient became worse and died; the kidneys were found to be in a condition of amyloid degeneration, and their tubules contained hyaline masses and threads giving Weigert's reaction for fibrin. Klein adds the notes of analyses of two other kinds of clots. The one was found in the urine in a case of cystitis; it consisted of a nucleo-albumin inclosed in a capsule of mucin. The other was a cast from a patient suffering from plastic bronchitis, and this failed to give the fibrin reaction either in bulk or in section; it consisted of mucin, and contained large colonies of diplococci.

A Rapid Method of Fixing and Staining Blood-Films.—Gulland (*British Medical Journal*, March 13, 1897, p. 652) describes briefly a method of making permanent microscopic preparations of blood that he has learned to follow and that gives accurate fixation, is rapid in execution and is sufficiently flexible to avoid the spoiling of preparations in consequence of even considerable deviations from the exact method. A small drop of blood, drawn in the usual way, taken up on the center of a cover-glass held with forceps and distributed evenly between that and another cover. The utmost care must be taken to avoid all pressure, as the after-appearance of the red corpuscles depends almost entirely on the way in which this maneuver is carried out. The covers are then gently and rapidly slid off one another and dropped, with the wet side downward, into the fixing solution, which consists of absolute alcohol saturated with eosin 25 c.c., pure ether 25 c.c., mercuric chlorid in alcohol absolute (2 gm. to 10 c.c.) 5 drops (more or less). The quantity required for use at one time, which may be from 5 to 10 c.c. for four cover glasses, should be poured into a wide-mouthed bottle or a flat dish, and may be used several times over if it be preserved from evaporation. The three liquids may be kept in separate bottles and be combined in the required proportions when needed. The fixation of the elements is practically instantaneous, but the cover-glasses should be allowed to remain in the solution for at least three or four minutes, in order to fix the film to the cover. They are then taken from the solution with forceps and washed rapidly but thoroughly by waving them to and fro in a small basin of water. They are then stained for one minute (not longer) in a saturated watery solution of methylene-blue and again rapidly washed in water. Next, they are quickly dehydrated in absolute alcohol (which at the same time removes the excess of methylene-blue), cleared in xylol and mounted in xylol balsam on a slide. The whole process need not occupy more than six or seven minutes, although any portion of it may be prolonged without injury to the specimen. The fixation may be continued for twenty four hours and the washing for the same time, but if the staining with methylene-blue be prolonged for more than a minute or two it becomes necessary to use an inconveniently large amount of absolute alcohol to remove the excess of the stain, and the eosin may be washed out at the same time. The red corpuscles are stained pink, the nuclei a deep blue, the bodies of the leucocytes various shades of pink; the eosinophile and the basophile granules in the leucocytes are well brought out; the blood-plates are stained a fainter blue than the nuclei; and organisms also are well stained. Any other stain that is soluble in alcohol and is not precipitated by mercuric chlorid may be used instead of eosin; and the stain may be omitted from the fixative altogether, so that the cover-glass after fixation in the alcohol-ether-mercuric-chlorid solution may be stained in any way that is desired. The method is also useful for fixing pus, sputum and anything else that may be spread in a film; only with these it is advisable to prolong the fixation.

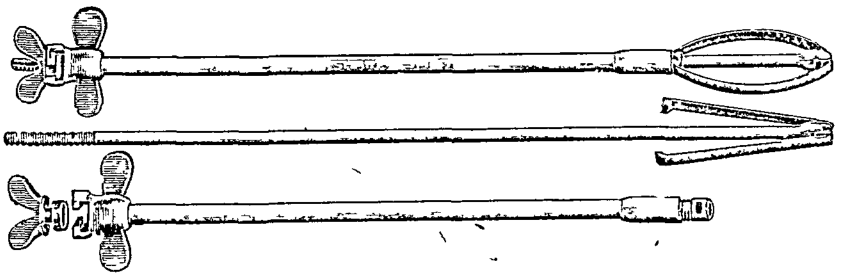
Gunshot Wounds of the Chest with Penetration of the Lung; Extraction of Bullets; Recovery.—Musgrove (*British Medical Journal*, May 29, 1897, p. 1342) has reported the case of a man, 26 years old, who was found in a field in a state of collapse, bleeding profusely from the front of the chest. He was conscious and stated that five and a half hours before he had fired two bullets from a revolver into his chest, with the intention of killing himself. On removing the clothes saturated with blood, after transporting the man to his home, two circular wounds were found in the precordium, one over the fourth rib and the other in the fourth interspace, both blackened with gunpowder and both bleeding profusely. From the lower wound also air was escaping at each expiration, whilst there was emphysema of the cellular tissues on the left side, extending up into the neck and down to the level of the lower ribs. On probing these wounds the track of the upper one was found to pass outward along the rib, while that of the lower led almost directly backward, with a slight inclination to the left. The probe was passed along the track of the lower wound for six inches backward through the cavity of the chest. No bullet could be felt in either of the wounds. On account of the weak condition of the patient no further search was possible until a little later, when by turning the patient upon his right side and making incisions along the inner border of the scapula and using a probe the two bullets were found, the one corresponding to the upper wound in front lying in contact with the outer aspect of the fourth rib, along which it had evidently run, while the other lay projecting between two ribs and had to be dragged forcibly out by forceps, along with a piece of bone (apparently from the anterior part of the fourth rib) with which there were entangled fragments of wool, corresponding in color and texture to those of his undershirt. These bullets were of large size and had sharp projecting spiral spurs on their surface, evidently due to their having been too large for the bore of the revolver. As ether and chloroform were inadmissible, owing to the patient's condition, local anesthesia was effected by means of ethyl chlorid spray and hypodermic injection of cocain. The incisions were afterward packed with boric acid lint soaked in carbolic lotion. For three days the respirations were rapid, but the pyrexia was slight. On the second day an attack of severe dyspnea occurred. There was no expectoration or cough until the fourth day, when a small quantity of plum colored sputum was brought up and also once or twice daily until the tenth day. On the first appearance of the sputum the odor of the breath became offensive, but it became normal again in the course of a few days under the use of a creosote spray. No lung-tissue was found in the sputum. The incisions in the back were dressed daily, being packed with lint as at first. From the fourth to the sixth day a rubber drainage-tube was substituted, but was subsequently discarded for the former. On about the fifth day dulness and other signs of pleuritic effusion on the left side appeared, and on the twenty-third day of the illness, when this dulness had risen to the level of the spine of the scapula an exploratory trocar was introduced and four ounces of transparent blood-stained fluid withdrawn. On the repetition of this operation a week later no fluid could be obtained, but the costal pleura was felt to be enormously thickened. The dulness cleared up, leaving a slight impairment of the percussion note. The posterior incisions healed up in the course of a month, and several weeks later the patient was able to take a long walk without dyspnea or fatigue.

NEW INSTRUMENTS.

A NEW CURETTE.

BY COURTNEY L. SMITH, M.D.
AURORA, ILL.

Curetting the uterus for endometritis, subinvolution, retained products of conception, etc., has come to be a very common operation. It is deservedly recognized as a valuable procedure in these conditions, and accomplishes speedily what local treatment or the exhibition of medicines can not. It needs no argument to prove that unless curetting is thoroughly done, and the material scraped off is removed from the cavity of the uterus, the operation is apt to do more harm than good. I think the experience of the majority of physicians will bear me out in the statement that there is a large element of uncertainty in performing curettage with the ordinary spoon curette. We are never sure, in using this instrument, that we have not neglected to reach some portion of the mucous surface, or that some shreds of tissue have not been left behind to cause trouble.



The instrument shown in the annexed cut was designed to overcome these objections and adds much to the ease of performance and the safety of the operation. The main part of the instrument consists of two cutting or scraping blades, which can be stretched flat or bowed out in the form of an ellipse by a rod and screw. After dilatation of the cervix in the usual way by a branched dilator, the closed curette is readily slipped up to the fundus. The screw is now turned, thereby separating the scraping blades and drawing the stretched membrane tight down upon them. Rotation of the instrument removes the diseased tissue, much or little being scraped away as we desire. A backward turn of the screw straightens the blades and the instrument is withdrawn.

An examination will now show that the space between the blades is filled with shreds of tissue brought out with the instrument. A plunge in sterilized water cleanses it, it is again introduced slightly dilated and given a turn or two and drawn out with the remaining shreds. The products of the operation are now removed with the exception of a slight amount of blood and small clots, which are readily washed out by the irrigator.

The advantages claimed for the instrument are the following:

1. It is easily introduced and manipulated.
2. Every portion of the uterine mucosa is curetted as the instrument is revolved.
3. As it is withdrawn all shreds of tissue are removed with it. And
4. There being no sharp angles or points to go through softened tissues, there is no danger of perforating the uterine wall.

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SATURDAY, AUGUST 14, 1897.

THE ANTIVIVISECTIONISTS AND THEIR LITTLE BILL.

Whether or not we may console ourselves with the thought that many of those posing as antivivisectionists are degenerates or perverts, we must remember that Senate Bill No. 1063 is still on the calendar and will undoubtedly be taken up at the next session. Missionary work must be done during the recess of Congress. Here the general practitioner may be of infinite service in giving his Senators and Representatives, wherever they are found, his opinion why the bill should not become a law. The infamous attempt to stifle physiologic experiments by the enactment of the bill can be defeated, if the profession will see to it that each Senator and Member of the House of Representatives is furnished with the necessary reasons why the measure should not pass.

Modern medical science rests almost exclusively for its facts upon animal experimentation; without it the beneficent effects of vaccination would have been unknown, physiology would have been a collection of fables, and bacteriology still in the future. The great practical benefit to mankind through the advanced state of knowledge in medicine and surgery should be made clear to our legislators, and the effect of passing crippling laws should be clearly explained. The bill can not be beaten by making faces at the misguided perverts or even by pointing out their lack of mental equilibrium; we must demonstrate fully and conclusively the evils that will flow from the enactment of a law stopping animal experimentation; that man who is a little lower than the angels, is yet immensely superior to the lower animals, and that the same law of self-preservation that causes us to slay and eat, causes the humanitarian to use animals to work out problems for the prevention of the disease, through development of human wisdom, for the preservation of the human species.

The higher value placed upon human life is the glory of modern civilization, and notwithstanding the existing necessity for enslavement and use of the lower animals we are far kinder to them than the ancients. The ancients, who roasted their enemies, tore them limb from limb, harrowed them with "harrows of iron," tortured them with fire, made them beasts of burden when great public works were to be erected, were even more cruel and careless of the lives of animals. If they occasionally worshiped an animal, it was on account of some particular benefit conferred, or dread of evil to come, a habit which JUVENAL set forth with his pungent sarcasm.

> The serpent-eating ibis these inshrine;
> Those think the crocodile alone divine;
> Then in another place you may behold
> The statue of a monkey shine with gold.
> Here men some monstrous fish's aid implore,
> And there whole towns a grinning dog adore.
>
> —JUV. XV. 2.

Nearly all that was known of anatomy in the early times was obtained by dissection of living and dead animals. By command of ALEXANDER the Great, ARISTOTLE made regular vivisections on animals, and later PTOLEMY PHILADELPHUS, apparently to outdo ALEXANDER, gave HEROPHILUS and ERASISTRATUS permission to dissect criminals condemned to death, and a great number were used in that way, but so far as history informs us, no subsequent ruler ever gave permission of this sort, and through all the centuries down to the present time, animals have been used to increase the stock of human knowledge by every principal investigator in the field of anatomy and physiology. Now, by reason of increased knowledge brought by animal experimentation, serum and toxin therapeutics, we in this generation have gone a step further and have discovered means of arrest and cure of some of the worst scourges known to mankind. Shall the cranks prevail and by creating false sentiment succeed in preventing the further development of bacteriology? We trust not brethren, but *let us beat Senate bill No. 1063!*

NOSTRUMS AND PHARMACISTS.

The report of a committee on a prize for an essay on price-cutting by druggists (signed by the dean of the Chicago College of Pharmacy, by a member of the American Pharmaceutical Association, by a wholesale jobber in drugs who largely advertises abortifacient nostrums, and by the "promoter" of a proprietary "tonic" advertised only in the daily press), announces that the highest achievement of the pharmacal skill of the close of the nineteenth century, is the nostrum, and eulogizes this "grand result" of "scientific" acumen in the fulsome style so characteristic of the "promoters" of dubious enterprises. This fulsome eulogy which seriously reflects on hundreds of reputable pharmacists is as unjust to them as it is historically false. Crabbe, nearly a century ago, sang ancient patent medicines in "The Borough":

> With monstrous promise they delude the mind
> And thrive on all that tortures human kind;
> Void of all honor, avaricious rash,
> The daring tribe compound their boasted trash;
> Tincture or syrup, lotion, drop or pill,
> All tempt the sick to trust the lying bill,
> And twenty names of cobblers turned to squires,
> Aid the bold language of these blushless liars,
> How strange to add, in this nefarious trade,
> That men of parts are dupes by dunces made;
> That creatures, nature meant to clean the streets
> Have purchased lands and mansions, parks and seats;
> No class escapes them, from the poor man's pay
> The nostrum takes no trifling part away.

The patent medicine traffic herein commemorated had, however, begun more than half a century previously. In 1711 in New Jersey a Mrs. McMaster sold "Tuscarora Rice a Cure for Consumption." Concerning the eighteenth century patent medicine trade in other English-speaking countries Mr. Alpe states (*Pharm. Journal* and Transactions, 1887), that the *Gentleman's Magazine* for 1748, contained a "Pharmacopeia Empirica," which shows that patent medicines were exceedingly numerous in England in the eighteenth century. The "Pharmacopeia Empirica" was compiled that "persons who could not afford the expense or might not care to be governed by the advice of the physician and apothecary, might know where to apply on occasion for an appropriate remedy." It contained 202 patent medicines, 90 per cent. of which were manufactured in London. This list, therefore, was far from complete. Patent medicines for gleet, gonorrhea, syphilis, impotence and sterility are exceedingly numerous. One man advertises "belts" for cure of "leprosy," at $1.50 each. "Necklaces" for "cutting teeth" are advertised $1.25. "Girdles" for the "itch" are advertised at exorbitant prices. Among the patent medicines mentioned are "James's fever powders" at $1 per "paper;" "Godfrey's cordial" at 75 cents a bottle; "Daffy's elixir" at 63 cents; "Bateman's drops" at 25 cents; "Stoughton's bitters," and "Betton's British oil." The highest priced articles are "Dr. Bellost's pills" for rheumatism, at $5.00 per box, and "Profely's pills" for syphilis at $2.50.

Mr. Alpe gives a list of patents for medicines, beginning with one in 1711 by Timothy Byfield, described as "A new and most vsefull chemicall preparation and medicine publickly known" by the name of his "sal oleosum volatile which, by abundant experience, hath been found very helpful and beneficial as well in uses medicinall as others and will very much tend to the public use and benefit of our subjects." Robert Stoughton patented his "elixir magnum stomachi" in 1712 (now surviving as a bar room bitters). The next patent was in 1722, obtained by Robert Eaton for a "styptic" medicine. Benjamin Okell came next (1726) with "Dr. Bateman's pectoral drops." "Betton's British oil" was patented in 1742; "Hooper's female pills" in 1743; and "James's fever powder" in 1744. About this date the patenting of medicinal compounds became more common—three or four in a year.

Some of these display polypharmaceutic tendencies. Thomas Greenough got a patent in 1744 for a toothache tincture containing twenty-six ingredients. Nathaniel Godbold obtained one in 1785 for a vegetable balsam, into which he had worked fifty-two ingredients. In 1805 Richard Brandreth the elder was given a patent for some constitutional pills with ninety-one ingredients. Mr. Godbold patented his balsam in 1785, and "improved" upon it in 1798. "John Ching's worm lozengers" were patented in 1796, and "improved" in 1808 by Rebecca Ching. The object of the "improvement" was to evade the time limitations of the patent laws. Some modern medicinal preparations seemingly originated in these patents which, however, were often prescriptions of physicians stolen, "improved" and patented. "Friar's balsam," according to Mr. Alpe, originated as a patent obtained in 1777, by Robert Grubb, for a certain medicine called the "Friar's drop for cure of venereal disease, scurvy, rheumatism, strangury and gleet, without any electuary or pills, in every stage of the complaint, or without any confinement or particular regimen." To make the "drops" rectified spirits are added to calomel, purging anatomy, guiacum wood, balsam Peru, extracts of hemlock, sugar candy, oil sassafras, tartaric acid, and gum Arabic.

Patent nostrums are fetich survivals of polypharmacy of the medicine men. Their atavistic persistence in the nineteenth century is a reflection alike on popular intelligence and commercial honesty. The signature of the dean of a pharmacy college to such a fulsome endorsement as that described can not but be regarded as evidence of unfitness for the position of teacher. The American Medical Association, by creation of its Section of Pharmacy, has endeavored to elevate the status of the pharmacist. Performances like these render the performers (if a member of the American Pharmaceutical Association) *persona non grata* as a delegate to the Section on Materia Medica and Pharmacy of the American Medical Association.

HIS ROYAL HIGHNESS, THE PRINCE OF WALES, F.R.C.P.

The London *Lancet*, of July 24, devotes an editorial to an explanation of the significance, as it understands it, of the recent conferring of an honorary fellowship of the Royal College of Physicians on the Prince of Wales. Judging from the tone of this leading editorial, for we have no other source of information, the appointment has been looked upon somewhat askance by certain members of the medical profession in Great Britain. The ordinary significance of an honorary degree is, that its recipient possesses eminently respectable, if not pre-eminent qualifications in the particular branch of learning represented by the degree, and to make such a bestowal upon one who has notoriously had no special training, solely on account of his official position, has upon its face a certain stamp of grotesque impropriety. The *Lancet* admits that the granting of an honorary medical title, no matter who is the recipient, will seem ridiculous to some, if he has had no medical training and can claim no medical knowledge, and in this country there is no doubt that such a proceeding would meet with general ridicule; and the learned body or corporation granting such a distinction would suffer more or less severely in public estimation. One can not here speak as an expert on the special impropriety of the action of making the heir to the British throne an honorary member of our profession, but it is evident, from the semi-apologetic character of the *Lancet's* leader, that something of the sort was more or less appreciated by our transatlantic brethren, and hinted if not freely and openly discussed. Some members of our profession evidently questioned whether it was materially elevated by making official position, even the highest, a qualification for its honors, and in a strictly medical and scientific point of view their doubts are amply justified. Our contemporary, however, probably states the more general and popular opinion of our British *confrères* when it says that, as representative of her Majesty the Queen, it is perfectly appropriate and germane to his position that he should enjoy high official status in all national institutions, including the higher professional corporations, and that his gracious action in the acceptance of the compliment (it does not venture to call it an honor) is, in its opinion, "a pleasing recognition of the whole profession of medicine."

In the light of the *Lancet's* editorial, and considering the peculiarities of British political and social institutions, we must admit that there is much force in its way of stating the case, and that the ridiculous aspect that is at first sight most obvious is very materially softened down. It would not take well in this country to have an honorary M.D. bestowed on President McKinley or Vice-president Hobart on the sole ground of their official rank, and neither they nor the profession would feel that honor had been bestowed or received; but circumstances are not the same in Great Britain, where so much depends on recognition by royalty and the aristocracy. One has only to glance at the rosters of English medical and charitable institutions to see how important such recognition and patronage is regarded. If this "pleasing recognition" of the medical profession will in any way or to any degree elevate or improve its social status in Great Britain, we in this country can only express our satisfaction with such a result. It is not so very long since this Journal had occasion to notice what appeared to be a lack of due recognition of the medical profession by the highest social arbiters in Great Britain, and again to notice some British exceptions to its criticisms. If we could take this acceptance of a medical honor by the Prince of Wales as in any way, directly or indirectly, intended as an answer to such criticism, the critics may congratulate themselves upon having had some influence in producing what the Journal trusts will be a benefit to our English *confrères*. The Journal would also congratulate H. R. H. the Prince of Wales on having been made an honorary member of the profession which above all other secular ones has cherished and maintained a high standard of honor and ethics, and which is second to none in its honorable history and traditions. Of all the various honors he has received he need not consider this among the least, even with full recognition of the fact that its conferment is solely due to the special conditions existing in a country where honors are hereditary and simple manhood or scientific merit are secondary matters as regards social consideration and standing.

KOCH'S EXPERIMENTS WITH THE RINDERPEST.

The recent issue of the first official reports of Koch's investigation of the rinderpest in South Africa is attracting much attention to this subject from the African and Indian bacteriologists and veterinarians; and there is strong reason to believe that his experiments in connection with the immunization of cattle from this deadly plague will result in the saving of millions of animals. The real import of Koch's work can only be understood when we consider that a low estimate of the annual monetary loss from cattle destruction alone, by this disease, is over thirty million dollars. There is an extra significance in the fact that this loss is sustained by a people generally poor in other than agricultural ownings.

The details of Koch's actual system of practical procedure are of such interest as to command the attention of every one interested in the development of the serum treatment of disease, and the following epitome is offered to our readers.

On Koch's arrival in South Africa in December, 1896, he found a belief among the Free State farmers that the bile of an animal dead from rinderpest, mixed with blood or other liquid, would cure the disease. Experiments with bile as a curative agent were negative. Koch then directed his attention to the inoculation of cattle with cultures of the alleged specific microörganisms of rinderpest. Such inoculations did not produce any symptoms of the pest, and offered no protection. Having failed in confirming any of the so-called discoveries of the origin of rinderpest, experimentation was directed to the main object of the visit to discover a process of attenuation of the virus of rinderpest, so as to use it by inoculation as a certain preventive measure.

Koch found that a mitigated rinderpest could be produced in sheep and goats, animals ordinarily less susceptible to the disease than cattle. Inoculations were continued to the seventh generation, and the later serums produced mild manifestations of the disease. In the hope that by passing the disease through the smaller animals it might be given to cattle in a mild but protective form, Koch inoculated four heads of cattle with the virus of two sheep and two goats, after it had passed five times through the latter animals. The two cattle inoculated with the sheep virus exhibited a violent and fatal form of rinderpest, giving the inference that passage through the sheep intensified rather than lessened the strength of the virus. The results of the inoculations with the goat virus were more encouraging and further experiments were made with the goat virus exclusively, showing very slow, but actual attenuation of the infection by passage several times through the animal. None of the goats died, but one typically infected animal was killed, and lesions similar to those seen in cattle dying at the same stage of the disease were noticed. In this connection Koch says: "These experiments explain satisfactorily the widely different statements concerning rinderpest in eep and goats. Many farmers are of opinion, and this I have seen myself on rinderpest farms in the Free State, that these animals may graze with diseased cattle without contracting rinderpest, while, on the other hand, some have reported that the pest had appeared in their flock of sheep and goats, and carried them off in large numbers, after it had already disappeared among the large stock. My opinion on this subject is that sheep and goats at first contract rinderpest in such a mild form that it can not be diagnosed, and that the pest gradually becomes more virulent through being continuously propagated within these animals' systems. Then the symptoms became naturally more distinct, and in some cases the disease may even take a fatal course."

No other animals than those mentioned were found susceptible to the disease, and birds were particularly exempt from the action of the rinderpest virus.

Chemic attenuation of the virus was unsuccessful; even glycerin, which preserves almost all similar infective materials, destroyed the potency of the virus. Salt solution and distilled water failed to give any protection or immunity. Dessication for a period of four days, rendered the virus innocuous, and failed in protective action.

The most important and the really practical experiments were those relating to the animals recovered from rinderpest, commonly called "salted" cattle. Inoculations with rinderpest blood failed to produce symptoms in the "salted" animals, while the "unsalted" cattle promptly died of genuine rinderpest. The serum of the blood of "salted" cattle was then injected into the susceptible animals. At first, 100 c.c. of serum were used, and on the following day 1.5 c.c. of rinderpest blood was hypodermically injected, without significant symptoms, and on the sixth day there was a reinoculation with negative results. Another animal was inoculated with a mixture of blood and serum without injury. Thus it was difinitely established that the serum of the immune or "salted" cattle possessed a certain protective power, and it is from this fact that the important results will be eventually obtained.

The protective power of the serum from the immune animals is not very great, and probably only lasts a short time, and the quantity of serum necessary for general immunization is too great to render the inoculation on a large scale practicable. However, animals have been immunized to such an extent by a mixture of serum and virulent rinderpest blood as to withstand an injection of 20 c.c. of rinderpest blood, a ten-thousandth part of which is the ordinary fatal dose. Such immunity Koch judges to be equal to that of the "salted" cattle. Koch also discovered that the bile of cattle dead from rinderpest, injected under the skin in 10 c.c. doses, is sufficient to render healthy cattle immune by the tenth day at the latest. Four weeks afterward an injection of 40 c.c. of rinderpest blood caused no injurious results.

In concluding his report Koch says: "Both these above-mentioned facts convince me that rinderpest can be eradicated with but little difficulty, and within a comparatively short time, by putting these methods into practice. The method of immunizing cattle with serum may be used in order to separate from infected areas those tracts of country which are still free from the scourge by means of forming a broad belt between them in which all the cattle are inoculated with the vaccine. The protective properties of the bile will be of inestimable service in infected parts. Nearly every case of rinderpest supplies a greater or lesser quantity of vaccine for those animals which are still healthy."

THE ADRENAL TUMORS GROWING OUT OF THE KIDNEY.

The study of the ductless glands seems to be just making its beginning. The thyroid presents an interesting example, but as yet our knowledge of this organ remains almost as unsatisfactory as complete ignorance. The absence of the thyroid determines a pathologic condition known as myxedema, its abnormal activity another condition known as exophthalmic goiter. The former disease has been successfully treated by the implantation of pieces of living thyroid or by feeding fresh or dried thyroid tissue, and the latter has in some cases been cured by the removal of the enlarged or vicious thyroid gland.

An analogous condition prevails in the case of the adrenal glands. When these glands are destroyed by tuberculosis, or by other diseases, a condition known as ADDISON'S disease is instituted. This disease is characterized by a bronzing of the skin, a loss of strength and a rapid, small soft pulse. All the other symptoms of a wasting disease come on and life ends in asthenia. There is however, a condition of great hypertrophy or hyperplasia of the adrenal tissue which shows itself in various degrees of toxicity. In the exaggerated form the patient has a slow pulse of remarkably high tension, a very light colored skin and many of the external appearances of renal sclerosis. These patients however pass normal urine and sometimes die of apoplexy even though quite young. The autopsy reveals adenoid tumor of the kidney resembling the adrenal tissue with or without similar metastatic tumors in the lungs or bones. The lipomas of the kidney so often reported in the literature are, many of them at least, of adrenal origin.

There has been no proper exposition. in our medical literature, of the phenomena of adrenal tumors in the kidney. GRAWITZ first pointed out the origin of these neoplasms (*Langenbeck's Arch.*, vol. 30), and many contributions have been made to the pathologic study by the aid of the physiologic researches of CYBULSKI and SZYMONOWICZ. (*Gazette lekarska*, 1895, XV, and *Pfluger's Archiv*, 1896, LXIV.) These investigators found that the removal of both adrenals produced the small rapid pulse of ADDISON'S disease, and that the injection of the adrenal extract produced a slow pulse of high tension. The injection of the venous blood from the adrenals of one animal into the veins of another, produced the same effect as the adrenal extract. OLIVER and SCHÄFER confirm these observations. Any one may confirm them, in a measure, by using the adrenal extract for its digitalis-like effect.

To the diagnostician and surgeon these phenomena are of the greatest interest. There came under the writer's observation some years ago, a man complaining of his inability to give up the morphin habit. He began to use the drug for pain in the back and severe headaches, which were accompanied by violent palpitation of the heart. After long confinement in a hospital with a gradual diminution of the morphin and the substitution of small doses of atropin combined with careful diet and regular bathing, his health improved, but the pain in his back remained. His headaches were almost constant and only partially controlled by atropin. An examination of his back now disclosed the presence of a tumor just under the last rib and apparently in connection with the kidney. With the patient's consent this kidney was explored through a lumbar incision and found to be attached to the palpable tumor. It was accordingly removed. The man recovered from his pain and headaches and the tumor was found to be an adrenal parathelioma growing out of the middle of the kidney. In another case long taken to be renal sclerosis, the patient was suddenly attacked with symptoms of pneumonia without fever. This was followed by a pleuritic effusion of a bloody color and later by death. The pulse was all the time of the highest tension although the skin was pale. At the autopsy a large adrenal tumor of the kidney was found with multiple metastatic tumors in the right lung.

The size of the tumor does not always determine the virulency of the intoxication. In some cases a small tumor results in such a virulent product that the young sufferer dies of cerebral hemorrhage, while in other cases the tumor reaches a prodigious size without any marked circulatory symptoms.

It is at least remarkable that the increase in the thyroid produces an intoxication, often fatal, with symptoms almost the opposite to those produced by an analogous increase in the adrenals, and that the destruction of the thyroid is accompanied by a remarkable condition (myxedema), the most pronounced symptom of which is related to the skin, while the destruction of the adrenals results in a very different condition (ADDISON'S disease), the most manifest symptom of which is also found in the skin.

These analogies are certainly suggestive, even to the therapeutist, and ought to lead to some rational use of the much abused glandular extracts.

THE SECTION ON PRACTICE.

If nothing had been produced at the Semi-Centennial outside of the papers of this Section, the meeting would still have been of immense value to the American Medical profession. The current number of the JOURNAL containing the important discussion and committee report on serum diagnosis is one that no practitioner can afford to be without, and Dr. MUSSER and his colleagues have set a model that will be very difficult to surpass.

These papers, however, valuable as they are, should serve the additional purpose of further stimulating effort, and realizing to the full extent the wise purpose of the founders. There is much room for original experimentation and it is a matter of congratulation that the subject of prize essays has again been revived with so bright a prospect of ultimate success.

The JOURNAL, as it is now produced, covers each year nearly the whole field of medicine, as the Sections now number twelve.

The already great but growing membership brings that material power which will insure success. Let the whole prof [illegible] in [illegible]ATION the determination to show the world what the American medical profession can do for science and humanity when united in collective effort.

BRITISH MEDICAL ASSOCIATION—SPECIAL RATES.

The Grand Trunk Railway System will sell reduced rate tickets to all physicians attending the British Medical Association meeting at Montreal, August 31 to September 5. Tickets will be sold August 28, 29 and 30, good returning three days after adjournment of the convention, at rate of one and a third fare for the round trip. Through Pullman palace vestibuled sleepers daily between Chicago and Montreal. For tickets and sleeping car accommodations apply to L. R. MORROW, G. P. & T. A., 103 Clark St., Chicago.

CORRESPONDENCE.

Treatment of Typhoid Fever.—An Answer.

DAVIS, W. VA., Aug. 3, 1897.

To the Editor:—In the JOURNAL of July 10 I notice an article on the "Treatment of Typhoid Fever," by Dr. Upshur of Richmond, Va., and his criticism of Dr. Woodbridge. His treatment especially attracted my attention. He says: "Dr. W. makes claims of such brilliant results that one is startled, and the question arises, have I been groping and blundering all these years?" In the outset he desires it understood that he has never used it, not because of any *spirit of prejudice or unfairness*, but because upon *careful* consideration the brilliant results *claimed*, to *his* mind, disproved the facts, and he did not feel willing to trifle with the lives of his patients by uncertain experiments. He has never tried it. How can we know of anything unless we try it? How does the Doctor do when he hears of a new drug, for instance, antitoxin in the treatment of diphtheria? Did he use it after reading what it did at the hands of others? Does he not use vaccine virus that was hooted at by many for years? Many wise and learned physicians laughed at it and cried it down, but what physician does not now use it, believing firmly in it? It was an experiment at first, but after it was perfected, tried and proven, it became a *fact*. How can he judge of a treatment (no matter what) if he does not give it a trial—a fair trial? Does he practice medicine and never try what others recommend? Does all his practice consist of what he knows most positively are *sure cures?* Can not others teach him? Have we to depend on foreign physicians entirely? Have we not just as wise, just as learned men in our own country as they have across the water? Is it not just as possible for the Woodbridge treatment to succeed as for antitoxin?

I have used Woodbridge treatment exclusively for two years, without the loss of a single case. If I should have typhoid fever I should feel safe, if I took it or had a physician give it who understood just how to use it. I lost from two to five cases every year before I used it. Does Dr. Upshur think the ability to diagnose typhoid fever is confined to himself and a certain few others? He says, "there *must* have been a mistake in diagnosis." I used for years iodin and carbolic acid and cold baths, and had good nurses. I had a case last year who had four hemorrhages from the bowels, temperature ranging from 104.5 to 105.5 degrees, and she got well in three weeks. I used the Woodbridge antiseptic tablets. Her husband was sick with the same disease this summer, between nine and ten weeks, and is really not well yet. He was on the old treatment and under a physician who does not believe in Woodbridge. Since I have been using the Woodbridge antiseptic tablets I have not had a case sick over four weeks, and they rarely run more than three before being discharged. Only the one mentioned had hemorrhage from the bowels and four or five deliriums, which soon passed off. Several cases came to my office with temperature 105 to 105.5 degrees when I first saw them. Do I make mistakes sometimes in diagnosis? Yes, and so do all of us; Dr. Upshur included.

When I see physicians all around me using the old treatment and working and fighting with might and main with this dread disease, I am all the more ready to sound Dr. Woodbridge's praises for his wonderful discovery, and add my voice to the many in urging all physicians to try it and prove its efficacy. I saw one of our physicians lose four cases in one family on the old treatment. The Doctor was discharged and another one called in, who, although he did not use the formula of Woodbridge, used a part of it—thymol, guaiacol carbonate and hydr. chlor. mite, and brought the rest of them through.

Dr. Upshur seems to think that Dr. Woodbridge breaks a law of ethics. I can not see how he does, for if Dr. Upshur would recall how often he puts the make of drug he wants on his prescriptions, he would see in some measure while that is a sort of advertisment for the firm, his motive is to secure what he considers the best make for his patient. I often do this myself, for I have carefully watched and know whose preparations act best for me. Dr. Upshur speaks of the years of experience of the great men past and present, of the convincing truth of their writings, etc. It is true in most instances, but can not others come forward thinking and studying and find out new things and improve on what has already been found out and teach you and me? To sum up: What is our object in this great science of medicine? Is it not to relieve suffering, to cure disease, to get our sick ones strong again, and the sooner the better? I for one intend to read, to study, and to work, but use good common sense with it, and do my very best for my patients. I am heart and soul with Dr. Woodbridge, and firmly believe he has made a great discovery and advise all my brother physicians, who have not already studied and tried it, to do so. Watch it carefully and you can not fail to have your efforts crowned with success. Anyway, do not condemn before giving it a fair trial.

Fraternally, B. M. SMITH, M.D.

Criticism of a Critic.

CLYDE, N. Y., July 28, 1897.

To the Editor:—In the number for July 24, page 196, I notice under the title "The Jubilee Meeting," that among your exchanges there is one journal, *Buffalo Medical and Surgical*, which is deeply grieved that the representative of the anarchistic element of the profession of this State—"president of the Medical Society of the State of New York," was *not* allowed to participate in the proceedings," etc.

The writer also laments that "a great medical society" was thus ignored.

If the writer was not in his swaddling clothes at the time, does he fail to remember the insurrection in which he and his fellow-revolutionists were engaged—an insurrection the purpose of which those revolutionists boldly proclaimed was the expunging of the Code of Ethics from the Constitution of that "great medical society" by which, since 1807, it had been governed?

This mournful state of feeling, mingled with much pity, is so intense that he sorrows because Dr. Davis was not magnanimous enough to allow it, so long as it "would not have diminished the renown that is so justly accorded to the *Father of* the ASSOCIATION." Herein lies a great mistake of the writer. If he well knew of what he was writing, he knew that Dr. Davis had always protected the Code of Ethics from any and all invasions, and he ought to have known that had the representative of a "new code" been allowed, by vote, "to participate in the proceedings," it would *not* "have been a graceful act." On the contrary, it would have been a *disgraceful* one.

If the revolutionists before referred to desire to "participate in the proceedings" of future meetings of the AMERICAN MEDICAL ASSOCIATION, let them "confess their manifold" errors of the past, come to the *front* door, and they will "receive the right hand of fellowship."

D. COLVIN, M.D.

Carbohydrates in Diabetes.

PARIS, ILL.

To the Editor:—I think Dr. E. L. Munson is right in allowing a moderate amount of carbohydrates in diabetes mellitus. I have done so for the last eight years, and the results have been better than under a strict proteid diet.

I also allow the patient to drink all the water he wants, because it dilutes the urine and makes it less irritable to kidneys and bladder and, I think, lessens the danger of coma.

Respectfully, W. H. TEN BROECK, M.D.

PUBLIC HEALTH.

A Yellow Fever Ship at Cape Charles.—July 30 advices of the arrival of the Norwegian bark *Nor*, with a suspected case of yellow fever have been given out. Two cases developed on the vessel at Kingston, Jamaica. The bark was accordingly sent to the quarantine at Fisherman's Island.

Infectious Disease Hospitals of Massachusetts.—Legislation that will place restrictions upon the building or establishment of homes for consumptives and the like, in towns and cities is sought in that State. The unanimous approval of the boards of aldermen and health, plus that of the mayor, will be prerequisite for a license for all private sanitaria for contagious diseases. What contagious affections are, is thus defined: "The following diseases are infectious and contagious diseases, and diseases dangerous to the public health within the meaning of this act: smallpox, diphtheria, phthisis or pulmonary tuberculosis, membranous croup, measles, scarlet fever, typhoid fever, yellow fever and cholera." The proposed act provides that "no infectious or contagious disease, or other diseases dangerous to the public health, shall be treated or cared for in any city or town, in any hospital, home, or other like institution, not a public hospital maintained at the expense of said city or town, or of the commonwealth, or receiving endowment or assistance therefrom; provided, however, that the board of aldermen of any city, by unanimous vote, with the approval of the mayor and board of health thereof, and the board of selectmen of any town, by unanimous vote, with the approval of the board of health thereof, may license any private hospital, home, or any other like institution, of said city, to treat and care for any of said infectious and contagious diseases, or other diseases dangerous to the public health."

State Supervision of Medical Practice in Rhode Island.—The following are some of the principal regulations governing the issuance of certificates to practice medicine in that State, as adopted by the Board of Health of the State: All applicants applying for a certificate to practice medicine in the State of Rhode Island, presenting a diploma from any foreign medical school must pass an examination before the State Board of Health upon the following subjects: Anatomy, physiology, chemistry, therapeutics, materia medica, surgery, theory and practice of medicine, obstetrics, gynecology, hygiene and State medicine. An average grade of 80 per cent. will be required as conditions of receiving a certificate to practice medicine or surgery in this State. Diplomas from all recognized medical colleges in the United States requiring a minimum of three years study of medicine and two courses of lectures for graduation, prior to 1885, shall be recognized as in good standing, and diplomas issued by the same prior to that date, properly verified, shall entitle the holder thereof to a certificate to practice medicine and surgery in this State. For the ten years ending Jan. 1, 1895, all medical colleges exacting the foregoing requirements, shall, by virtue of such fact, be recognized as in good standing and to include the year 1891, but no medical college shall be recognized as in good standing which has not, since 1891, possessed the foregoing requirements, and which has not, in addition, exacted an entrance qualification and attendance on three regular courses of lectures, no two courses to have been given in any one year, as a condition of graduation. On and after July 1, 1895, no medical college shall be recognized as in good standing which does not require the entrance qualification representing as a minimum a high school diploma, or its equivalent, as a prerequisite for matriculation; which does not possess an adequate equipment for teaching medicine; which has not the clinic and hospital facilities, based upon a minimum municipal population of fifty thousand, and which does not have an active faculty embracing the departments of anatomy, physiology, chemistry, therapeutics, materia medica, surgery, medicine, obstetrics, histology, pathology, bacteriology, ophthalmology, otology, gynecology, laryngology, hygiene and State medicine, and which does not enjoin attendance upon 80 per cent. of four regular courses of instruction, of not less than twenty-six weeks each, in four different years, and which does not exact an average grade of 75 per cent. on examination, as conditions of graduation. A medical college shall be recognized as in good standing, in which the student is conditioned in one or more of the branches as requirements for matriculation, or that admits to advanced standing, students that are matriculants of colleges of pharmacy, or colleges of veterinary medicine, or upon the possession of an academic degree.

Meeting of the State Board of Health of Michigan.—The State Board of Health held its summer meeting in Sand Beach July 30 and 31, 1897, for the purpose of examining plans for State institutions and the transaction of other business. Plans and specifications were examined and recommendations made for a hospital cottage for female patients at Michigan Asylum, Kalamazoo. Plans and specifications were examined and recommendations made for a hospital building and also for a work shop at the State School for the Deaf at Flint.

President Wells congratulated the Board on the fact that at the recent session of the legislature a small appropriation was made which enables the Board to fulfil the Act of 1895 relative to teaching in the schools how to restrict the most dangerous communicable diseases; he suggested that the United States life saving station at this place may be examined by the members of the Board and mentioned in this connection the work of the Board relative to the resuscitation of the drowned. The plan recommended by the Michigan Board necessitates the action of only one person, whereas other methods necessitate action by two. At this meeting Secretary Baker presented a paper on the treatment of the drowned, suffocated and electrically shocked, to be published in the annual report. The Board's leaflet on the treatment of the drowned was slightly amended, a new edition ordered printed and copies to be distributed to life saving stations, lake summer resorts and other places around the State. The leaflet includes rules for efforts at resuscitating persons electrically shocked.

Dr. Belknap brought up the request of a local health officer that the State Board supply blanks for the use of householders and physicians in reporting contagious diseases. Secretary Baker pointed out the fact that the appropriation was not sufficient to enable the State Board to print so many blanks as would be required for that purpose; under such circumstances he claimed it was the duty of the various local boards of health to supply those blanks.

Professor Fall brought up the subject of the collection of samples of water from different parts of the State to be tested for chlorin in order to map out the normal amount of chlorin in the natural waters about the State to enable analysts to judge of the safety of samples of water hereafter examined, with a view to their use as water supplies. Professor Davis of Alma College, who is working on the State geological survey, is to collect samples of water in the eastern part of the State and send them to Professor Fall for examination. Professor Fall's map relative to chlorin in natural waters relates thus far mainly to the southern part of the State. He is now preparing to have samples of water sent by mail, more cheaply than heretofore by express.

The subject of quarter-centennial celebration of the establishment of the Michigan State Board of Health, in Detroit, July 30, 1898, was considered. Special subjects were referred to the several members of the Board who were charged with the duty of preparing for presentation at that meeting papers on a number of important subjects. The Secretary was directed to issue to the several ex-presidents and ex-members of the Board formal invitations to be present and take part in the quarter centennial celebration. The President and Secretary of the Board were appointed a committee to attend the meeting of the National Conference of State Boards of Health in Nashville, Tenn., Aug. 18 and 19, 1897. The two delegates were authorized to vote at that meeting for the proposed amendment of the rules for the transportation of corpses, the design being to have such rules uniform throughout the United States and adjoining provinces.

Dr. Cattermole of the office of the Board, was asked to give special study to the subject of the best measures for local health officers to take in connection with the State Laboratory of Hygiene, for the bacteriologic diagnosis of the dangerous communicable diseases.

The subject of the alleged pollution of the St. Clair River was brought up by a letter from a health officer of a township situated on that river, who claimed that there is "a large and increasing amount of sewage in the waters of the river St. Clair, produced by the discharge of the sewers of Port Huron and St. Clair cities into said river above this point." He suggests "that such oversight be used by the State Board of Health, as would prevent an accumulation of sewage matter in all the rivers of this State to such an extent as shall be dangerous to the public health." Secretary Baker mentioned a paper read at the last meeting of the Michigan Society of Engineers, by Engineer Williams of the Detroit Water Board Office, pointing out the facts relative to the unusual occurrence of typhoid fever in Detroit immediately following the dredging of sewage sludge from the bottom of Black River, Port Huron, and the emptying of that sludge into the St. Clair River. Secretary Baker read a communication from the Secretary of the Massachusetts State Board of Health, in reply to his letter of inquiry, which says: "In regard to the general act in force in this State for the protection of the purity of inland waters, I can say without hesitation, that the Act as amended in 1888 is one of the most important and valuable laws ever enacted in this State. It has already accomplished a great deal for the purification of public water supplies and the adoption of efficient methods of sewage disposal in cities and towns, and has undoubtedly saved to the State a far greater amount, financially, than has ever been appropriated for the purpose of the Act. Many towns and cities would, undoubtedly, have adopted unwise and expensive schemes had it not been for the enactment of this law." "The law was amended in 1888 . . . and appears to be at present as perfect a law as can be asked for." The subjects of sewage filtration laws and the protection of the purity of the inland waters of the State, was referred to the two Committees of the Board on Water-supply and Sewerage, Professor Fall to act as chairman of the joint committee.

A letter from Samuel G. Milner, M.D., member of the Board, not present at this meeting, proposed several subjects for action, including the prevention of infection through milk supplies, the inspection of sewage and other sanitary arrangements at Michigan health resorts, the isolation of tuberculous inmates in asylums and poorhouses, all of which subjects seemed to call for further legislation, and were therefore referred to Judge McAlvay, the committee on legislation.

Professor Fall reported the result of his work in the preparation of a pamphlet for the use of teachers in complying with the law which requires the teaching in the public schools of the best measures for the prevention of the most important diseases. Several hours were devoted to the examination of the work, and in the discussion of the subject. The Secretary was directed to have copies made, and one sent to each member of the Board for further study, with the view of perfecting it for publication.

A vote of thanks was extended to Mr. Wells for his entertainment of the members of the Board during this meeting and for the courtesies extended to them during their stay in Sand Beach.

BOOK NOTICES.

The American Text-book of Operative Dentistry. In contributions by eminent American authorities. Edited by Edward C. Kirk, D.D.S., Professor of Clinical Dentistry, University of Pennsylvania, Department of Dentistry. In one very handsome octavo volume of 699 pages, with 751 engravings. Cloth, $5.50; leather, $6.50, net. Philadelphia and New York: Lea Brothers & Co.

The contributors to this volume are R. R. Andrews, Henry H. Burchard, Calvin S. Case, William E. Christensen, Dwight M. Clapp, M. H. Cryer, Edwin T. Darby, C. L. Goddard, S. H. Guilford, Louis Jack, Edward C. Kirk, Louis Ottofy, C. N. Peirce, J. D. Thomas, Alton Howard Thomas.

This book is a successful attempt to bring modern pathology to bear upon the old traditions and has resulted in an essentially modern book, retaining the essence of the past literature which was of value, so arranged and presented as to meet the requirements of those for whom it was written. From a literary standpoint the work is a distinct advance on the text-books of the past, and will add to the reputation of the dental profession in this line.

The surgical anatomy of the teeth and jaws is correctly given in every detail, and the subject of implantation of teeth receives careful attention. Dr. Younger is given the credit justly due him of the authorship of modern implantation. The chapter on malformation is especially good. In mechanical dentistry the work will be found fully up to date. As a whole, we have unstinted praise for this work.

Reference Book of Practical Therapeutics. By various authors, edited by Frank P. Foster, M.D., editor of the *New York Medical Journal.* Vol. 2, pp. 618. New York: D. Appleton and Company. 1897.

The following are the contributors to the volume: Samuel Treat Armstrong, M.D., Ph.D.; Samuel M. Brickner, M.D., William B. Coley, M.D.; Floyd M. Crandall, Jeremiah T. Eskridge, Matthias Ganckton Foster, A. G. Gerster, M.D., Henry A. Griffin, M.D., Charles Jewett, A.M., M.D., Howard Lilienthal, M.D., Russel H. Nevins, M.D., Austin O'Malley, M.D., George L. Peabody, M.D., Frederick Peterson, M.D., Samuel O. L. Potter, A.M., M.D., Charles Rice, M.D., Solomon Solis-Cohen, M.D., James T. Whittaker, M.D.

This volume which is fully equal to its predecessor is arranged alphabetically and will be found of highest value for reference especially in relation to newer remedies, mineral springs and mineral waters. The index is very full and adds much to the value of the work.

We congratulate the distinguished editor on the completion of the work, which for convenience and completeness is unexcelled.

Eye-strain in Health and Disease. With Special Reference to the Amelioration or Cure of Chronic Nervous Derangements without the aid of Drugs.—By Ambrose L. Ranney, A.M., M.D., author of "Lectures on Nervous Diseases." "The Applied Anatomy of the Nervous System," etc., etc.; late Professor of Nervous Diseases in the Medical Department of the University of Vermont and of the Anatomy of the Nervous System in the New York Post Graduate Medical School, etc. Illustrated with 38 wood-cuts. One volume, royal octavo, pages viii-321. Extra cloth, beveled edges, $2,00 net. The F. A. Davis & Co., publishers, 1914 and 1916 Cherry Street, Philadelphia; 117 W. Forty second Street, New York; 9 Lakeside Building, Chicago.

The author of this volume is an enthusiast in the eye treatment of chorea and epilepsy and backs up his opinion with the recital of cases apparently cured by the correction of the eye defects. It must be conceded in the present inaccurate state of the treatment of epilepsy that it is well in all cases for the practitioner to consider the relation of eye strain to the particular case under observation and there is no question but in many cases the correction of visual defects will be found of great advantage.

A System of Practical Medicine, by American Authors. Edited by Alfred Lee Loomis, M.D., LL.D., and William Gilman Thompson, M.D. Volume ii. Diseases of the Respiratory System, Diseases of the Circulatory System and the Mediastinum, Diseases of the Blood, Diseases of the Kidney, Diseases of the Bladder and Prostate Gland. Illustrated, pp. 941. New York and Philadelphia: Lea Brothers & Co. 1897.

We have no hesitancy in pronouncing this system one of the best that has lately appeared; one altogether creditable to American medicine. In its pathology it is modern, in its treatment conservative and in diagnosis accurate and exhaustive. The careful reader will find himself fully informed of the latest teachings of the time and consequently well equipped for his daily work. As a work of reference it will be found very satisfactory, and the practitioner will make no mistake who follows its teachings closely.

The only criticism we make in relation to the book is that the old system of dosage is unfortunately adhered to throughout the volume.

Twenty-ninth Annual Registration Report of Births, Marriages and Deaths in Michigan for 1895. Lansing, 1897.

The report presents in the introduction the new laws affecting vital statistics, treating in Part 1, "Vital Statistics and Population." Part 2 presents a general discussion of births, while Part 3 is limited to marriage statistics. The "Incidence of Deaths by Months, Age, Sex, Color, Nativity and Nationality of Decedents," and "Causes of Deaths" are considered in Part 4, and vital statistics of Michigan cities in Part 5. Each part is replete with practical talks covering varied phases of the subjects. There are also meteorologic tables and two diagrams, one showing the comparative mortality from certain diseases for a period of twenty-seven years, and one showing age incidence of mortality from certain diseases by decimal periods. The report is much reduced in size as compared with former reports, this being secured by excluding all tables not essential to correct interpretation of the report.

Eleventh Annual Report of the State Board of Health and Vital Statistics of the Commonwealth of Pennsylvania for the year 1895.

The first forty-one pages are devoted to the secretary's report and the minutes, then follow reports of various committees, inspections, quarantine, disinfections, epidemics, conferences and conventions, etc. "Correspondence and Legal Opinions" are considered at length, as are also the Acts of 1895 bearing on the protection of life and health. A chart of the Susquehanna River, showing the fall in feet per mile, and other charts showing pollution of various water supplies accompany the report and are of much interest, while the maps furnished by the weather service are of more than usual excellence. Throughout the report are illustrations (in colors) of quarantine station, maps showing epidemic areas, plans for contagious disease hospitals, etc.

Transactions of the Vermont State Medical Society for 1895 and 1896. Cloth, 445 pages. Published by the Society, 1897.

Among other papers read in the 1895 session are noted the president's address, "Some Suggestions Concerning the Examination of Blood;" the vice-president's address, "Chronic Gastritis;" "Cholelithiasis," by E. H. Martin; "Intestinal Indigestion; its Dietetic and Rational Treatment," by W. H. Porter; "The Medical and Surgical Treatment of Appendicitis," by S. C. Gordon; "The Border Lands of Insanity," by S. E. Lawton; "The Radical Cure of Inguinal Hernia," by J. B. Wheeler; "The Prostate, etc.," by L. B. Bangs; Diabetes Mellitus," by F. C. Morgan; "Blood Stains," by J. N. Jenne; "Antitoxin Treatment of Diphtheria," by E. R. Campbell, and "Cases of Tuberculosis Treated with Tuberculin and Antiphthisin," by L. M. Greene. The papers for the meeting of 1896 include: "The Cure of Hernia," by H. O. Marcy; "Acute Peritonitis, etc.," by W. H. Vincent; "Inebriety and Its Treatment," by W. S. Nay; "Diseases of the Rectum," by D. C. Hawley; "Puerperal Fever," by J. M. Hamilton; "The Operation of Shortening the Round Ligaments, its Indication and Technique," by E. H. Ross, and several papers on obstetric and other questions.

Eighteenth Annual Report of the State Board of Health of the State of Rhode Island for the year 1895, including the Report on Registration of Births, Marriages, etc., for 1894. Providence, 1897.

The report considers in detail sanitary improvements of towns, water supplies, meteorology, vital statistics, legislation for 1895, the wording of the medical law and examinations of diphtheria culture. There is also a record of all consumption cases in the State and a report on "An Epidemic of Typhoid Fever from Milk Supply." The appendix presents "Bacteriologic Results from Mechanical Filtration," "Drainage Areas," "Disposal of Sewage at Pawtucket," and "Experiments with the Howatson Filter," with illustrations of sewage plants, charts of water analyses and map of the drainage areas of the State.

Text-Book on Mental Diseases.—By Theo. H. Kellogg, A.M., M.D., late Medical Superintendent of Willard State Hospital, etc., etc. Octavo, 702 pages, illustrated by original sphygmographic tracings and photographs of the different types of mental disorder, pp. 776. Extra muslin, $6.00. New York: Wm. Woods & Co.

In our notice of this excellent work last week, through an oversight the line containing the name of Wm. Wood & Co., the publishers, was accidentally omitted.

Essays on Social Topics. By Lady Cook. Published by the Roxburghe Press, Westminster, London.

These essays consist of reprints from Woodhull and Claflin's *Weekly* and other essays on social topics and miscellaneous essays not before printed. As an iconoclast Lady Cook is an undoubted success and those interested in the history of all sides of the social question will be instructed by a perusal of these essays.

A Retrospect of Medicine. A half-yearly journal by James Braithwaite, M.D., London, assisted by E. T. Trevelyan, M.D., etc. London: Simpkin, Marshall, Hamilton, Kent & Co. July, 1897.

This volume of Braithwaite is fully equal to its predecessors and consists of carefully made abstracts from literature of the preceding six months. We note with pleasure that American medical literature is fairly represented.

Franklin and Marshall College Obituary Record. Vol. i, No. 1. Paper, 245 pages. Published by the Alumni Association, Lancaster, Pa., 1897. $1.

This publication is to appear annually and contain "a record of the lives of the deceased alumni of Marshall College and of Franklin and Marshall College." Vol. i, No. 1, contains the record of all deceased alumni from 1837 to June, 1897, the articles being grouped according to the year of graduation.

The Roller Bandage, with a Chapter on Surgical Dressing. By William Barton Hopkins, M.D., with illustrations; pp. 130. Fourth edition. Philadelphia: J. B. Lippincott & Co. 1897.

This well known book for the use of students and practitioners has been thoroughly revised and brought down to date. The illustrations are excellent.

NECROLOGY.

John N. Beach, M.D., West Jefferson, Ohio, who died July 17 (*vide* Journal, p. 252), was graduated in medicine from Starling Medical College, Columbus, in 1850. He afterward carried on further study in New York hospitals and colleges and in 1858 located at West Jefferson, practicing there until his death. After being commissioned surgeon of the Fortieth Regiment Ohio Volunteer Infantry in April, 1862, he was assigned to staff duty in September of that year. This service was continuous, as follows: [illegible] on of [illegible] Third Brigade, Army of the Kanawha, [illegible] of 1[illegible] [illegible] director of the Third Division (General Baird's), Army of the Ohio, in the spring of 1863 at Franklin, Tenn.; Surgeon of the First Brigade, First Division Reserve Corps, Army of the Cumberland, from July 24, 1863, until the re-organization of the army in October, after the battle of Chickamauga, and from that time until his muster out, he was surgeon of the Second Brigade, First Division, Fourth Army Corps. In the spring of 1864, in addition to his staff duties, he was assigned as operating surgeon in the hospital of the First Division, Fourth Army Corps, a position he held until the fall of Atlanta. He was mustered out at Nashville, Tenn., Dec. 6, 1864. He was professor of pathology in Columbus Medical College, 1875, surgeon general of Ohio from 1880 to 1885, and a member of the Madison County Medical Society, Central Ohio Medical Society, AMERICAN MEDICAL ASSOCIATION, and National Association of Railway Surgeons. He died at Chattanooga, Tenn., July 17, aged 69 years.

JOHN J. CURRAN, M.D., died from cardiac complications, after a month's illness, at his home in New York, July 24. He was a native of Newport, R. I., a graduate of the College of Physicians and surgeons, N. Y., 1888, associated in practice with his brother, Dr. Frank W. Curran, who survives, and a Fellow of the N. Y. County Medical Association.

EDGAR M. IKE, M.D., Jefferson Medical College 1888, of Altoona, Penn., died there July 29. He was born March 21, 1867.

A. B. CALHOUN, M.D., Newman, Ga., August 1, aged 89 years.——John W. Hocking, M.D., Govanstown, Md., July 26, aged 40 years.——Theodore B. McNabb, M.D., Fremont, Ind., August 7.——John W. Powell, M.D., Rush Medical College, Chicago, 1865, at his home in Peoria, Ill., August 8, aged 59 years.

MISCELLANY.

Personal.—Dr. Isaiah B. Sexton of Sparta, Kent County, Mich., is one of the thirty-three survivors of the 1812 war.

Large Bequests to Charities.—The will of Mrs. Nathaniel Thayer of Worcester, Mass., provides for some important institutions as follows: The Massachusetts General Hospital, $25,000; Eye and Ear Infirmary of Boston, $10,000; Lying-in Hospital and New England Hospital for Women, together, $20,000; Perkins' Institution, $10,000; Convalescent Hospital for Children at Wellesley, $5,000; Home for Incurables, $5,000, and also about $90,000 for humane and religious bodies, chiefly located in Boston.

Corrections in Membership List.—Received too late for publication in list of July 24:

Eaton, Frank B., San José, Cal.	1894
Gihon, A. L., New York, N. Y.	1876
Heffron, John L., Syracuse, N. Y	1897
Schnabel, E. D., Bethlehem, Pa	1897
Van Ettan, C. S., Rhinebeck, N. Y.	1895
Penny, Herbert T., Truro, Mass	1892

Post-operative Tetanus.—There are fifty-nine cases on record, and Cackovic adds another, described in the *Cbl. f. Chir.* of July 3, with a review of the literature on the subject. His case followed a lumbar nephrotomy, and he is inclined to think that the patient brought the germs with her into the hospital, as she came from a street which had just been deeply excavated for some purpose, and another patient with developed tetanus was brought soon after to the hospital from the same house. "They were probably in her organism, latent, and developed into virulence from the shock of the operation." The wound was drained with a rubber tube.

The Anatomy of the Novelist.—Our Gray is becoming pretty old, and the cover is getting loose. Some of the pages are torn and others are missing. We are in need of a new anatomy. This new anatomy should be in part original, and in part a compilation. The chapters that are compiled should be taken from the dissecting table. The chapters that are original should be taken from the works of the modern novelists of the romantic school. In a newly published novel that we recently picked up at a book-stall we came upon the following graphic description of the result of a duel between the hero and the villain: "The hero fell at the first shot. The surgeon bent over him. 'Safe,' he whispered. 'The bullet has grazed his temple, but had it gone an eighth of an inch deeper it would have severed the femoral artery.'"—*Medical Era.*

Longevity Among Centenarians, judging from newspaper items, is on the increase. Females now, despite their hardships, lead the company. Two widows, one in Croton, Vt., and the other in Lawrence, Mass., celebrated their one hundredth anniversary on July 31, while another in Lockport, N. Y., entered upon her hundredth year on August 4. Life Insurance authorities claim that only one in a million can attain so ripe an age. Beyond the fact of a long uneventful existence added to a certain imperturbability of temperment and simple regular habits there is not much need of inquiring into the real cause of longevity. "Wound up for a longer run" was the reported answer of a watchmaker, three years above the century mark.

The Prognostic Stage of Tuberculosis.—Dr. A. Mansfield Holmes of Denver, Colo., believes in the possible estimation of the recuperative power of tuberculosis. Out of 100 cases carefully studied by him he claims to have elaborated the law of disintegration as being the same in the leucocytes as in the system as a whole. He prepares the blood films, fixes, stains and mounts them. The finger of the patient antiseptically cleansed he pricks with a sterilized needle, uses the blood drop with due celerity and scrutinizes the shade communicated by the staining solution to the cell tissues. The leucocytes, he maintains, forbode the doom by showing the earliest signs of disintegration and thereby giving the greatest chances for recovery, by perhaps the abortive method of acclimatation or of rational nutrition.

Hope for the West.—The August number of the *North American Review* containing one of the contributions of Mr. M. G. Mulhall, the British statistician, quotes the percentage of illiterates in the Prairie States as being but 5.7 per cent. as against 6.3 per cent. in New England and 7 in the Middle States. This surprisingly favorable exhibit is attributable to the fact that the foreign settlers in the Prairie States are of a superior class to those in the Eastern, the former being mostly farmers from northern Europe, while the bulk of the latter consist of factory hands and unskilled laborers. May it not be assumed that the professions of the future have a better subsoil?

The Rational Employment of Defectives in Great Britain.—The *Popular Science Monthly* says: It seems that there are in England and Wales, 20,000 children so defective in mental powers that they are incapable, if left to their own resources, of fighting the battle of life. It is now proposed to take steps to provide a home for feeble-minded girls in West London. Dr. Warner, who takes great interest in the subject, says that since 1890 six homes have been started and kept going, the girl inmates helping to support themselves by laundry work and other occupations suited to their capacities. It is hoped eventually to have such institutions in all parts of England and Wales.

The Central Trend of Population.—At the recent Hygienic Congress Dr. Stephen Sedlaczek produced statistics of the increase in population of the greatest cities of the world since 1800. He showed some very interesting facts. The population of Amsterdam, Birmingham, Brussels, Manchester and Rome doubled in that period; Copenhagen and Marseilles have now a population three times as large as at the beginning of this century; London, Lyons, Paris, St. Petersburg and Prague have quadrupled in the number of inhabitants within the last ninety years; Breslau, Dresden, Hamburg, Cologne and Vienna have five times as many people; Leeds, Liverpool and Warsaw, six times as many; Glasgow and Sheffield, seven times as many;

Munich, eight times as many; Berlin, Budapest and Leipsic, nine times as many; Baltimore, ten times as many; New York and Philadelphia, twenty-five times as many; Chicago, 245 times, and Brooklyn 339 times as many as ninety years ago. Dublin, while slightly larger now than ninety years ago, has lost 17,000 inhabitants within the last forty years, and is the only large city in Europe which shows a retrograde movement in its population.

Psychic Phenomena.—One of the most remarkable manifestations of psychic force at the present day is the wave of suggestion that seems to sweep over the country periodically, affecting certain luminaries of the medical press on the subject of translations from foreign exchanges. In the first place, it is remarkable that out of the dozens of exchanges brought to these shores, the editors of some of our esteemed contemporaries should each happen to select the same articles for translation and condensation. But the mystery deepens as we note that some psychic force impels them to translate into brief abstracts, word for word, letter for letter, page after page, exactly as the articles were translated for the Journal the

tory.—There was much adverse comment when Governor Black vetoed the $250,000 appropriation for this Reformatory, but on petition, reviewing his judgment, he sent an architect to examine the building. The report returned is that the roof is necessary and should be constructed during the present season at a cost not to exceed $20,000. The contractors, and they are many, have expressed a willingness to go on without a formal appropriation.

The Muhlenberg Hospital of Plainfield, N. J., which was opened Dec. 1, 1881, and has a present capacity of only forty beds, is not large enough for present demands upon it. At the July meeting the Board of Governors, representing some nineteen societies, determined to make the possible additions as required.

Cincinnati.

The Mortality Report for the week shows: Zymotic diseases, 16; phthisis, 9; other constitutional, 15; local, 52; developmental, 9; violence, 9; stillbirths, 10; total, all causes, 110; annual rate per thousand, 11.12; under one year, 23. Deaths during preceding week, 97; corresponding week 1896, was introduced as evidence as having been treated by the defendant for "some trouble with the hip" whereas she was suffering from a tubercular hip joint disease. "Dr." Axtel while on the stand was subjected to a rigid cross-questioning, and showed himself totally ignorant of what the "school" to which he belongs claim to know so much. Judge Thompson took the case under advisement and has just rendered his decision, in which he fines the defendant $50 for practicing medicine without a license. With this decision as a precedent, the State Board of Health will leave no stone unturned in their efforts to rid the State of every practitioner of this form of quackery. The following is the Judge's opinion:

"The defendant is charged with 'practicing medicine' in this city without the authority required by the statute. It is urged by defendant's counsel that 'under the statutes of Kentucky the acts mentioned and complained of in the evidence do not constitute an offense.' That no witness has 'sworn that Axtel ever practiced medicine, ever gave a prescription or administered a drug, and it appears that he never performed any surgical operation, never used an instrument, never set a fracture, or did anything except to manipulate the limbs and muscles with the hands.' The legislature of Kentucky, in chapter 85, 'intended merely to make a law which would prevent persons from administering drugs or giving prescriptions who did not know anything about them.'

"The language of the statute is: 'It shall be unlawful for any person to practice medicine in any of its branches within the limits of the State who has not exhibited and registered in the county clerk's office in the county in which he resides his authority for so practicing medicine, as herein prescribed,' etc.

"It is not pretended that defendant has the authority to practice medicine which is prescribed by the statute. The only question, therefore, in the case is, Do the acts and doings of this defendant constitute the offense of 'practicing medicine' as denounced by the statute?

"This depends upon what the legislature intended by the words 'practice medicine.' If these words are to be construed as meaning only the administration of drugs, the giving of prescriptions and the performance of surgical operations, then this defendant is entitled to his acquittal. I think it is a just, and certainly a safe rule, to construe the language of a criminal statute in the sense in which it is commonly used and understood among intelligent people, and I do not think any person of ordinary intelligence ever uses *these terms in the restricted* sense here contended. The word 'practice' is defined by Webster to mean 'the exercise of an art, or the application of a science to the wants of men;' and the word 'medicine,' 'a remedial agent, a remedy, physic.' and in its secondary sense, 'that branch of science which relates to the prevention, cure or alleviation of diseases of the human body;' as the 'study of medicine' or a 'student of medicine.' It is in this secondary sense that the term 'practice of medicine' is always used among intelligent people, meaning the application of that branch of science which relates to the prevention, cure or alleviation of diseases to the wants of man.'

"The defendant claims that he applies to the prevention and cure of disease the science of osteopathy, which his advertisement defines to be 'the science of curing diseases without the knife or medicine.'

"The defendant puts in evidence the *Journal of Osteopathy* for May, 1897, in which Dr. William Smith, who seems to be an authority on the subject of osteopathy, writes of the 'three essentials.' He says: 'Were I asked to name these to the practitioner, no matter of what school, I would unhesitatingly state, anatomy, physiology and symptomatology.' Further on he says in italics: 'If you permit ignorant men to go forth and treat the sick and suffering, it is you who are responsible for their errors.' I find also in this journal, which seems to speak with authority, that osteopathy is a science; that it is based upon exact, definite and verifiable knowledge of the anatomy and physiology of the human mechanism, including chemistry, histology, morphology of its known elements, as make discoverable the great laws of the human system, by which nature, apart from artificial and medical stimulation, may recover from displacements, disorganization and consequent diseases, and regain strength and health.'

"From this evidence it is manifest that the practice of osteopathy is the practice of medicine within the meaning of the statute; it is further evident that no one is qualified to practice this branch of the science of medicine without a thorough knowledge of anatomy, physiology and the cognate branches which go to make up the science of medicine; and, upon the evidence, the court finds as a fact that the defendant has shown himself absolutely ignorant of the most rudimental learning in any of them. That in his ignorance of the fundamental principles of his profession, he subjected the child of Mrs. Detroy, which was laboring under a tubercular disease of the hip, to cruel and unnecessary torture, affecting its health and necessitating the employment of a physician to treat it for fever resulting from his inaptitude.

"The court is of opinion that any person who, for compensation, professes to apply any science which relates to the prevention, cure or alleviation of the diseases of the human body, is practicing medicine within the meaning of the statute; and as a matter of fact on the evidence, that defendant is guilty as charged, and the fine of fifty dollars is assessed against him."

Vacations.—A number of physicians of the city have left for their summer vacations. Dr. J. M. Mathews is sojourning at Makinac Island, Mich.; Drs. Clint Kelly and A. M. Cartledge are in Canada fishing; Dr. Louis Frank is at Petoskey; Dr. L. S. McMurtry will spend a week in Canada before going to the meeting of the American Association of Obstetricians at Niagara Falls; Dr. J. B. Marvin is at the Wentworth, Portsmouth, N. H.; Dr. J. A. Ouchterlony is at Atlantic City; Dr. Carl Weidner went to Germany to see his father, who had been in delicate health for some time, and since his departure last week word has been received by his family that the father died two days before he sailed, the letter apprising them of the fact being delayed in its transmission; Dr. J. W. Guest is at Rock Castle Springs, Ky., where he is the resident physician.

THE PUBLIC SERVICES.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from July 31 to August 6, 1897.

Lieut.-Col. Alfred A. Woodhull, Deputy Surgeon-General (chief surgeon, Hdqrs. Dept. of the Colorado), is granted leave of absence for one month and ten days, to take effect on or about Aug. 20, 1897.

Major Paul R. Brown, Surgeon, the order directing him to report for duty at Ft. Keogh, Mont., upon being relieved from duty at Ft. Hamilton, N. Y., is revoked.

Capt. William B. Banister, Asst. Surgeon, is relieved from duty at Ft. Crook, Neb., and ordered to Ft. Keogh, Mont., for duty.

Major Paul R. Brown, Surgeon, having been found by an Army retiring board permanently incapacitated for active service, will proceed to his home and await retirement.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending July 31, 1897.

P. A. Surgeon S. S. White, ordered to report on the "Concord" immediately.

Surgeon J. D. Gatewood, ordered to Brussels, Belgium, and Berlin, Germany, as delegate, then return.

Asst. Surgeon J. C. Thompson, ordered to the naval laboratory, New York.

Surgeon H. E. Ames, when detached from the "Cincinnati," ordered home and granted two months' leave.

Surgeon J. E. Gardner, detached from the "Amphitrite" and ordered to the "Dolphin."

Surgeon F. Anderson, detached from the "Dolphin" and ordered to the hospital, Yokohama, per steamer of August 14.

Surgeon H. G. Beyer, detached from Museum of Hygiene and ordered to the "Amphitrite."

P. A. Surgeon T. B. Bailey, detached from the "Machias" and ordered to the "Yorktown."

P. A. Surgeon J. S. Page, detached from the "Yorktown" and ordered to the "Olympia."

P. A. Surgeon G. Rothganger, detached from the "Pinta" and ordered to the "Wheeling" August 10.

P. A. Surgeon M. R. Pigott, detached from the "Olympia" and ordered to the "Machias."

CHANGE OF ADDRESS.

Davis, C. E., from Ann Arbor, Mich., to Woodward, Okla. Ter.
De Vaux, F. H., from Valley City, N. D., to Davenport, Iowa.
Harvey, D. M., from 1112 Folsom St. to 911 Laguna St., San Franc. Cal.
Lewitt, W. B., from 800 McAllister St. to 500 Van Ness Av., San Francisco, Cal.
McKee, C. W., from Chicago, Ill., to Cockran's Mills, Pa.
Reed, R. Harvey, from 150 E. Broad St. to 68 Ruttles Av., C Ohio.
Small, L. M., from Decorah to Castalia, Iowa.
Thorner, Max, from 141 W. 8th St to 37 W. 7th St., Cincinnati, Ohio.
Westnedge, R. B., from Chicago to 562 Julien Av., Dubuque, Iowa.
Weber, Lee, from 124 W. 3rd to 103 E. 4th St. Davenport, Iowa.

LETTERS RECEIVED.

Allaben, J. E., Rockford, Ill.; Ash, E. E., (2) Goshen, Ind.; Atkinson, W. B., Philadelphia, Pa.; Appleton, D., & Co., Chicago, Ill.; Aaron, Chas. D., Detroit, Mich., Abbott, C. N., Cincinnati, Ohio.

Blaylock, Thomas A., Washita, I. T.; Bushong, L. B., Lyndon, Kan.; Booth, D. S., St. Louis, Mo.; Baker, E. F., Jacksonville, Ill.; Bluhm, Geo. J., Chicago, Ill.; Boroughs, Bryon, Jackson, Ala.; Byrd, W. H., Salem, Ore.; Brannon, L., Joliet, Ill.; Burke, T. A., Cleveland, Ohio.

Clark, A. J., Albion, Neb.; Chapman, B., Copley, Ohio; Crawford, S. K., Chicago, Ill.; Coulter, C. E., Ogden, Utah.

Dabney, S. G., Louisville, Ky.; Demerak, A., Chicago, Ill.; Dunlap, W. B., San Francisco, Cal.

Edson, Carroll E., Denver, Colo.; Eads, S. O., (2) Arthur, Ill.; Erwin, J. J., Cleveland, Ohio; Elliott, A. R., (2) New York, N. Y.

Feitwell, A. L., Altoona, Pa.; French, J. M., Milford, Mass.; Flick, L. F., Philadelphia, Pa.; Fessenden Mfg. Co., Pittsburg, Pa.; Fairhall, Joseph, Grape Creek, Ill.; Frieberg, A. H., Cincinnati, Ohio; Fair, J. F., Freeport, Ill.; Frick, Lewis, Hilbert, Wis.; Foxton, J. L., Huron, S. D.

Ground, W. E., West Superior, Wis.; Garceau, Edgar, Boston, Mass.; Goodwin, E. W., (2) Mt. Summit, Ind.; Glen Springs, The, Watkins, N. Y.; Gallant, A. E., New York, N. Y.; Griffith, J. P. Crozer, Philadelphia, Pa.

Hoagland, George A., St. Louis, Mo. Haldenstein, I., New York, N. Y.; Hopkins, M. J., St. Louis, Mo.; Hobson, J. F., Cleveland, Ohio; Howe, W. F., Indianapolis, Ind.; Hill, George A., Wynnette, Ala.

Jackson, Thomas J., Chicago, Ill.; Jayne, W. A., Denver, Colo.

Kyger, John W., Kansas City, Mo.; Keener Co., The W. T., Chicago, Ill.; Kinnear, Beverley O., New York, N. Y.; Keech, J. S., Racine, Wis.; Kelley, Maus & Co., Chicago, Ill.; Knox, C. S., Superior, Wis.; Kellogg, J. H., Battle Creek, Mich.

Lowenthal, Louis, Chicago, Ill.; Luken, W. H., Chicago, Ill.; Lea Brothers & Co., Philadelphia, Pa.; Libbey, E. A., Farmington, N. H.

Mason, Frank M., Rossville, Ill.; Mills, Charles K., Philadelphia, Pa.; Marchand, Charles, New York, N. Y.; McGarvey, J. F., Lorain, Ohio; Mears, J. E., Philadelphia, Pa.; Moulton, C. W., Buffalo, N. Y.; Meisenbach, A. H., St. Louis, Mo.; Morton, Geo., Kansas City, Mo.

Norwich Pharmacal Co., Norwich, N. Y.

Ohlmacher, A. P., Gallipolis, Ohio.

Parmenter, John, Rainbow Lake, N. Y.; Patton, E. E., New Kensington, Pa.; Pasteur-Chamberland Filter Co., Chicago, Ill.; Richmond, S., Bedford, Iowa.

Rogers, H. W., Cleveland, Ohio; Reed, R. Harvey (3), Columbus, Ohio.

Stillman, G. B., Cleveland, Ohio; Smith, B. M., Davis, W. Va.; Saunders, W. B., Philadelphia, Pa.; Sharp & Smith, Chicago, Ill.; Swanters, S. F., Madison, Wis.; Storrs, W. D., Topeka, Kan.; Standish, Myles, Boston, Mass.; Shenier, L. H. (2), Taurus, N. J.

Tessler, M., St. Paul, Minn.; Tenny, J. S., Alma, Wis.; Taylor, P. Richard, Louisville, Ky.; Trowbridge, L. S., Detroit, Mich.

Van Note, W. B., Lima, Ohio.

Whitney, J. Eugene, Rochester, N. Y.; Wright, O. S., Plant City, Fla.; Woltishek, F. J., Cedar Rapids, Iowa; Woman's Medical College of the New York Infirmary for Women and Children, New York, N. Y.; Weatherby, R. J., Wilkesbarre, Pa.; Wheaton, C. A., St. Paul, Minn.; Wyman, Walter, Washington, D. C.

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ADDRESSES.

CHAIRMAN'S ADDRESS.

Delivered in the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY WARREN B. HILL, M.D.
MILWAUKEE, WIS.

The progress in medicine during the last fifty years has been such as to revolutionize its principles and practice. Empiricism has largely given way to rationalism, and physiologic and pathologic investigation has led to rational therapeutics. A great impetus has thus been given to pharmacy, while the experimental and physiologic laboratory has been the means of more accurate study into the physiologic action of drugs, and today we prescribe drugs with a degree of certainty as to their physiologic actions, little dreamed of by our earlier brothers in medicine. The advance in organic chemistry has enabled us to isolate the various active principles in remedial agents, so that it is possible, to a large extent, to produce physiologic effects by the use of alkaloids, unhampered by antagonistic and irritant substances which might be contained in the crude drug, thus bringing therapeutics to an exactness entirely inconsistent with former conditions.

Physiologic chemistry and advance in biology, has stimulated pharmacy in the line of synthetic chemistry, and today the laboratories of the world are busy producing new and sometimes useful compounds which are calculated to produce exact physiologic effects, based on the known actions of their chemic components. To mention the most conspicuous of these newer remedies would be tedious in the extreme, and to pass judgment on them, selecting the most useful, would be rash at this time, for the test of time is necessary and careful discrimination and experience will demonstrate their several virtues or shortcomings. The production of a number of useful and popular remedies of this kind has (unduly perhaps) stimulated energy along the line of multiplication of remedies, and the strife of the manufacturers has been such as to sometimes overlook the object, which is to produce something new and useful, and thereby earn for themselves a rich reward of fame and fortune—but rather to produce something which will sell, aided by the perfected art of advertising, which has (it seems to me) reached its acme in this—the closing decade of this our glorious nineteenth century. This evil tendency of multiplying pharmaceutic names, as well as remedies, is working mischief both in the medical and the pharmaceutic professions. The mercenary pharmaceutic chemist attacks his brother physician in his most vulnerable spot—his materia medica. He eliminates his necessity for remembering aught of incompatibles, and furnishes him ready-made compounds, with physiologic action and indications printed on the label, under a name that the chemist calls his own.

The mode of preparation of the remedy, as well as its exact composition, he retains as his own property, and it is a sad commentary on the progress of medicine during the last fifty years, that the record from the drug stores in the United States gives indisputable proof that the average physician (yes, a large majority of the profession, to a greater or lesser extent) encourges this baneful practice by his patronage. It demoralizes pharmacy, because pharmacists are no longer called upon to exert their knowledge and skill at compounding, but are required by the doctor, to put up so-called proprietary remedies, and their only care is not to make a mistake and put "B. J's." elixir when "J. B's." is called for.

At this rate of progress we will, in a short time, no longer need pharmacies, but commercial institutions, known as drug stores, will be all that is necessary. The commercial conditions into which pharmacists have been forced by a combination of manufacturing chemists and the doctors, has led to the evil of substituting, on the part of the druggist, and to a feeling of distrust on the part of the physician, who in turn incurs the enmity of the druggist by dispensing his own drugs by the aid of the manufacturing chemist, who kindly furnishes him, at wholesale, his favorite remedies put up in suitable vials already labeled for use. The ire of the druggist finds vent in counter-prescribing the very secret compounds which his former friend, the doctor, compelled him to have on the shelves.

Thus we see that the progress of pharmaceutic activity, in this one direction, has a tendency to alienate the two professions which are dependent upon each other and should work in harmony for the benefit of mankind. The remedy is simple. We are not to turn backward and ignore the progress in pharmacy and chemistry, but, on the contrary, we, as physicians, should amend our code of ethics so as to recognize *new* and *useful* remedies, and recognize the value of the time, knowledge and skill of those who, by their industry, bring to us the products of their labor. We should insist on the knowledge of the exact method of the preparation, its action, and composition of the product; and should extend to the discoverer the same rights of protection that we do to authors and inventors, and finally stamp out the secret nostrum man by a higher and more thorough education in materia medica and therapeutics in our medical colleges.

There was a time, not many years ago (when empiricism held sway), that therapeutics was the mainstay of the physician; but investigation has led us off into scientific and speculative fields, until now, in the field of medicine, the question of etiology and pathology are so all-absorbing that the treatment of disease is passed by with only a passing mention. While it is true that the enthusiasm and energy along these lines is what has brought medicine out of the depths of empiricism into the broad light of rationalism, it is necessary for us to bring back to its old estate the unpopular branch of therapeutics. For, after all, after we have learned to diagnose, detail the symptoms, talk learnedly of the etiology, the all-absorbing question to the patient is, "what are you going to do for me?"

We have the broad foundation of the years of investigation on which to build our structure of rational therapeutics, and we, as physicians, should join hands with our brothers in pharmacy, to provide a rational treatment for disease. There has been much done in this direction during the last few years. We have just entered on a new epoch in the history of therapeutics. Bacteriologic investigation has opened up new channels for thought and action, and today we have achieved a signal victory in the cure of disease by serum therapy. The remarkable result achieved in the treatment of diphtheria, by the use of antitoxin, has demonstrated that there is a legitimate field for investigation and discovery in this direction. The days of terror from the streptococcus seem to be numbered, as that serum is being so perfected that we have every reason to believe that in a short time erysipelas and kindred diseases will no longer resist treatment as they have in the past.

Tuberculosis is being attacked from several quarters, and tetanus and typhoid fever must, sooner or later, succumb to the treatment of antitoxins. Still, the field is large, the laborers comparatively few, and serum therapy is in its infancy. The use of toxins has been resorted to but little except experimentally on lower animals, but the time is at hand when they will be brought to their full share of usefulness. The human system may be made immune by the judicious use of toxins, the antitoxins being generated within the organism instead of being introduced from without, having been produced first in some other form of animal life.

The question now arises, "what is it that makes the serum antitoxic?" Can we not go farther, and, from the serum, isolate an active principle, as we did from Peruvian bark? Shall we not extend our chemic research into the realms of the animal organism, and find the antidote for the poisons generated within the human system?

These seem to me to be the vital questions of the day, and if we work with the same zeal that our colaborers have, in their investigation, we will have a new materia medica, a new pharmacy, a new therapeutics, that will attract the attention of not only the medical profession but of all humanity. For, it is here that disease will be robbed of its terrors, it is here that the acme of medical knowledge will be attained—the *cure* of disease.

DISCUSSION.

Dr. **WOODBURY** expressed the hope that biologic or organic chemistry would soon be able to isolate the effective constituents and present them as simple chemic substances, the dosage of which could then be definitely established and the physiologic actions of which could be investigated so as to place serum therapy on a scientific basis. The use of toxins for immunization appears to be a step in this direction.

Dr. **STEWART** recommended the reference of the address to the Executive Committee, and also to the American Pharmaceutical Association, which was agreed to.

Dr. **HILL** said that the remarks on the subject of toxins had called up in his mind, an interesting case of a man who had been accidentally rendered immune of erysipelas by the use of Dr. Coley's toxins from the streptococcus erysipelatis. The man was suffering with inoperable sarcoma of the neck. Rather with the idea of amusing the patient then with any hope of checking the growth, Dr. Hill resorted to injections of this serum. At first he used, daily, one injection of five or ten minims, which was sufficient to cause decided reaction including an eruption on the skin resembling erysipelas. The patient finally died, but what Dr. Hill wanted to bring particularly to notice was that he became so accustomed to the toxin that even the injection of ten cubic centimeters of toxin would produce no reaction whatever. He was absolutely immune to the streptococcus. He might be operated on without danger of pus formation; his abdomen might be opened and a pint of pus poured in and he would not have peritonitis, and he need not fear septicemia. It occurred to Dr. Hill that this condition was not due to stimulation of the leucocytes, or their increase in number, or to phagocytic action; but it was the fixed tissue cells which were modified in their functions by the toxin injections, then having caused a stimulation and incidental changes so that there was induced a special antagonism. A new set of cells was formed with the special function of generating antitoxin.

Two practical results came from this experiment. In that class of cases, where the patient after operation is especially liable to streptococcus invasion, not due to dirty surgery, but necessarily suppurating cases—if we are aware of this liability would it not be our duty to make the patient immune before we commenced the operation? The second thought is in reference to the action of the antitoxins in the system. There was, in his opinion, an alkaloid in the antitoxin, which did the work, and it is the proper field of analytic chemistry to discover and isolate this principle. We have known for fifty years or more, that a man may render himself immune to tobacco, or nicotin. How is this accomplished? It is brought about by the building up of a new set of cells of superior powers of resistance, and which secrete substances which make the system immune to the toxins. The same result follows the constant use of morphin, and a tolerance to the drug is established. It has been found that when a rabbit has become accustomed to morphin, and is not affected by a large dose, if we take the blood of this rabbit and inject it into another one, not thus accustomed to its effects, the blood will render the latter also immune to the usual fatal dose of morphin. Therefore, by this method, we have not only a means of counteracting the animal poisons, but also poisons of all kinds. It is in this direction of producing immunity from disease and protection from toxic agents of mineral, vegetable or animal origin, that clinical medicine has a most promising field before it. The workers in the department of bacteriology have done their share; it is our duty to take up the work where they have left off and isolate the remedial agents and determine their physiologic actions and therapeutic applications.

ADDRESS OF WELCOME TO DELEGATES FROM THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Delivered in the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY WARREN B. HILL, M.D.

MILWAUKEE, WIS.

Gentlemen of the American Pharmaceutical Association:—We feel honored by your presence here today. The significance of the meeting of the representatives of the two great professions or, rather, the two branches of the one great profession of medicine, is well worthy of consideration.

Thoughtless men little realize how closely the professions of pharmacy and medicine are bound together, how dependent the one is upon the other, and yet how seldom we come together for our common weal. There is a tendency toward estrangement rather than that coöperation which should exist between the two, and the only way to overcome this estrangement is by coming together and cementing our friendship with united work.

The pharmacist is the right hand supporter of the doctor. He is especially fitted for his part of the work, and without his support, the doctor would indeed be in a sorry plight. The perfection of our armamentarium depends on our fellow laborer in the pharmaceutic profession. The leaders in your profession have in the past and are at present giving their best efforts to bring pharmacy up to the highest standard of professionalism, where it rightfully belongs, but they are hampered and impeded in their work by the commercial druggist, who with the aid of the commercial doctor are the means of disseminating nostrums broadcast throughout the land and bringing down from its high estate the practice of medicine and pharmacy.

The danger of commercialism in our profession is patent to every observant mind, and it should call forth a stronger effort on our part toward a united action in the progressive work in which we are engaged. The Section of Materia Medica, Pharmacy and Therapeutics, gives us a place in our National Association where we may come together, and bring to each other the results of our work and investigation; a place to cement our friendships and receive fresh enthusiasm in our common work.

I wish to honor your colleague, Prof. Rusby, for the work he has instituted in the "joint investigation," a work that can not be over estimated, and now, having been instituted, should be carried on and developed to such an extent in the future that its power and influence should be felt in the medical world. I would suggest that each of us go to our homes with the importance of this work so impressed upon us, that we use every effort to establish such a system of collaboration in the State societies to which we belong, and bring our State pharmaceutical and medical societies into closer contact.

I, therefore, welcome you, delegates from the American Pharmaceutical Association, to our society as co-laborers. I welcome you to the work in which we are engaged in the practice of medicine, and I trust the day is not far distant when your profession will not be looked upon as something apart from ours, but regarded as one of the settings in the grand mosaic that goes to make up that noble profession which disregards self in the work of alleviating suffering and restoring physical man.

RESPONSE BY F. W. STEWART.

Chairman of the Committee from the American Pharmaceutical Association.

It gives me great pleasure to respond to your address of welcome on behalf of the delegation from the American Pharmaceutical Association. In making this response, I desire to call your attention to the fact that this delegation, consisting of thirty-one leading pharmacists, representing every section of the United States, is here by invitation of the AMERICAN MEDICAL ASSOCIATION. The object the ASSOCIATION had in extending an invitation to the National Association of Pharmacists to take part in the deliberations of the National Association of Physicians was, and is, the recognition of pharmacy as a part of medical science and practice; not the recognition of commercial pharmacy by the commercial physician, but the recognition of professional pharmacy by the professional physician.

The professional physician, in thus recognizing pharmacy as a part of medical science and practice, requires that the pharmacist shall comply with professional requirements; and the delegation of the national organization of pharmacists, by its presence here, admits that pharmacy should be practiced with the same beneficent object as medicine.

Medicine is not only a liberal and beneficent profession but it is a fraternity as well. From the earliest times the medical profession has been a fraternal organization. We still believe in the Hippocratic oath and its obligations. The physician must, therefore, serve his profession, and his standing in the profession should depend upon the manner in which he meets his fraternal obligations. It is, therefore, considered unprofessional for a physician to withhold the knowledge of discovery from his professional brethren for the purpose of obtaining advantage over his fellows in practice. Furthermore, the practice of medicine is dependent on progress in the knowledge of disease and the methods for treating those afflicted with disease. This knowledge, published in medical literature, and classified in scientific forms, constitutes the science of medicine. The service of the professional physician is, therefore, toward the cause of suffering humanity, the cause of public health, the cause of the professional brotherhood of which he is a member, and the cause of medical science. As a member of the subsidiary profession of pharmacy the pharmacist is bound by similar obligations to humanity, to science, to his professional brethren and to the medical profession.

You have heard that the pharmacist is the servant of the public. So he is; but his contact with the public should be through the physician and under the guidance and control of the medical profession. The preparation of medicine must always be subservient to the application of medicine to the treatment of the sick; therefore pharmacy is subservient to therapy; and the pharmacist is subservient to the physician. He is not educated to practice medicine and should leave that important and responsible vocation to the physician. This does not apply to the pharmacist who is also a physician, though the practice of both pharmacy and therapy by the same individual is objected to by some. The pharmacist owes it to the physician, with whom he is, or should be, in fraternal relations, not to interfere with the physician's prerogatives on the one hand; and he is under obligations on the other hand to discountenance those who do so interfere.

The vocation of the professional pharmacist is, therefore, to aid the physician in his efforts to combat disease, by working hand in hand with him as his professional brother, devoting himself to the study of drugs from every possible point of view, and furnishing the same in the form of scientifically prepared pharmaceutic preparations with published formulæ and open methods of manufacture.

But if we are to have a profession of pharmacy devoted to the service of the medical profession as the "physician's right-hand supporter and co-laborer," as you have said, the medical profession will have to foster and protect such professional pharmacists in the pursuit of their profession. There is only one way to do this, and that is to throw the patronage of the profession into the hands of those pharmacists who practice pharmacy professionally.

The medical profession can not be blamed for withholding its patronage from druggists who prescribe over the counter, renew prescriptions without the sanction of the prescribers, and manufacture and sell nostrums. Under the existing state of affairs the physician may be justified in dispensing his own medicines to protect himself and his patients from such irregular practices. But I claim, as the representative of the delegation of the American Pharmaceutical Association, that the medical profession itself is more responsible than the pharmacists for the disgraceful state of pharmacal practice, for by prescribing nostrums of secret and secret composition, and patented medicines until, in some localities, about one-half of the medicines prescribed are of a secret or proprietary nature, physicians have forced pharmacists to keep such medicine in stock to supply the very demand the physicians themselves have created. Educated and professional pharmacists everywhere deplore the condition of affairs, but are powerless to prevent it. The reform must come from the medical profession itself. Let every physician refuse to prescribe medicines controlled by patents, secret formulas, and so-called trade-marks, and send their prescriptions to professional pharmacists who practice pharmacy under professional and scientific requirements, and the nostrum trade would soon be forced back to the lowest depths of the infernal regions from whence it came. Then let the two professions come to some proper understanding in relation to the sale of such open formula household remedies for certain minor ailments. for which the public will always patronize the drug store, and we will have secured the desirable object so well described by the Chairman in his very able address.

ORIGINAL ARTICLES.

ON THE THERAPEUTIC PROPERTIES OF ALCOHOL AND THE REASONS WHY THE FERMENTED AND DISTILLED LIQUORS USED AS BEVERAGES SHOULD NOT BE RECOGNIZED IN THE PHARMACOPEIA AS MEDICINAL AGENTS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY N. S. DAVIS, A.M., M.D., LL.D.
CHICAGO.

Pure ethyl alcohol, undiluted, is regarded by all chemists and intelligent physicians as an active poison, rapidly destructive of both vegetable and animal life whenever brought into contact with either. The presence of absolute alcohol in contact with any living tissue immediately arrests all natural metabolic and vital processes in such tissue, and causes it to become corrugated or shrunken and dead. Swallowing absolute alcohol, undiluted, as quickly destroys the vitality of the membranes of the mouth, throat and stomach, and kills the individual, as does pure carbolic acid. Consequently, alcohol, in its pure and undiluted state, is not capable of being used as a medicine, but when largely diluted with water, as it is in all the fermented and distilled beverages, its direct corrosive or corrugating effect upon the membranes it comes in contact with is so much diminished that it is capable of being absorbed and conveyed in the blood to all parts of living body. In this diluted condition, therefore, it early began to be used both as a medicine and as a popular drink, and as the most readily appreciable effect was to diminish the individual's consciousness of impressions, not only from without but also from within, it soon came to be regarded as a universal tonic and restorative. Its supposed tonic and restorative effects were based wholly on the sensations and movements of patients or individuals under the influence of moderate doses, for it was soon demonstrated that large doses directly diminished strength, sensibility and action. But when under the influence of moderate doses the patient said he felt less weak, or weary; felt the sensation of cold or heat as pain less, felt lighter or more buoyant and his heart was found to beat faster, it was perfectly natural for both physician and patient to think the alcohol was acting as a tonic or stimulant and general restorative. It was not until the advancement in analytic chemistry and the physiology of all parts of the nerve structures of man, coupled with the researches of physics and biology of the last half century, that we have had it in our power to prove the incorrectness of these conclusions founded on the sensations and actions of the patient under its influence. The more recent chemico-physiologic researches have shown more clearly the composition of the blood and the various tissues of the body, and especially the existence and functions of the hemoglobin, leucocytes and other corpuscular elements of both blood and tissues, and the part each plays in the reception and internal distribution of oxygen with its effects on all the metabolic changes in living bodies. By the same class of researches it is shown that alcohol, diluted with water and taken into the stomach, is rapidly absorbed by the capillaries and is conveyed in the blood to every tissue in the body and by its presence retards the natural metabolic changes, lessens the processes of oxydation and elimination, diminishes nerve sensibility and, when repeated from day to day, induces cell and tissue degenerations. By the more recent studies in the anatomy and physiology of the several parts of the nervous system it has been shown, not only that the action of the heart and the movement of the blood in the vessels are directly under the control of the cardiac and vasomotor nerves, some of the fibers of which are excitors of action while others are inhibitors, by which uniformity and harmony is maintained in the circulation of the blood, but also that our voluntary movements and sensations are manifested by the cerebro-spinal nerves, having their excitors and inhibitors by which we are enabled to co-ordinate muscular contractions and relaxations in executing all complex movements, and equally so it is that our mental actions, manifested through the convolutions of the brain, are regulated by excitors and inhibitors. Every individual whose brain is in its normal condition has frequent sensations, impulses or excitors of mental actions which he promptly inhibits or disregards. Indeed, it is on the proper development of this mental inhibition that every person's self-control and sense of propriety depends. If it is true, as has been already stated, that alcohol when taken into the living system in large doses is an active poison, quickly destroying animal life, and in smaller doses is an anesthetic directly diminishing cerebral sensibility and mental consciousness and retarding all metabolic changes, both in the blood and tissues, it follows as a logical and necessary inference that if administered as medicine it should be done with the same care and exactness in regard to purity, dose and time that we exercise in prescribing morphin, quinin, aconite, arsenic or any other active drug. This can not be done by using any of the various fermented and distilled liquors ordered either from drug stores or liquor dealers, since they are kept at no uniform standard of either strength or purity. The present pharmacopeia recognizes as medicines, vinum or wine, spiritus frumenti or whisky and spiritus vini gallici or brandy, but does not give a definite officinal standard of alcoholic strength for either of them. Neither does it give any reliable and readily available tests by which the strength and purity of the articles can be determined by the ordinary practitioner of medicine. Repeated analyses have shown that the amount of alcohol in different samples of wine varies 6 to 25 per cent.; in whisky from 35 to 50 per cent.; and in brandy from 40 to 60 per cent. Such variations in the strength of any other medicine would quickly cause its standard to be corrected or its exclusion from the official list of drugs. As alcohol is the only important therapeutic agent in all these liquors, why not let pure alcohol of fixed strength be officially recognized to the exclusion of all the varieties of both fermented and distilled drinks. Then every practitioner desiring to give alcohol as a remedy could order it with any desired degree of dilution with water and he would know what his patient was getting and how much, and the pharmacist would no longer have need to pay for a license to sell liquors or to be classed with the ordinary dealers in such beverages. One of the most important improvements in modern pharmacology consists in the separation of the active therapeutic agents from the more complex or crude drugs and thereby enables the physician to administer them with far greater convenience and certainty. Very few intelligent physicians of the present day would think of prescribing crude opium when they desired to produce only the anodyne effects of the morphin it contained, certainly not without knowing what per cent. of morphin would be in the crude drug. Why, then, should he prescribe the uncertain mixtures called beer, wine, whiskey or brandy when his sole object is to obtain the therapeutic effects of alcohol? If it is claimed that these several fermented and distliled liquors contain other therapeutic agents in addition to the alcohol, we answer that, so far as any such agents exist, their proportionate quantity and quality are far more variable and uncertain than is their per cent. of alcohol. Almost the only constituents found in whisky and brandy, besides the alcohol and water, are very variable quantities of fusel oil, tannin and, in very old specimens, a trace of some etherial substance to which connoisseurs attribute the special *bouquet*. So far from adding to the therapeutic value, the first two substances are regarded as very undesirabte impurities and the last named has never been isolated in sufficient quantity to have its medical qualities tried. Much has been said and written concerning valuable nutritive constituents in the different varieties of wine, but the numerous analyses on record show only very variable quantities of fecula, saccharin matter, tannin, some vegetable acids and potassium salts, in addition to the alcohol and water. Of these extra ingredients the fecula and saccharin matter are the only ones that could be classed as nutritive or capable of being converted into any natural element of the blood or tissues of the body. The quantity of these in any variety of wine is so limited that it would require several barrels of the wine to furnish the equivalent of a pound of bread. Consequently it would be far more economic as well as more scientifically accurate for every physician to prescribe such doses of pure alcohol and water to be given with such quantify of sugar, milk or meat broth, as he thought his patient might need. The physician who can not do this and thereby accurately adjust the proportion of all the elements his patient may need has certainly received a very defective profesional education. It would be a long and very important step in advance both in the interests of scientific accuracy and of humanity if all physicians when they thought alcohol was needed would prescribe it in the manner just indicated, and if in the next revision of the pharmacopeia only alcohol of standard strength was retained to the exclusion of all fermented and distilled liquors. If these changes were adopted and carried into general practice the result would be a more complete separation of both pharmacist and physician, from connection with or responsibility for, the general traffic in and uses of the various alcoholic liquors in popular use.

DISCUSSION.

Dr. **Frank Woodbury** said that about twelve years ago he had adopted the plan recommended in the paper of substituting diluted alcohol for all forms of alcoholic stimulants in his service in the medical wards of the Medico Chirurgical Hospital, which had been previously suggested by Dr. Dennis of New York. He had used high wines or cologne spirits in water flavored with peppermint or cinnamon. The accuracy of dosage and the absence of all deleterious flavoring substances seemed to make this the preferable method of administering alcohol, at least in all public institutions. As regards the physiologic question, whether or not alcohol increases the energy of the body, it is sufficient to recall the fact determined by Dr. Edward Smith that the excretion of carbonic acid is diminished by spirits, such as brandy or gin, which also diminish the excretion of urea. As bodily force must come from combustion and increased metabolism in the organism, it is evident that alcohol is a force producer only within the limits of its oxidation, and any excess of this small quantity retards waste and checks force production. In therapeutics alcohol is a food, a stimulant to the circulation, a nerve sedative or a narcotic, according to circumstances and dosage.

Professor **Remington**—As a member of the Committee on Revision of the Pharmacopeia, I think it is only right to state the method which is in vogue with the Committee for introducing various drugs and medicines into the pharmacopeia, and for dropping from the official list such as are undesirable. This is left exclusive to the physicians on the Committee, to whom are intrusted the task of selecting and deciding on the claims of substances and preparations which are proposed for admission into the national pharmacopeia. Now, their action is very largely regulated by the demand and the use of these drugs and chemicals. If they are much used they are retained but if there is no demand by physicians they may be dropped. On my part, I can see no very great objection to the dropping of spiritus frumenti and spiritus vini gallici from the pharmacopeia because they do not enter into any official preparations, but as regards vinum album and vinum rubrum, this would be scarcely possible because they do enter into the composition of preparations such as the wine of ipecac or wine of antimony, for instance, which are official. Therefore it is absolutely necessary for the pharmacopeia to limit the amount of the alcohol and determine the purity of wines and to prescribe tests for determining the value of wines. In the pharmacopeia of 1880 there were very good alcoholimetric tests to ascertain the strength of wines. It is very necessary for the pharmacist to know the exact amount of alcohol in the wine, because if it is deficient in strength the preparation will not keep and if, on the contrary, it is too strong it would become like a tincture and defeat the medical object in view in selecting the wine as a menstruum.

Granted that alcohol is a curse, and I am thoroughly in accord with Professor Davis in his desire to restrict its use, but, granting this, should there not be some authority in the country to decide what shall be dispensed by the druggists when the doctor's prescription calls for wine or brandy? How shall the pharmacist know what is in the mind of the physician when he uses these terms? On the other hand, if such a practical test as Dr. Davis prescribes can be put into the pharmacopeia—though I am not sure this can be done—it would result in this, that it would be in the power of various druggists throughout the country and boards of health everywhere to decide on the tests for purity and strength and there would be no uniformity. If it were a question of driving all alcoholic drinks out of the country, that would be one thing; but, if this is not feasible, would it not be better to have some control over those that are to be used in medicine. The question raised by the paper certainly needs some attention, but should we not desire to make the tests more exact and the regulation more stringent rather than to leave it without any control whatever? Dr. Rice of the Committee on Revision some years ago received a number of communications from the Western States about the wines and brandies not being up to the standard and suggesting that the standard of the pharmacopeia be made easier of application, and we have now under consideration such a test, which will give more definiteness to the strength. As regards the Committee, I would say that the Committee on Revision are not altogether responsible for the presence of spirtus vini gallici and spiritus frumenti in the pharmacopeia; they are only there because there is use for them and physicians use them. I would, personally, very much prefer to send every one who wants brandy or whisky to a store where spirits are regularly sold, and so would every member of the Committee on Revision, but as long as they are employed for medicinal purposes there must be some standard established by authority, that is to say, the pharmacopeia.

WM. THOMPSON, Washington, D. C.—As a pharmacist I am honest in this question. I am anxious, if possible, to leave the drug store no excuse for dealing in alcoholic liquors and selling brandy and whisky. As one means of preventing this abuse as far as possible I am anxious to see these two articles dropped from the pharmacopeia. It is not for the profession of pharmacy or for the pharmacist to say that these articles are worthless. Spiritus vini gallici, spiritus frumenti, vinum rubrum and album, we have just been told, are valuable only for the alcohol they contain, and this has been my own opinion for a long time. I am glad to have the authority of Dr. Davis for the statement that the physician, when he desires to prescribe any of these articles, may get the same effect from the use of dilute alcohol. Moreover, when he orders alcohol diluted with clean water the physician knows just what quantity of pure alcohol the patient is getting, but when he gives spiritus vini gallici and spiritus frumenti he gives an uncertain quantity of alcohol, combined with certain ingredients which are added to make the preparation palatable, and there is danger of creating an appetite in the patient for these alcoholic drinks. This danger does not attend the use of dilute alcohol because it is not palatable. I do not agree with Professor Remington that it is necessary to have them in the pharmacopeia so as to establish some standard of purity; if they are not to be used in the treatment of the sick they should not be in the pharmacopeia. As to the difference between brandy and whisky, if the patient is not a connoisseur and experienced in the matter, he can not tell the difference by any chemic means. As regards vinum album and rubrum, the small amount of alcohol could be supplied by using dilute alcohol, and by using this the preparation could be made just as well as they could from the use of vinum album or rubrum.

Dr. J. V. SHOEMAKER—I fear that I can add nothing to the very full consideration of physiologic action and the practical recommendations which Professor Davis has given with regard to the use of alcohol and the elimination of wines and spirits from the pharmacopeia. Some years ago, while I was writing on the subject of alcohol and endeavoring to describe the differences between brandy and whisky and the different wines, I sought information from a gentleman who was employed in one of the large manufacturing establishments and he told me that if he had given to him a certain amount of alcohol and certain flavoring ingredients and coloring materials he would make a most perfect brandy or whisky, the most perfect white wine and red wine the most expert gourmet would want to taste. Now, as thus distinctly formulated and as already stated by the distinguished speaker, we are pouring into our patients certain extracts and flavoring substances in order to get the action of the alcohol. Many years ago I adopted the use of alcohol in the dilute form as a substitute for the officinal spirits and was satisfied with the results. As one of the humble laborers in this Section, I add my voice to that of Dr. Davis in favor of dropping the spirits and wines from the pharmacopeia and to make alcohol alone the officinal preparation.

Dr. KEEN, Pittsburg—It is a fact that perhaps 75 per cent. of all practitioners of medicine in the United States will continue to use whisky in their practice during the next ten years, whether the pharmacopeia recognizes it or not. Professor Remington, on behalf of the pharmacopeia committee, stated that no drug that is used so commonly as is whisky could be dropped from the pharmacopeia. He also stated, and I agree with him, that there should be some standard of purity for articles that are used in medicine. I therefore think that whisky should not be taken from the pharmacopeia. I believe that whisky is capable of doing good; I have seen life saved by it. It is no reason that it should be thrown out of the pharmacopeia because it may be abused. We might as well throw out opium or morphin because some people form an opium or a morphin habit. In my opinion the opium habit is a greater curse to society than the alcohol habit. To drop whiskey from the pharmacopeia would do no good. It would still be prescribed by physicians and there would then be no standard of quality or of therapeutic activity. That is the question in my mind.

Dr. ECCLES—Dr. Keen has just informed us of his knowledge that life has been saved by the use of whisky, and that 75 per cent. of professional men would use whisky during the next ten years whether the pharmacopeia recognize it or not. I do not know whether or not whisky, as such, is much prescribed throughout the United States, but in the section of New York in which I am situated the druggists will scarcely receive one prescription for whisky in twelve months, and this is the general experience of pharmacists in my neighborhood. If this is then the case, that whisky is so frequently prescribed in Pittsburg, where Dr. Keen comes from, it is a very remarkable state of affairs. Professor Remington has stated that it would be necessary to retain the officinal wines. I believe that there is no value to be obtained from the wines which we can not get as readily from dilute alcohol. It may be objected that the preparations made with alcohol would not be so palatable, but as Dr. Shoemaker has told us that in nine cases out of ten even experts may not be able to distinguish the prepared wines from the pure article, it is evident that the palatability is due to flavoring ingredients, which may be added, if desired, to the dilute alcohol. The impression is becoming general that the druggist's is not the right place from which to get brandy or whisky, but the applicant should go to the liquor store. The liquor dealer can afford to sell liquors cheaper in small quantities, and druggists should direct their patrons to the liquor store for brandy or whisky, and in this way he does not promote in any way the abuse of these articles by the public. Professor Remington has stated that if they were dropped from the pharmacopeia there would be no standard of purity, but other articles are constantly prescribed which are not in the pharmacopeia; antipyrin, for instance, and other drugs of the coal tar series. The tendency of evolution is to go to the active principle of remedies, as the vegetable alkaloids, and why should we not do this in the case of whisky? We no longer prescribe opium, cinchona and other crude drugs, but use morphin, codein and quinin or cinchonin. The alcoholic drinks are used principally for the alcohol. The drug stores are loaded up with wines of coca and other wines not in the pharmacopeia. I am very much in favor of making those of alcohol pure and simple. I can not go as far as Dr. Davis does, in believing that alcohol is not destroyed in the system. I believe that there are temperance reformers who use alcohol every day. I believe that *it is formed in the process of digestion in the intestinal tract.* I do not wish to be misunderstood. I would not prescribe alcohol when it is not needed simply because it is formed in the intestinal tract, any more than I would prescribe pepsin where it was not required, which is also found in the alimentary canal.

Dr. C. C. FITE—I would say to the members of the Committee on Revision, that the further they go away from the physicians' prescriptions in the pharmacopeia, the farther the physicians will go away from the pharmacopeia.

Dr. KING—I would like to reply to Dr. Eccles' statement that Pittsburg has a very remarkable state of affairs, and to say that I am led to believe that the physicians in Brooklyn have very little faith in their druggists. Now we do believe in our pharmacist and send to him for all our drugs, including whisky and brandy. I never prescribe antipyrin or any other article which is not in the pharmacopeia.

Dr. F. E. STEWART—On behalf of the delegates from the American Pharmaceutical Association, I desire at this time to offer the following:

WHEREAS, The medicinal properties of spiritus frumenti and spiritus vini gallici are due solely to the alcohol they contain; and alcoholic stimulation can be better achieved by the use of pure alcohol properly diluted and with less danger of the patient acquiring an alcoholic appetite, than by administering either of the above-named beverages; it is, therefore

Resolved, That the Section on Materia Medica, Pharmacy and Therapeutics of the AMERICAN MEDICAL ASSOCIATION recommends that spiritus frumenti and spiritus vini gallici be dropped from the United *States Pharmacopeia in its next revision.*

This was adopted by the Section.

Dr. DAVIS—I hope that I made it plain that I raised no question in the paper as to the value of alcohol as a medicine. I simply spoke of its physiologic properties and spoke of the desirability, for those who wish to use it, using it in its purity and knowing exactly what they are using. I made no question as to whether life is saved or life is destroyed; no question whatever. There are thousands of druggists who do not wish to be classed with liquor dealers, and would like to put it out of their shops.

FURTHER DISCUSSION.

Discussion on the Subjects Referred to the Section on Materia Medica, by the American Pharmaceutical Association.

Dismissal from the United States Pharmacopeia of spiritus frumenti, spiritus vini gallici, vinum album and vinum rubrum; replacement of officinal wines by vinegars; dismissal of all tinctures having a fluid extract of the same drug officinal; substitution for such tinctures and fluid extracts of a 50 per cent. tincture under a distinctive title; change of formula for Dover's powders back to that of the 1890 United States Pharmacopeia, by using potassium sulphate in place of sugar of milk.

Professor Remington—I have very decided views on these subjects of dismissal of spiritus frumenti and vina from the pharmacopeia and the replacement of officinal wines by vinegars, and I think that in both cases they are in the negative. The former subject has been considered and, as regards the latter, while I believe that the vinegars are useful and that the class could be increased with advantage, yet as regards the substitution of vinegars for the officinal wines, I do not think it can be done. For instance, the wines of ergot, of iron, of antimony, are very largely used in the United States, and the great objection to the dismissal of agents which are in use by physicians is that we thereby increase the number of drugs used over which we have no control. I therefore think that there can be no ground for the dismissal of the wines from the pharmacopeia. In the proposed dismissal of tinctures and fluid extracts we have the same difficulty before us. Physicians will continue to prescribe tinctures. We have supplanted a good many by fluid extracts, but physicians do not use them; for instance, digitalis. We have supplied for thirty years a fluid extract, but physicians have not yet abandoned the use of the tincture. Then again, there is the objection of the difference in the strength of the proposed 50 per cent. tincture and also in the menstruum. We now have dilute alcoholic preparations in the tinctures, strong wines and fluid extracts, and this proposed change would add another. If the doctor wishes to get the full action of all the active principles of a drug he would order the tincture, because the menstruum used in the tincture extracts more than other menstrua, because by adding water to some of the tinctures you will have a precipitation and the solution loses some of its effects.

With regard to the distinctive title of these proposed preparations. The question in regard to the fluid extracts has been before the Committee on Revision for thirty-five years. The tendency is to increase the strength so as to make them conform to the standard of one grain to the minim; rather than to reduce it. The fact of making the fluid extract weaker would open the door to sending out fluid extracts of half strength. The question came up before the Committee on Revision in 1880 and again in 1890, and has been referred to a subcommittee to work on. It was also discussed at the last meeting of the American Pharmaceutical Association. With regard to the substitution of sugar of milk for the potassium sulphate in Dover's powder, which was first suggested by Dr. Piffard, and the proposition to change it again, I think that the old method is the better one, and would approve the change. This subject was fully considered by Mr. Kebler in the June issue of the *Druggists' Circular*.

Dr. C. C. Fite moved that the Section does not concur in any of the above suggestions sent to it by the American Pharmaceutical Association, except in that with regard to Dover's powder. This was unanimously adopted.

ANTITUBERCULIN.

Presented in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY JOSEPH McFARLAND, M.D.

PHILADELPHIA, PA.

The enthusiastic reception of the "Blutserumtherapie" led many of our esteemed colleagues to entertain the most ardent expectations of miraculous results in all divisions of the field of infective diseases. The constantly increasing number of recoveries from diphtheria that were reported and the occasional recoveries from tetanus that were hurried into print, convinced large numbers of professional, as well as lay men, that "Blutserumtherapie" led to an almost unlimited field of usefulness.

In those early days, I was frequently asked what the chances of serum treatment were likely to be and why I did not hasten to occupy that field and be among the first to benefit mankind with that much-needed boon, a "cure for consumption.". My answers to these inquiries were received with incredulous looks, and my endeavors to show why serum therapy for tuberculosis was likely to fail in the majority of cases, were unheeded. It was only after several years had rolled by and I had been almost forced into the field, that I at last consented to undertake the experimental research in which a number of the gentlemen present have so kindly aided me.

In order to make clear my grounds for hesitation and my convictions that the experiments would fail, I beg your indulgence in a brief résumé of the pathology of tuberculosis: Tuberculosis is primarily an inflammatory process. Every tubercle begins its history as a single inflammatory node, not very different from those produced by the introduction of foreign particles into the tissues. In the early stages of the disease there is rarely any marked systemic involvement, and many cases progress to the considerable destruction of organs before constitutional symptoms are observed.

Up to a certain stage, therefore, tuberculosis is not essentially different from any ordinary or non-specific focal inflammation. It is as the disease progresses that the difference is observed, for as the cause of the disease is alive and engaged in growing and propagating its kind, there is a progressive tendency for the disease-producers to disseminate and new inflammatory foci to form, and as growth means metabolism, there are waste products of the growth to be absorbed and eliminated. This is by no means all of the pathology of the disease. The tubercles develop at the expense of the organs whose tissues transformed into or replaced by the tuberculous tissue, are unable to perform their functions, or do so so insufficiently that disease must result from their incomplete action.

Lastly, the tuberculous nodes in which no blood vessels are formed, constantly soften and disintegrate with the frequent formation of holes or cavities in the tissues, in which, if they communicate with the outer air, saprophytic bacteria are likely to grow and add the harmless or oftener harmful results of their metabolism to the blood.

Tuberculosis is thus a progressive, distributive and in most cases, essentially chronic disease, from which death is more often the result of the destruction of organs, suspension of vital functions from local lesions, and profound secondary anemia, than from any poisonous principle in or produced by the bacillus. Viewed from such a standpoint, and this is the standpoint I always took in the early days of serum therapy, what could any antitubercle serum do? Could it reinstate disorganized organs? Could it prevent secondary infection? Could it prevent the dissemination of the bacilli in the organs or could it probably kill the bacilli already in the body? The last two questions are admittedly possibilities, and to them a third possibility might be added, the serum might excite the normal vital resistance of the animal body so as to enable it to dispose of the bacillus by phagocytosis or its bactericidal humors and so render it harmless. These seemed to be the possibilities, but the insurmountable difficulty seemed yet to c[illegible] t woul[illegible] an antitubercle serum be? How [illegible]

Clinicians.	Age and sex.	Occupation.	Stage of Disease.	Condition on beginning treatment.	Duration of treatment.	Dosage.	Disadvantages.		Comments.
Ed S Reynolds and J. C. Welch.	F.	. . . .	Advanced.	. . . .	About a month.	5 to 100 m. daily.	Cramps in the lumbar and gluteal muscles and much pain.	Cough and expectoration diminished	Patient died. "There were no results to encourage the use of the serum."
Ed. S. Reynolds and J. C. Welch.	M. 27.	. . . .	Advanced; 7 years old; confined to bed when treatment was begun. Had been housed for months.	Weight 120; hectic; temperature 97-100½° F.; cough moderate but troublesome at night; marked physical signs; night sweats; diarrhea.	Six or eight weeks.	. . . . .	Urticaria in every part of the body, one attack only. No repetition or other bad symptoms.	Night sweats ceased; cough improved; temperature was reduced in two weeks to 98.6-99; diarrhea ceased; appetite improved; weight increased to 125; became able to walk out to a distance of a half mile; pulse and respiration became normal.	"The serum has done wonders." Dr. Reynolds feels that it will effect a cure in this case.
James M. Anders.	. . .	. . . .	First stage.	. . . .	Short.	. . . . .	None mentioned.	None given.	Encouraging success.
M. R. Ward	. . .	. . . .	Third stage.	Temperature 102-103° F.; pulse 115-120.	Three weeks.	. . . . .	. . . .	Temperature dropped to 100-101; pulse subsided to 96-105; appetite improved.	Patient became worse when the treatment had to be suspended because the supply failed. Two cases treated with Paquin's serum recovered.
Guy Hinsdale. . .	F. 27.	Married; housekeeper.	One year old.	Weight 120 pounds; cough and night sweats; physical signs marked; many tubercle bacilli.	Four months.	5 to 40 m.	None noted.	Weight increased to 127; bacilli disappeared; all physical signs disappeared except slightly increased vocal resonance over the right apex.	This case seems to have recovered. Dr. Hinsdale promises to make a future report of the case.
A. A. Eshner. . . .	F. adult	Married.	Probably three years old.	Cough; loss of weight; impaired appetite and digestion; constipation; weight 138.	Nearly three months.	1 to 2 c.c.	None noted; there was some discomfort, no pain following the injections.	Temperature was not altered, as it had not been elevated; no distinct effect on pulse or respiration; body weight increased to 112; appetite and color of skin improved; chilliness ceased after beginning the injections; physical signs did not improve.	Concludes that while the serum did no good it certainly did no harm.
J. S. Cohen.	F. 23.	Married; three children.	Probably four years old.	Night sweats, cough and expectoration; weight 120 pounds; marked physical signs; tubercle bacilli in sputum.	Jan. 9 to Feb. 14; recovered after three weeks.	. . . . .	. . . .	Cough lessened during treatment, became worse when treatment ceased; when treatment began again some favorable signs observed. Patient was discharged from the hospital April 1, 1897, weighing 118 pounds.	Seems to have done good.
J. S. Cohen	F. 21.	Single.	Four months.	Cough troublesome; t. b. in sputum; marked physical signs.	Began Jan. 10 to Feb. 12, '97.	. . . . .	Urine decreased markedly in amount and showed traces of albumin.	Strength and appetite decreased; when the treatment was stopped patient improved.	Seems to have done harm.
T. V. Crandall . .	F. 26	Secretary.	Since Oct. 10, 1895	Pulse rapid; temperature 103; expectoration of blood and pus followed by cavity formation; cough constant; expectoration 63 in twenty-four hours; tubercle bacilli.	Began June 6, 1896, with Paquin's, concluded with Mulford's.	Up to 30 m. daily.	Urticaria.	Appetite and nutrition improved; gained nine pounds in weight; temperature reduced to 98° in the day and 99° at night; tubercle bacilli diminished, possibly disappeared; was able to resume her occupation.	Dr. Crandall does not think that in 30 years' experience with tuberculosis that he did as well with the "time being" treatment as with the antituberculin.
H. G. M. Kollock. .	M. 43.	Engineer.	Patient had been confined to bed for 6 months and was in the last stages of phthisis. There was a small cavity; tubercle bacilli in system.	. . . .	Eight weeks; 25 m. daily.	. . . . .	Urticaria.	Began to mend on the third day; by April 7 was able to go out, and in a short time was able to resume work; gained six pounds in weight; appetite enormous; physical signs are improved, only a small area of dulness remaining; bacilli have not disappeared; he is now able to perform his ordinary duties.	There seems to be little doubt about the beneficial effect of antituberculin upon this case.
J. C. Wilson and Dr. Kalteyer . .	M. 29.	Paper hanger; good family history.	Duration six months.	Weight 132 pounds; dry cough; scanty expectoration; night sweats; good appetite; pulse 80-100; temp. 98-100° F.; no cavities; bacilli.	Twenty-four injections.	1 to 10 c.c.	Much urticaria and swelling.	Temp. more regular, slight decrease in pulse; weight reduced to 127 pounds; physical signs became worse; bacilli.	No result.
J. C. Wilson and Dr. Kalteyer . .	M. 33.	Shoemaker; good family history; operated upon eight times for enlarged lymphatic glands.	One and one-half years.	Weight 122 pounds; loose cough, worse at night.	Twenty-five injections.	1 to 10 c.c.	Much urticaria, swelling, pain and occasional chilliness.	Conditions did not improve; patient decreased in weight.	No result.
J. C. Wilson and Dr. Kalteyer . .	M. 45	Shoe factor.	One month.	Weight 112 pounds; dry cough; some night sweats; temp. 97-103°; hectic; bad physical signs.	Twenty-seven injections.	1 to 10 c.c.	Very slight urticaria, slight chilliness and drowsiness after injections.	Temperature was more regular; lost weight; expectoration increased.	Patient became worse during the treatment.
J. C. Wilson and Dr. Kalteyer . .	M. 36.	Brewer.	Three months.	Weight 113 pounds; loose cough; much expectoration; sweats every night: high fever; hectic; 98-104 1-5° F.; bad physical signs.	Twenty injections.	Rapidly increas'd to 10 c.c	No bad symptoms.	Temperature became more irregular and hectic; pulse increased.	Patient died.
J. C. Wilson and Dr. Kalteyer .	M. 33.	Electrician.	Seven years.	Weight 113½; dry cough; night sweats; vomiting; temperature 97-100 2-5° F.; bad physical signs.	Twenty-three injections.	1 to 10 c.c.	Much urticaria; was unable to sleep.	No good followed the injections.	No result.
J. C. Wilson and Dr. Kalteyer . .	M. 23.	Leather worker.	Nine months.	Weight 123 pounds; slight cough; night sweats; temp. 97-103° F.; no cavities, but bad physical signs.	Twenty-four injections.	1 to 10 c.c.	Much urticaria and chilliness.	Patient did not improve or become worse.	No result.

Of course, one's mind naturally turned to *tuberculin* as that which was to be the means of securing the desired end, but in tuberculin the desired and necessary means did not seem to be present. Tuberculin bears in no respect the same relation to tuberculosis that diphtheria and tetanus toxins bear to their respective diseases. Tuberculin is not a toxin, and large doses injected into healthy animals fail to produce symptoms in any manner analogous to tuberculosis, or in fact, any serious symptoms at all. In all the diseases successfully combatted by antitoxins there are distinct toxins, productive, when injected into animals, of the essential symptoms of the disease.

The fact, however, that tuberculin when injected into tuberculous animals produces a marked febrile reaction and in sufficient doses, death, is one that must not be overlooked and one from which the conclusion that "antituberculin" could do good was drawn. The idea of tuberculin was not a new one. Not to go into the history of the subject, let me say that it was first investigated by Viquerat and that Paquin has written numerous papers upon the subject and claimed remarkable results from it. I could not see, when I read Paquin's papers, nor do I yet see any reasoning from which it could be inferred that *antituberculin* can be in itself curative, yet both with Paquin's and with my own antituberculin, cures seem to have been effected.

I am of the opinion that the systemic symptoms of tuberculosis and the local distribution of the bacilli are favored by tuberculin or some similar substance in the blood of the animal and the effect it exerts upon the tuberculous tissue. This opinion is in conformity with the results obtained by the injection of small doses of tuberculin into diseased animals. It is not impossible that the hectic of early cases which can not be attributed to secondary infections, may be due to the periodic reaction of the organism to tuberculin produced in its own body.

If it should be demonstrated that when tuberculin is injected into an animal it is either changed into an antituberculin or stimulates the cells of the animal to produce an antituberculin, or in any way effects the origin of an antagonistic substance or an antidotal substance, it would be quite proper to conclude that such a substance would be of benefit, when injected into tuberculous animals, by suspending those effects directly traceable to the tuberculin itself.

To determine the existence of such an antidotal substance in the blood of an immunized (or accustomed) animal is, however, attended with the greatest difficulty, for only upon tuberculous animals can the effects of tuberculin be shown, and only upon such animals can the combined effects of tuberculin and antituberculin be shown.

The method employed for the preparation of the antituberculin is too much in the ordinary path of serum therapy to need any lengthy description. The ass was the animal chosen. After preliminary examination, at the hands of the veterinarian, for good general health and freedom from glanders, the animal was subjected to a systematic series of graduated injections increasing from 1 to 150 c.c. About a month after the last injection the first bleeding was taken and upon testing was found to be free from tuberculin. The serum of the ass is unfortunately of a peculiar grayish color and is never quite clear, so that the preparation is never a satisfactory one to look at.

We have preserved the serum by the addition of 0.5 per cent. of trikresol, after which it is filtered through diatomaceous earth. In the beginning there was no theory upon which the dose could be regulated. I advised, however, that the beginning dose be 1 c.c. Soon this dose was found by the majority of the clinicians to be too large and to cause much pain in the wound, in the joints and in the back. The dosage in the reported cases varied, however, from .5 to 10 c.c. at an injection.

Supposing that the "antituberculin' was to be efficacious in the treatment of tuberculosis, what action shall we expect from it? From the premises given we may conclude:

1. If the fever be the result of tuberculin poisoning it will reduce the temperature.
2. If the rapidity of the pulse depend either upon the fever or the poison the antituberculin, by annulling the effect of the tuberculin and by relieving the fever, will slow the pulse.
3. If the spread of the disease depend in part upon the destruction of tuberculous tissue by the specific action of tuberculin and the liberation of the bacilli from it, that reaction will not take place, the tissue will not be destroyed and the bacilli will be held within bounds.
4. If the retention of the tubercle bacillus in the already diseased tissue will enable the changes in the surrounding healthy tissue to encapsulate it, and if the retention of the temperature and pulse will aid in the temporary or permanent improvement of the general condition of the patient. the antituberculin may be a means toward the production of a cure.

In what way the clinical use of the remedy thus far will bear out these theoretic considerations the accompanying analysis of cases will show.

Having thus secured a serum and a theory under which it might be a useful one, the difficulty was only met not surmounted. The proof of usefulness was yet to be demonstrated.

The first test to which the "antituberculin" was subjected was that of curing tuberculosis in guinea pigs.

1. Series 1 and 3.—Twelve guinea pigs were inoculated with tubercular sputum and then subjected to a routine of frequent subcutaneous injections of antituberculin, beginning with 0.01 c.c., and in the course of twenty-five injections, extending over a period of five months, increasing to 2.0 c.c. These guinea pigs died at varying periods from eleven (probably not from tuberculosis but from some other microörganism in the sputum) to 213 days. Excepting the first, all the animals had pronounced tuberculous lesions.

2. Series 2 and 4.—Together with these tests twelve other guinea pigs were inoculated with tuberculous sputum and subjected to no treatment. Of these one is still living, all the others died in less than 127 days.

From these experiments I felt pretty well satisfied that the antituberculin would not cure tuberculosis in guinea pigs. It next remained to see whether or not it would produce immunity to the disease in guinea pigs.

3. Series 5.—Six healthy guinea pigs were subjected to the same course of antituberculin injections as are described in experiment 1. At the end of the five months these animals all being well and strong and having gained weight regularly, were inoculated with pure cultures of the tubercle bacillus. At the present time they all show signs of tuberculosis. While small in numbers, the second experiment invited no repetition. From it I feel that we can safely conclude: 1, that the antituberculin in large doses is without injurious effect upon healthy guinea pigs; 2, that it does not immunize guinea pigs against tuberculosis.

To determine whether large doses admi [illegible] to [illegible]hy guinea pigs not previously accustomed to [illegible]

4. Series 10.—Three healthy adult

given 1 c.c. of the serum. No sympto

I suppose all medical men are now acquainted with the action of tuberculin upon tuberculous animals, to the extent that when small doses are administered a febrile reaction is manifested, and when large doses are given, death results. My last guinea pig experiments were conducted with a view to determining whether it would be possible to destroy the activity of tuberculin upon diseased (tuberculous) guinea pigs by combining the tuberculin with the antituberculin.

The fatal dose of tuberculin is quite inexact and varies with the stage of the disease, which in its turn varies with the susceptibility of the individual. The tuberculin with which I worked was of such strength that 1 c.c. of it was fatal for an average guinea pig tuberculous beyond four or six weeks. The same dose was harmless for healthy guinea pigs.

5. Series 7.—Three tuberculous guinea pigs inoculated with 1 c.c., 1.5 c.c. and 2.0 c.c., respectively, died in twenty-four hours.

Series 1.—Guinea pigs inoculated with tuberculosis Oct. 21, 1896, and injected with the serum of an immunized animal as follows:

Date.	Dose, c.c.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
Oct. 27, 1896	0.01	Died April 24, 1897; 213 days.	Died; 80 days.	Died; 48 days.	Died; 65 days.	Died; 11 days.	Died; 12 days.
Oct. 28, 1896	0.01						
Nov. 30, 1896	0.01						
Dec. 2, 1896	0.02						
Dec. 3, 1896	0.02						
Dec. 4, 1896	0.02						
Dec. 5, 1896	0.02						
Dec. 7, 1896	0.05						
Dec. 10, 1896	0.05						
Dec. 12, 1896	0.05						
Dec. 15, 1896	0.05						
Dec. 17, 1896	0.1						
Dec. 18, 1896	0.2						
Dec. 30, 1896	0.2						
Dec. 31, 1896	0.2						
Jan. 5, 1897	0.5						
Jan. 9, 1897	0 5						
Jan. 12, 1897	1.0						
Jan. 18, 1897	1.0						
Jan. 24, 1897	1.25						
Jan. 26, 1897	1.5						
Feb. 1, 1897	2.0						
Feb. 8, 1897	2.0						
Feb. 10, 1897	2.0						
Feb. 13, 1897	2.0						
Mar. 23, 1897	2.0						

Series 2.—Control animals injected with tuberculosis and not treated with the serum as above. These animals were six in number and were not frequently observed. The last of them died of tuberculosis Feb. 28, 1897, so that none lived longer than about 127 days.

Series 3.—Six guinea pigs inoculated with tuberculosis Nov. 28, 1896, and injected with the immunized serum as follows:

Date.	Dose, c.c.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
Nov. 26, 1896	0.01	Died Feb. 8, 1897.	Died Dec. 5, 1896.	Killed Jan. 5, 1897.	Died Feb. 8, 1897.	Died Feb. 16, 1897.	Died Jan. 5, 1897.
Nov. 28, 1896	0.01						
Nov. 30, 1896	0.01						
Dec. 2, 1896	0.02						
Dec. 3, 1896	0.02						
Dec. 5, 1896	0.02						
Dec. 7, 1896	0.05						
Dec. 10, 1896	0.05						
Dec. 12, 1896	0.05						
Dec. 15, 1896	0.05						
Dec. 28, 1896	0.1						
Dec. 30, 1896	0.2						
Dec. 31, 1896	0.2						
Jan. 5, 1897	0.5						
Jan. 9, 1897	0.5						
Jan. 12, 1897	1.0						
Jan. 18, 1897	1.0						
Jan. 21, 1897	1.25						
Jan. 26, 1897	1.5						
Feb. 1, 1897	2.0						
Feb. 3, 1897	2.0						
Feb. 8, 1897	....						
Feb. 10, 1897	....						
Feb. 13, 1897	....						

Series 4.—Six control guinea pigs inoculated on the same day were not frequently examined. On March 6, 1897, only one remained, which is still living, June 1, 1897.

Series 5.—Six guinea pigs in good health were subjected to the same injections as Series 1 and 3. After a long rest they were all inoculated April 7, 1897, with tuberculosis. One died May 20, 1897, another May 8, 1897. The remaining animals

Series 6.—Two healthy non-immunized guinea pigs were also inoculated with pure cultures of the tubercle bacillus on the same day. One of them died May 21, 1897, the other is still living with advanced tuberculosis.

Series 7.—Six guinea pigs were inoculated with tuberculosis Jan. 28, 1897 (sputum). In March there remained three animals of this series, all with well-developed tuberculosis. They were injected March 22, 1897, with 1, 1.5 and 2 c.c. of tuberculin. All died in twenty four hours.

Series 8.—Five guinea pigs inoculated with tuberculosis Feb. 13, 1897, survived until March 31, 1897. Each was given a fatal dose of tuberculin with respectively 0.5, 0.5 and 1.0 c.c. of the antitubercle serum. The first survived until April 15, 1897, the second until April 1, 1897, the third until April 15, 1897.

Series 9.—Six guinea pigs with advanced tuberculosis were given each a fatal dose of tuberculin and varying quantities of serum from 0.5 to 2 c.c. All died within twenty-four hours.

Series 10.—Three healthy guinea pigs each received 1 c.c. of the serum used in the above experiments; no results.

Series 11.—Three healthy guinea pigs received varying quantities of the tuberculin used above, 1 to 2 c.c.; no results.

Series 11.—Three healthy guinea pigs injected with 1 c.c. and 2 c.c. of the same tuberculin showed no symptoms.

6. Series 8.—Five guinea pigs inoculated with tuberculosis Feb. 13, 1897. Three survived until March 31, 1897, when each was given a fatal dose of tuberculin and varying quantities of antituberculin from 0.5 to 2.0 c.c. The first survived until April 15, 1897, the second until April 1, 1897, a third until April 15, 1897. In this experiment the rapidly fatal issue of the tuberculin injections seemed to be suspended as if the tuberculin had been neutralized. The outlook was now so interesting that the experiment was repeated.

7. Series 9.—Six guinea pigs with advanced tuberculosis were each given a fatal dose of tuberculin and varying quantities of the antituberculin. All were dead within twenty-four hours. This experiment seemed to destroy the results of the one before it, but the exact problem is a difficult one, for these cases may have been a little more advanced than the others, when less tuberculin would kill them; or the particular bacillus they received may have been a little more virulent, when the disease would have progressed more rapidly.

Thus far, therefore, I have been unable to prove that antituberculin neutralizes or in any way affects tuberculin in its action upon tuberculous guinea pigs. The sacrifice of my fifty or more guinea pigs seems to have been without result.

In all experiments upon animals, however, one must not forget that man is not a laboratory animal, and that he differs from them in his susceptibility. The guinea pig is an animal so susceptible to tuberculosis that it rarely if ever recovers after inoculation. Man not infrequently recovers and almost always suffers from a chronic form unknown to the guinea pig. The question now arose whether one should content himself with the results of guinea pig experiments or whether the experiment should be tried on man. Through the kindness of a number of gentlemen, I am able to lay before you results of an analysis of about twenty cases in which the remedy has been systematically applied.

I think it will be best for me to allow you to draw your own conclusions from the data given. To me it looks as if a definite improvement was obtained in some cases. A glance at the tables will show that the improvement consisted in amelioration of just those symptoms that the theoretic considerations had suggested. The temperature declined and became less hectic; the pulse slowed; the appetite and body weight increased and the cough became less violent. The disappearance of the tubercle bacilli is the most rare and least to be expected result of the use of the remedy.

It would be an egregious error not to speak of the ill effects that have been noted. I can not persuade myself that the death of the one case or the rapid decline of the two were in any manner attributable to the antituberculin which I believe to be harmless.

The most common ill is urticaria immediately following the injection, sometimes localized, sometimes general. This, I think, is due to the freshness of the serum, which was sent out almost as soon as bled.

Painful swellings at the seat of injection seem to be common and undesirable. They may be due to infection or may have some connection with the rapidity of the injection or to the character of tissue selected for the injection, or they may depend upon the freshness of the serum. They have been troublesome in many cases but have never, so far as I know, suppurated or done any damage.

Lastly, the opinion of those who have used the remedy seems to be that the dose should not exceed 1 c.c., at least for a long time. Excessive dosage seems to produce pain in the back, pain in the joints and pain in the wound.

In conclusion, I think we have in antituberculin a substance useful in the treatment of tuberculosis, in that it ameliorates certain symptoms seemingly associated with the toxic conditions present. While the exact value and action of the substance can not be proven by experiments upon guinea pigs, it seems to have been demonstrated clinically.

In closing this paper I must express my sincere thanks to Drs. J. C. Wilson and Kalteyer; Drs. James and T. Miller Tyson; Dr. H. G. M. Kollock; Dr. E. S. Reynolds and J. C. Welch; Dr. James M. Anders; Dr. M. R. Ward; Dr. Guy Hinsdale, Dr. A. A. Eshner, Drs. J. and S. Solis-Cohen, Dr. T. V. Crandall and others for their kind interest and aid in the investigation.

EIGHTEEN YEARS OF PERSONAL OBSERVATION OF TUBERCULOSIS IN ASHEVILLE, N. C.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY JOHN HEY WILLIAMS, A.M., M.D.
SURGEON-GENERAL N. C. N. G., ASHEVILLE, N. C.

In presenting this paper to your honorable body it is well to premise by stating that it is not my intention to exploit any new discovery or vaunt any new mode of treatment. I simply present deductions drawn from a personal observation of over two thousand cases, covering a period of eighteen years; during which time I have been more or less actively engaged in the general practice of medicine in Asheville, N. C., and with, perhaps, special opportunities for such observation.

My excuse for this paper is, that I believe that the profession at large has a deep interest in such observations, made by one of a fair amount of intelligence and a deep interest in his profession. It is too often true that with the specialist the "wish is father to the thought," and conclusions are reached long before the clinical facts will justify such conclusions. It is not my intention to burden this paper with futile speculations and reports of cases.

For the last thirty years or more, the plateau of western North Carolina, of which Asheville is the center, has been the Mecca toward which the faces of many of our afflicted have been turned.

Eighteen years ago I was myself an invalid, suffering from supposed pulmonary tuberculosis—I say supposed, having then no means of positive diagnosis. I was advised by such eminent authorities as Da Costa, Weir Mitchell and the lamented Pancoast that I could not live a year longer in Philadelphia and that a change of climate was necessary. My attention was drawn to western North Carolina by the writings of Hon. E. J. Aston, to whose memory I would that time and ability would permit a more fitting tribute, and the reports of Dr. J. W. Gleitsman, now of New York, who was then conducting a sanitarium for pulmonary diseases at Asheville. To his scientific observation is due much of our knowledge of the climatologic advantages of this spot. At that time Asheville boasted of but 1,700 people, thoroughly imbued with the old time southern hospitality, and pride in their beautiful country. A few months' residence there, and a more thorough knowledge of its climatic attributes, decided me that to obtain a perfect cure I should take up a more prolonged residence. I decided to remain five years at least. With passing years came confirmed health, and I have remained eighteen, with pleasure and profit. With returning health I devoted myself to the practice of medicine, but as time passed the increasing number of invalids who sought our hospitable doors caused my work to run more largely into the line of tubercular troubles. Prior to the tremendous discovery of Koch the treatment of such cases was in no manner specialized. Few if any notes were made of the treatment and progress of the cases. Systematic record of temperature, pulse and respiration was seldom made and it was not until after the discovery of the tubercle bacilli and the necessary association of their presence with the usual phenomena associated with consumption, as we now understand it, that a sharp interest was taken in such cases and the work of our confrères all over the world was closely scrutinized, and independent investigations set on foot with the hope that we might add something to our armamentarium. With greater precision in diagnosis due to improved aids and the closer attention of the profession at large, the earlier diagnosis of tuberculosis was possible.

The influence of climate in the therapy of the disease was given closer attention and its influence in the arrest and cure of the disease has been from time to time strongly set forth by all of our leading specialists, not only to the profession but to the laity as well. The influence of all this teaching is that yearly still larger numbers of primary cases are seeking the health-giving plateau of western North Carolina and western Kansas and Colorado. The ease of access—less than twenty-four hours from New York and only eighteen from the Ohio Valley, with its now well-known climatic advantages, has made this favored region the choice of most physicians of the North and East.

With a proper understanding of all that climate can do for such cases has come the full knowledge that climate is not all, and we have learned, too, that "change of climate" in part consists of a complete change in the environment of the patient, which is so large a factor in the health-restoring attributes of most of our health resorts. The freedom from business cares, household and social duties, is by no means to be underrated. Then comes, too, the change in all the nutritive surroundings of the patient; the bracing air, surcharged with ozone as shown by the meteorologic bureau, the cloudless skies and magnificent scenery, where external impressions count for so much, all conduce to an active out-door life. To such as can and will lead such a life, climate means much—those who can not and will not submit to the intelligent discretion of the painstaking physician and put off having a "good time," till the restoration of their health, had better stay at home. The result in such cases will bring discredit upon the remedy. The care and supervision of the physician whose intelligence and skill has been or should be vastly improved by the observation of the large number of cases that yearly pass in review before him, is necessary in regulating the daily details of the patient's life.

With the closer attention that has of late years been given to the prodromic signs of latent tuberculosis comes an earlier removal from the environment of the patient with corresponding benefit.

In speaking of latent tuberculosis, I have had impressed on me the influence of heredity and a careful study of over 70 per cent. of my patients shows the hereditary taint. In this connection comes the thought of prophylaxis. I would strongly urge the propriety and even necessity of the family physician making regular and stated examinations of every member of the families who may be intrusted to his care, in whom there is even a remote suspicion of the hereditary taint. The importance of the early recognition of tuberculosis is being daily urged upon us—so much can be done in the earlier stages and so little in the later. Cases in the later stages of the disease, with large suppurative cavities, septic chills and fevers, amyloid degeneration of the kidneys, tubercular infection of the intestinal tract with diarrhea—any or all of these I have seen on their arrival in Asheville and have had to advise their immediate return—can have the pathway to the tomb made much smoother with the comforts of home.

The various treatments that have been exploited by their fond discoverers have all passed in kaleidoscopic review, Bergeon, superheated air, etc. Of the most of them it is unnecessary to speak. I have had an opportunity to observe all of them as well as to experiment with the various remedies that have found favor with the profession.

The grave disturbances of nutrition in all cases of tuberculosis, whether it be primary or secondary, is a matter of deep interest. It is a recognised fact that only through suitable changes in all the nutritive processes and surroundings of the patient can we hope to deal successfully with the profound cachexia of tuberculosis in any form.

Possessing no known specific, we have been led to experiment with any and all remedies, foods and physical surroundings that contribute in any way to the building up of the physical and vital forces. The gamut has been run in the way of chemic foods—so-called—but we have to admit that the chemic laboratory has not as yet furnished us with anything that can supplant nature in the catabolic and metabolic processes necessary to a stable equilibrium in the physical economy. Anything that will assist nature to resume a wholesome and healthy function of digestion and assimilation will prove to be a valuable addition to our armamentarium.

Intestinal antisepsis—thorough and complete as may be—appears to have first place in conducing to the nutrition of the patient. In this class of remedies creosote appears to have first rank. I have observed no special benefit from the inordinately large doses given by some. I have given it in doses of from 20 to 90 minims daily, but have decided that I get as good results from the smaller as from the larger doses.

Next to creosote, and I am sometimes of the opinion that it should come first, is the internal administration of ichthyol. I have used the remedy for the past eight years in daily doses of from 20 to 100 minims, and my case books show a very material modification of the symptoms in a large percentage of cases, especially marked in the earlier stages. Glandular cases and those showing evidence of gastric and duodenal catarrh come especially within the range of of its power. Since reading the remarkable results obtained by Scarpa I have had my faith in its powers much strengthened. In no one case have I noticed any unfavorable result from its usage, except an occasional bronzing of the skin, coming on about the third or fourth week of its exhibition and lasting a week or two. In a large percentage of the cases in which I have used it I have noticed a gradual involution and degeneration of the bacilli, with a reduction in number, and their final disappearance. The assimilation is improved and the patient takes on flesh; the character of the sputum is changed in a marked manner, loosing its heavy, viscid, nummular character and becoming thinner, with greater ease in expectoration. There is an improvement in the appetite and digestion with recession of the daily temperature and lessened night sweats.

The use of the pneumatic cabinet with forced inhalation of the vapors of creosote, oil of pine needles, oil of cedar and the various balsamic preparations finds great favor. The stimulation of the local circulation gives consequent freer oxygenation of the blood. The expansion of the bronchioles and vesicles helps to free them from retained mucus and gives a larger breathing capacity, and it counteracts the contraction of connective tissue from inflammatory deposits.

I think it is the general consensus of medical opinion that so-called intra-pulmonary medication, whether by sprays, vapor or steam baths, is, *per se*, of but little avail and that our best efforts should be directed to the restoration of the impaired nutrition and the stimulation of the leucocytes and phagocytes of the blood. If the theory of Metchnikoff be true, and it has not yet been discredited, the remedies that will stimulate this vital action will prove of best service to us.

In this connection I will mention my personal use of Koch lymph and later of the modified product of Klebs known as Antiphthisin.

I was an early user of Koch's tuberculin and was, as were most of us, enthusiastic over the promises of the future. Unfortunate results in some of my earlier cases, however, produced such revulsion of feeling that for months the remedy was allowed to fall into innocuous desuetude. More careful study, however, of the physiologic action of the remedy, with more favorable reports from observers at other points, induced me to give it further trial with careful precaution as to the initial dosage and thorough espionage of the patient for several hours after its administration. With care in its usage, I secured in a few cases some remarkably favorable results, but in the majority of cases confess to disappointment.

The advent of the serum therapy gave renewed interest in the investigations of Koch and Klebs The modification of the remedy as proposed under the name of antiphthisin or purified tuberculin seemed to offer a safer remedy than the earlier product of Koch's laboratory and to admit of a more extended application. It has been, I think, proven by clinical observation and experience that in the earlier or prodromic stages the antiphthisin Klebs or the later product of Koch's laboratory may give almost marvelous results. My case books show that within the last two years I have had not less than thirty absolute and unequivocal recoveries under the administration of this remedy alone.

It is not within the province of this paper to discuss the physiologic action of this remedy. I am simply noting clinical results. I may, however, mention that I do not think that antiphthisin possesses any bactericidal power as does the antitoxin of diphtheria but that it does produce in the body of the patient, by some catalytic power acting as a special ferment upon the healthy tissues of the body, that stimulation of phagocytosis that enables the patient to deal with the bacilli, producing if you please a personal antitoxin. With such specific treatment of the patient comes the general care of all the functions of the body. Septic chills and fevers are not to be controlled by quinin or the coal-tar products. The usage of these latter remedies has been generally discarded. The relaxed skin renders the patient more susceptible to the effect of the diurnal changes common to all elevated latitudes. The daily rise of temperature is best combated with perfect rest in bed with liquid food. With extreme temperature, I have gotten the best results from the use of the ice-bag over the precordium or cold packs to the chest. Oil of turpentine with subgallate of bismuth appears to give the best results in diarrheic cases—opiates are seldom required, save possibly in the form of codein to control cough. The large diurnal range of the thermometer renders the wearing of woolen or silk or other non-conducting material next to the skin imperative. The powerful and stimulating effect of a strychnia nitrate upon the vascular and respiratory centers makes it a valuable adjunct.

Hematic remedies, especially Gude's pepto-mangan, gives excellent results, epescially in cases of an anemic character and in those of a mixed infection. My experience in the Shurly-Gibbs treatment in sixty-four cases has been unsatisfactory in every respect. The Edson aseptolin has proven to be of service in about 14 per cent. of those cases that came to me with a history of malarial infection.

The ingestion of as large quantities of nitrogenous foods as can comfortably be taken care of by the digestive organs, the out-door life, the careful conservation of all the forces of the body will add much to that uncertain factor known as climate. In the selection of cases suitable for transfer to the plateau of western North Carolina I have a few words of caution to offer. Examine your cases carefully with all the aids that modern research has given us. A microscopic examination of the sputum will be of invaluable aid. Cases of mixed infection of the mesentery and the great eliminative organs are by far better off at home. The familiar surroundings, the faith and hope inspired by the old and trusted family physician, the thousand nameless comforts of home will prolong a possibly useful life that would succumb certainly and speedily under the depressing influence of absence from home and friends. Nostalgia is as important a factor in these as with our sick and wounded in the late war.

I have noticed but little effect upon the nervous system from our medium altitude, except that in most cases it has a distinctly soothing effect and that our visitors sleep better here than at home. Cases of a hemoptistic character are usually advised to try the lower altitudes of the eastern and southern slope of the Blue Ridge and I think that Tryon, in the western extremity of the famous Thermal Belt, is the ideal spot.

The financial condition of the patient should also be carefully considered, since to get the best results from climatic influences he should be provided with not only the necessaries but even the comforts and luxuries of life. Very little benefit can be obtained from such climate as can be obtained from a little back room in some second- or third-class boarding house. Let him keep away from the clubs and hotel lobbies and abstain from all the frivolities that are found in all well-known resorts. Do not advise him that the climate will do all for him that is necessary. Advise him by all means to consult on his arrival one who is familiar with all the various things that will conduce to his well being and capable of advising against the dangers that may result from a total change in his habits and surroundings. You will find more than one physician at all such resorts and it is presumable that they are as honest as the general run of the profession.

I would sugggest that you submit your observation of the patient, with history of prior treatment to the physician to whom you may intrust him, noting the remedies which you have found of special benefit, and any peculiarity of temperament or habit with which you may be acquainted. Above all be honest with your patient. It is not kindness to tell him that he has a little bronchial trouble, just a little catarrh or something of that sort, and that a few days' sojourn in a pleasant climate will set him all right. Tell him why you send him and the necessity of devoting all his time and energy to getting well. Tell him the truth.

53 Haywood Street.

DR. DeLANCEY ROCHESTER'S "REPORT ON THE TREATMENT OF PULMONARY TUBERCULOSIS."—REPLY.

BY PAUL PAQUIN, M.D.

ST. LOUIS, MO.

Under the above caption appears in the Journal of the American Medical Association, July 10, 1897, the report of Dr. DeLancey Rochester of Buffalo, N. Y., as presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1–4, 1897. This report I had the pleasure of hearing and was disappointed in not being able to discuss it, owing to the numerous other papers on tuberculosis presented before that and other Sections of the Association, and for the discussion of which only five minutes were granted to each member.

The report of Dr. Rochester seems to be a comparative statement of the results he obtained in the use of Edson's aseptolin, Paquin's tubercle antitoxin and Vaughan's nuclein. I have read it carefully and am compelled to reply because of the manifest injustice it does the cause of sero-therapy and myself. In order to present my case properly before the readers of the Journal and the members of the American Medical Association, it is necessary for me to give a history of Dr. Rochester's tests of "Paquin's" serum, and for this purpose I will be obliged, much to my regret, to quote from his letters to me and from mine to him. I feel justified in doing this because Dr. Rochester in his conclusions, gained from such a meager experience, declares against Paquin's tubercle antitoxin in unmeasured terms, and because the language and tone throughout the report is one to discourage the profession from using serum, and to belittle the method of treatment, to class it with aseptolin, and to exalt, beyond reason, another therapeutic agent. Dr. Rochester's grounds are not tenable.

On Nov. 28, 1896, Dr. Rochester addressed the laboratories bearing my name and made this statement: "I should like to compare Paquin's with Maragliano's serum." To this I replied, under date of Nov. 30, 1896, and made the following statement: " . . If you have more than a half dozen cases on hand at one time that you will treat for three months, or until the disease shall have disappeared, or until the patient shall have proven refractory to this method of treatment, we will make you the hospital reduction of 25 per cent., on condition that you will make careful examinations, charts and reports, as per enclosed blank,[1] you keeping a duplicate to assure yourself that we will not take advantage of anything favorable you may say and leave other results out. Furthermore, we would exact a microscopic examination of the sputum, not only with reference to the bacilli of tuberculosis, but also with reference to all pus germs, their kind and number; whether cavities exist or not, and the nature and degree of fever. You will understand that it is only on the grounds of a thorough diagnosis that sero-therapy can be intelligently applied in tuberculosis, and numerous reports have come to us of failures simply because the serum *was applied in absolutely hopeless cases*, or that a serum designed exclusively to act against the bacilli of tuberculosis *was used in cases of mixed infection* when a combined preparation against mixed infection should have been used. Any communication you may send me personally will be answered with pleasure, etc."

On Dec. 2, 1896, Dr. Rochester wrote me a long and pleasant letter, in which he makes this statement: "*I have none* (meaning no patients) in what may be truly called the incipient stages." In this letter Dr. Rochester also *objects* to sending the chart of his diagnosis, on blanks sent him by me, as mentioned above. To this letter of his I replied on December 4, and made the following statement: "My object in asking you to file your diagnosis and record with me is not for the purpose of publishing the same in our literature without your consent, but it is for my own guidance in experimentation, clinical work, and in our efforts to improve the serum. You will note by my previous letter that I mentioned the fact that some cases of mixed infection should be treated with serum *purposely prepared*, having for its object *the arrest* of the *various complicating germs* as well as the bacilli of tuberculosis. This is one of the reasons why we are so anxious to get the results of the microscopic analysis and a proper diagnosis, that we may supply the proper serum.

"In your cases you have a splendid opportunity of doing some good scientific work and I would respectfully suggest that you institute your work in such a way that you may be able to determine the results by the use of *pure* anti-tubercle serum and the *mixed* anti-tubercle and anti-streptococcus serum in pure and mixed cases of tubercular infection. For that purpose, I think the following mode would be practicable: I would first treat every patient with pure anti-tubercule serum, for several weeks, say a month or two, and note the results carefully. In all cases in which there is no imprvement, and in which mixed infection was discovered, I would then use the serum for mixed infection, which we would supply on demand, and note the result. By that means you could make a comparative report. You may, however, think best to start your work on a different basis, and that of course, is for you to decide.

"I thank you very much for your kind reference to my work in lecturing to your classes, but I beg to *warn the profession against too sanguine hopes in the use of serum in tuberculosis*, unless used in such cases where disintegration *has not advanced beyond repair*. It is true, we have on our list of recoveries, cases that seemed absolutely hopeless that had been given up by physicians of reputation and without question very competent, but these are exceptions and nothing should be left undone, in private practice at least, to sustain the action of serum by other methods. The digestive apparatus particularly needs careful attention and so does the nervous system.

"With reference to the business portion of our relations, I would beg you to correspond with the laboratories, as per enclosed card. Anything purely professional I will attend to with great pleasure, etc."

January 16, 1897, I received a note from Dr. Rochester saying that his patients had not done well but that he was "convinced he was working in the right direction." This I answered January 18, and made the following statement: "It is true that sometimes in desperate cases, sero-therapy succeeds in producing quite an improvement, and I have in my charge now patients in whom cavities seem to have dried up. But in a general sense one *need not expect much in advanced cases* of tuberculosis.

"On the other hand, it is well to consider that in almost every case of mixed infection it is the growth and products of the complicating germs that cause the great injury and eventually death. Chills and high fever, I am sure, are almost wholly due to these factors, and in such cases a serum prepared especially to meet these conditions is necessary. In all cases in which I find profuse quantities of mixed germs, besides the bacilli of tuberculosis, particularly when there is fever above 101, 101.5 or 102, and still more particularly when there occur rigors, and the expectoration is more or less profuse, I use a serum produced by the immunization of animals with the germs that complicate tuberculosis. I also in some instances mix the two serums, but in any event, the serum should be prepared according to the case. I have not yet put this serum on the market, but have been experimenting with it for some time and the results have been more gratifying than with the pure anti-tubercle serum, so that I would suggest that you make charts of your cases with reference to mixed infection and submit them to us, and from this I may be able to give you a serum that will prove more satisfactory.

"Further, I wish you to consider that tuberculous patients with *hereditary influences* are poor subjects for sero-therapy alone, seemingly because their general constitution, particularly the nervous system and digestion are very deficient, and the neutralization of the toxic products of the bacillus of tuberculosis and other germs is not followed by the arrest of the germs themselves and their growth, to a sufficient degree.

"I trust that you will give the serum *a fair trial* in all its forms, and I will be very glad to coöperate with you if you will permit me. I am anxious, in any event, *to know the nature of your cases*, and I think *it but fair* that you should kindly file with me a charted diagnosis of each, history, etc., on the blanks furnished you for that purpose. *My object in this is to guard against unjust criticism*, which I do not anticipate from you, but I think it fair that I should be prepared at any turn. Another object is to keep track of the cases the serum is used in by thinking men, to the end of advancing sero-therapy, in tuberculosis particularly. I believe that I begged you to send me these charts before."

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[1] This blank chart contains, on one side, cuts of the chest, back and front, and diagrams on which to note the nature and location of the physical signs and lesions; on the other side, blank form to write the history of the case, existing conditions, microscopic analysis, uranalysis, diagnosis, prognosis, etc.

February 13, Dr. Rochester wrote: "I have become convinced that the cases that present themselves at the County Hospital are *too far advanced for good results*, so have discontinued serum." In the same letter he says: "I was struck by *the fairness of your statements* at Baltimore and disgusted with the *unfair criticism* of a man from ———." I had been led to believe that with such feelings, Dr. Rochester could not himself be unfair.

I have other letters from both parties, from which I might quote to demonstate the absolutely legitimate and careful grounds on which I was attempting, through Dr. Rochester and at his request, as I have attempted with the assistance of many others whom I trusted, to improve sero-therapy in tuberculosis, at the same time taking step to protect myself and the work I was doing. It will be noticed from my letters to Dr. Rochester, that I specified repeatedly that little good could be expected from advanced cases of tuberculosis, and he himself acknowledged that the patients he had in hand were too far advanced, yet this is the very class of cases he chose in his attempts to demonstrate that Paquin's serum was painful and useless. Not only was the Doctor warned by letter, but the directions which accompany each bottle, and the literature on the subject from a number of physicians, all in good standing and splendidly equipped, demonstrate how the serum can be used with little or no pain, and the class of patients in which this method of treatment can be beneficial. He was advised that cases with cavities and other advanced conditions need not be considered favorable for serum treatment, and none of our reports claim more than a couple of cases of laryngeal tuberculosis (in which he deprecates serum) which were benefited materially.

Aside from these circumstances, I deem it unjust on the part of Dr. Rochester, to make a report comparing Paquin's serum with Edson's aseptolin rather than with Maragliano's serum, as he informed me he intended to do and for which purpose I sent the serum. I never knew he intended to compare sero-therapy with that justly discredited vagary known as aseptolin. I deem it unfair too that he should have chosen cases in which I claim little for serum, to minimize Paquin's serum.

I beg now to refer you to the cases he reports, as published in the JOURNAL, pages 69. 70 and 71, issue of July 10.

The first case in which he used serum had been on aseptolin from May 4 to December 1, 1896—seven months. Following are the chief points of diagnosis before beginning aseptolin: Case 1, D. M. (page 69 of the JOURNAL), "coughing and raising considerable . . . irregular chills followed by high fever and night sweats; . . . tubercular infiltration of right upper lobe." There was no cavity then. The Doctor claims that the patient improved and yet on December 12, when he began Paquin's serum (see page 70. first case) he declares that the following condition existed: "Infiltration in upper left; *cavity in upper right*." Thus a cavity had formed in the course of the seven months of breaking down during the aseptolin treatment. And yet, the Doctor used this case to make a comparative record of results between aesptolin, serum and nuclein. Was this scientific or reasonable or fair?

The second case, F. S., had also been experimented with. Aseptolin has been injected *six months* in this patient before beginning serum. The diagnosis' notes, May 4, 1896, before beginning aseptolin, (page 69 of the JOURNAL) give the following: "For six months the patient had gradually failed in health and strength: there was anorexia, anemia, marked cough, profuse expectoration, afternoon fever and profuse night sweats. Tubercular infiltration of upper and middle lobes of right lung." Now, on November 8, after the six months of aseptolin treatment Dr. Rochester declares that "there is infiltration of *entire* right lung, and *cavity* in left upper lobe surrounded by zone of breaking down lung; aseptolin stopped." The case had gotten much worse. December 14, just before beginning serum, this same aseptolin case was re-examined by Dr. Rochester and he describes his physical condition as follows: "Infiltration of left apex and of right upper, with bronchitis in right middle lobe." Mark that he no longer mentions the cavity, and thus the case appears milder to the readers. Is this scientific, fair or reasonable?

Case 3, of the serum series (p. 70, JOURNAL), is case four of the aseptolin series (p. 69). Before using aseptolin in him (for six months) he says, May 2, 1896, the patient is "anemic, has no appetite, feels very weak, suffers from dyspnea. There is evidence of consolidation of upper left lobe and scattered areas of broncho-pneumonia through rest of left lung, and slight bronchitis in upper right. Coughs a great deal, etc." Nothing is said in this diagnosis of a cavity existing. In fact, the very day the aseptolin was stopped, December 8, Dr. Rochester explains that there "was no change in patient's condition." And yet six days later before beginning serum he says: "There is an infiltration in the upper left and in the middle right and a cavity in the upper right." This undoubtedly is an acknowledgment that the patient has been going down hill with aseptolin, and still he considers it a patient to test serum. Is this reliable work?

Case 4 he describes as being with a *previous history*. infiltration of left upper lobe as far down as the level of the second rib in front, and as far as the spine of the scapula behind. "Considerable cough and expectoration."

Case 5 he describes as having *a previous history;* pneumonia five years ago; cough for two years; night sweats; cough and expectoration considerable; sputum often tinged with blood; scattered areas of broncho-pneumonia in both lungs, together with considerable emphysema; cavity in upper right lobe."

In the above descriptions there exists much discrepancy between the diagnosis made in identical cases, for the use of aseptolin and that for the use of serum and there is ample evidence to give the opinion that every one was advanced beyond permanent improvement, whether treated by nuclein, protonuclein or anything else devised by the human mind. They constitute the very class of patients against which I had warned Dr. Rochester not to use the serum with any hope of even satisfactory temporary results, as can be seen by the foregoing evidence: consequently, Dr. Rochester was not warranted or justified in taking the radical position he did against sero-therapy in tuberculosis, in an experience with five cases, none of which he treated longer than one month, and four of which were moribunds, and it is unjust if not absurd, to compare sero-therapy with aseptolin. Another case, glandular tuberculosis, not mentioned above, he treated longer, and that one he himself says was improved.

As to nuclein I know it is of value in its proper sphere; but I wish to say a word concerning Dr. Rochester's tests with this preparation also, to which he ascribes invariably good results. Let us see how he dealt with the patients under nuclein:

Case 1, Miss C. (page 72 of Journal), it seems is mentioned only to reflect on serum, for there is no scientific or practical data whatever with the mention of it, and there is a reiteration of regret to have used serum in her. (Perhaps this is Miss B., page 71. Inaccuracy throughout the report makes many points hardly intelligible.) The case *had not been tampered* with at all with aseptolin before nuclein was tried.

Case 2, Mrs. W. F. H., June 25, "infiltration with some softening of upper lobe of left lung," later "infiltration of the upper right lobe and entire left lung with softening of the upper lobe"; no cavity then. Nuclein was used for *two years*, and May 20, 1897, Dr. Rochester found "a *cavity* in upper left with infiltration about it." That is not such a wonderful cure. Probably nothing known to the human mind can arrest the disease in this case.

Case 3, Elizabeth McD., Nov. 11, 1895, "infiltration upper left, cavity surrounded by softening in upper right, etc." Nuclein used from November, 1895 to Aug. 15, 1896, "when she passed from under observation, still coughing occasionally and with some condensation in right apex." It does not appear that Dr. Rochester saw this patient after Aug. 15, 1896, when she still exhibited the latter symptoms, and yet in May, 1897, he hopefully remarks, "this case I consider *recovered* though there remains slight condensation in upper right." Is there a physician justified to call such a case a recovery?

Case 4, John D., Nov. 14, 1895, "infiltration in upper right; infiltration and slight softening in upper left; bronchitis in lower left." Nuclein was used till May 20, nearly seven months, and then Dr. Rochester found a "cavity." This was not present at the beginning of treatment. And "the sputum still contains the tubercle bacilli." There is not very great evidence in this case in favor of nuclein in advanced conditions.

Case 5 gives much better encouragement.

Case 6, David D., which had done so badly under serum on account of pains, etc., seemed to be naturally refractory to hypodermic medication, for he was prostrated repeatedly after injections of nuclein, and the fear of this, said Dr. Rochester, is what precluded (?) good results.

Case 7 was treated only two weeks, entirely too short a time for any improvement to have much significance, though the results are highly encouraging.

I have used nuclein extensively by hypodermic injections and I know that it does produce pain very frequently, and I have known physicians who hesitate about its use, just as Dr. Rochester did with serum on the plea that it produced too much pain, and the plea is just as unwarranted as it is in serum. If properly used in proper cases this criticism is without foundation either in serum or nuclein, except in a few refractory and sensitive patients with respect to hypodermic medication in general.

While the above cases are described sufficiently by Dr. Rochester to warrant any physician in declaring 98 per cent. of them hopeless under any kind of treatment, no one can tell to which class they belong. We have at least the following classes: Destructive broncho-pneumonia and cavities; destructive broncho-pneumonia without recognizable cavities; with diffuse febrile pneumonia, with or without a destructive character; with diffuse non-febrile broncho-pneumonia, with or without destructive process; with circumscribed febrile broncho-pneumonia; with circumscribed apyretic broncho-pneumonia. Information should have been given us on this question if it was intended by the author to show cause for success or failure. To take such a radical stand as he did one should have positive evidence.

As to the pain the Doctor says serum induces, I have already alluded to it. But I wish to say further that the directions accompanying each bottle of serum mention every untoward symptom of sero-therapy, and it is not long before most physicians who use serum find the means, if they follow the directions, of preventing pain and all other possible untoward effects of hypodermic medication. This pain is rarely worth mentioning and is caused by the preservative, which in one form or another, is found in all antitoxins and other organic products including nuclein. Pain is not a special result of Paquin's serum, as it seems is the author's intention to show. Dr. Rochester's experience on this score should not be utilized as a factor against the use of serum.

In refutation of Dr. Rochester's claim of serum uselessness, which is based on a few week's experience with five unavoidably fatal cases, four of which were practically moribunds before he began, I beg to mention the following physicians who used serum and are still using it when proper cases offer, not to mention the reports which I have myself made.

Dr. L. L. Shropshire, San Antonio, Texas, five cases of recoveries and improvements. (Reprint from *New York Medical Journal*, January, 1896.)

Dr. J. R. Lemen, Marion Sims' College, St. Louis, Mo., two cases recovered. (Reprint *New York Medical Journal*, Sept. 1, 1895).

Dr. J. A. Dunwody, Cripple Creek, Col., four recoveries and improvements. (Reprint New York *Medical Record*, July 11, 1896.)

Dr. H. C. Mitchell, Carbondale, Ill., two cases recoveries and improvements. (Reprint *North American Practitioner*; presented to the Southern Illinois Medical Society, Nov. 15, 1895.)

Dr. Hoell Tyler, Mentone, Cal., five cases recoveries and improvements. (Reprint *Southern California Practitioner*, October, 1896.)

Dr. William Miller, Boerne, Texas, one case recovered. (Reprint from *Southern California Practitioner.*)

Dr. J. M. Allen, Professor of the Principles and Practice of Medicine University Medical College, Kansas City, Mo., gives four cases, recoveries and improvements. (Reprint Journal of American Medical Association, May 29, 1897.)

Dr. F. T. Chamberlain, physician nose, throat and chest, East Hospital, Washington, D. C., under the use of various serums including Paquin's, reported twelve cases of decided improvement. (Reprint from *Virginia Medical Monthly.*)

Dr. Landon B. Edwards, ex-President Richmond Academy reported decided improvements and of Medicine and Science, splendid benefits from the use of serum. recoveries and (Reprint *Virginia Medical Semi-Monthly*, 1896.)

Dr. William Hutson Brioleau, Summerville, S. C., four recoveries and improvements. (Reprint *New York Medical Journal*, June 26, 1897.)

Dr. J. G. McFarland, Professor Pathology University of Pennsylvania, Philadelphia, June 3, before the American Medical Association. (New York *Medical Record*, July 10, 1897.)

Dr. J. D. Dillin, Ft. Worth, Texas, reported the cure of his wife.

At least twelve new reports testifying to the efficacy of Paquin's serum, from as many physicians of competence, are awaiting the medical press for publication.

I could mention the names of at least a hundred or more physicians, who have used serum according to direction, and obtained equally as good results, but they have not as yet reported to the profession and I have not time to get permission to quote them. The above-mentioned are some of those who *have* reported to the medical press and their statements can be veriged by any one who will read their papers.

Now I will admit, as I did to Dr. Rochester before sending his serum for the treatment of his patients and warning him against too great expectation in advanced cases, that pure anti-tubercle serum is *not sufficient* in advanced cases, for in them there is *always* mixed infection. The Doctor did not heed me in this, nor did he when I explained that he should use a serum purposely prepared, for all mixed infections, and at least four of his cases were unavoidably mixed. The one single case which he claims was pure tuberculosis(?) was not sufficient evidence to determine anything, especially as defective circulation about the diseased areas in laryngeal tuberculosis adds seriously to the difficulty of treatment. He confesses he knew better in saying (paragraph 4, p. 71) "good results from a specific antitoxin should not be looked for in such cases." Yet he deliberately and in defiance of advice sought by him, and given to him, took moribund cases, used serum least suited to them and draws a parallel with an exploded nostrum on one side and worthy nuclein on the other, giving months of trial to aseptolin, years to nuclein and only a few weeks to Paquin serum, chiefly in aseptolin-wrecked constitutions.

I regret to have to take the matter up in this form, but since Dr. Rochester has not hesitated in the use of unwarranted language, based on insufficient data, after I had taken the pains to warn him against the use of serum in the very cases which he used to form his rash opinion; when I find the whole report so full of inaccuracies and discrepancies; and when I trusted him to do really scientific work, as a man, physician and scientist, I feel warranted in my action both for self-protection and in behalf of the cause of serotherapy. I trust that Dr. Rochester will do me justice.

MY EXPERIENCE WITH PAQUIN'S ANTI-TUBERCLE SERUM.

BY S. LANE ANDERSON, M.D.

CHADD'S FORD, PA.

I have used Paquin's antitubercle serum on several cases, and for me it has done all that is claimed for it.

Case 1.—Miss G., aged 25, weight 130 pounds. January and February, 1896, suffered from an attack of la grippe; did not clear up properly. Symptoms three months later, in May, dull and pneumonic areas in right lung amounting to pectoriloquy; acute lancinating pain, purulent expectoration, continuous cough, and exaggerated and very *painful tubercular pharyngitis*, daily afternoon rise of temperature, excessive night sweats and most offensive diarrhea; had also two hemorrhages in June. My treatment up to this time had been the recognized standard remedies for the existing conditions. A professor of laryngology from one of our colleges in Philadelphia had seen the case and his suggestions had been faithfully carried out, with absolutely no amelioration of the trouble. Two consultants pronounced the trouble advanced tuberculosis. In July, 1896, weight had fallen to 116 pounds; had had no appetite for weeks, in fact, had not averaged four ounces of food daily. Commenced using serum in July, 5 m.. at first, increasing 3 or 5 m. daily till 30 m. was the regular dose.

Result.—In less than one week the throat was decidedly better, the sputum lost its pus character, night sweats lessened, cough was much improved; appetite became ravenous, could eat diet she previously had no taste for. In fourteen weeks, after using five bottles of serum, she returned to work (clerking in store) weighing 126 pounds, feeling well; throat entirely well, good appetite, sleeps well, and I might say, 100 per cent. better in every way.

I used in all on this case eight bottles of serum. Never had an unpleasant experience, and toward the last only gave her 25 m. every other day. She complained of tasting it in her throat within five minutes after the injection, and if any pain existed before the injection it would relieve it almost immediately. As I am very skeptical I used the serum believing the result would be negative, as I did not think Miss G. would live till September.

I have used it on other cases and the result has been on a par with this case, and I will also add that I shall continue to use the serum on any and all cases that will submit to it. I have never failed to see the benefit in seventy-two hours. It gives relief from those distressing symptoms which render that class of sufferers so miserable. All cases in which I have used it, after three or four weeks, I put on the following:

℞	Syrup hypophosphites, comp. (Fellows)	℥ ij	64 00
	Spirit. frumenti Ol. morrhuæ	āā ℥ iv	128 00
	Extract malt, q. s. ad	℥ xvj	512 00
	M. Sig.—ʒ iv in H_2O fifteen minutes before meals.		
℞	Quinin sulph.	ʒ ij	8 00
	Ferri sulph. exic	ʒ j	4 00
	Strych. sulph Acid arsenious	āā gr. iij	19
	M. Ft. pil., No. lx		
	Sig.—One after meals.		

These formulæ I have always found well borne after two or three weeks use of the serum, no matter how rebellious a stomach may have been prior to that time. My patients do well on this treatment and have never yet had to discontinue it. I am treating what was said to be a hopeless case now and she is doing well.

REPORT OF OBSERVATIONS MADE UPON A CASE OF GASTROSTOMY.

BY M. F. COOMES, A. M., M. D.

Professor of Physiology, Ophthalmology, Otology and Laryngology, in the Kentucky School of Medicine; Member of the American Medical Association, and the Kentucky State Medical Society; Ophthalmic Surgeon to the Louisville City Hospital and the Kentucky School of Medicine Hospital: Consulting Ophthalmic Surgeon to St. Mary's and St. Elizabeth's Hospital, etc.

LOUISVILLE, KY.

The stricture of this child's esophagus was the result of swallowing concentrated lye nearly a year before he was operated upon.

At the time of the operation Feb. 16, 1896, the stricture was impervious, not admitting the smallest bougie, and the child had not swallowed for six days. A modified Franck's operation was performed, and a rapid and uninterrupted recovery followed. The patient was five years of age.

Some six weeks after the operation he began swallowing fluids, and is now able to swallow thick broths and take milk with mush or oatmeal, which shows that the cicatricial tissue is being rapidly absorbed. Observations with a view of determining the quantity and quality of fluid found in the stomach, were commenced on Oct. 10, 1896, at 12:45 P.M., and were made on the various dates given below in connection with the tests. The greatest length of time between the periods of removal from the stomach and the time at which the digestive tests of the fluid were made, was 271 days, and the shortest 131 days.

All of the specimens were passed through ordinary filtering paper as soon as they were drawn from the stomach; after filtering, the tests for hydrochloric and lactic acid were made. The fluid was then placed in a clean bottle and properly numbered and labeled so that no mistake as to quantity, date or chemic reaction could be made. All of the specimens have been kept in a steam-heated room where the average temperature was 70 degrees, F., and on many occasions a much higher temperature was obtained, but it never went below 50 degrees, F. There was no special effort made to exclude the air from any of these bottles, as their mouths were only stopped with corks or cotton wool. All of the specimens seem to be well preserved at this writing, with one exception, and that is the specimen which was obtained on Oct. 15, 1896, at 8:30 A.M., after fasting 12 hours. On the top of this fluid is a moldy mass, the greater portion of it being white, a small fringe around the edge being decidedly black; this specimen showed less evidence of lactic acid than any of the others.

I did not see him from October 16, until October 26. On that day he came to town in an open wagon with his parents, who live fifteen miles in the country. He had breakfasted at 6 A.M.. partaking of some sweetened coffee well mixed with a goodly portion of rich cream, and some oatmeal mush. This youngster is no exception to the rule which governs the *genus homo.* He loves to gratify his appetite and persists in swallowing those things that are pleasing to his palate, as sweets and certain kinds of soups. If it is an ordinary broth or something which he *does not fancy, he* prefers to have it put into the stomach through the opening which is in that organ, rather than go to the trouble of swallowing. *He arrived at my office at* 11 A.M. Early in the morning the father had purchased him some peppermint candy with red stripes on it. He continued to suck the candy and swallow the saliva for a greater part of the trip, but had nothing else to eat or drink from 6 A.M., until he arrived at my office. I removed from his stomach, at that time, 150 cubic centimeters of gastric juice. It was decidedly pinkish in color, the color being due to the pigment upon the candy. There was also a decided odor of peppermint in the fluid. Both hydrochloric and lactic acid were present. No digestive test was made.

The results of the tests reported to determine the digestive powers of the different specimens of gastric juice, were made on July 9, 1897, 271 days after removal from the stomach. It will be noted that No. 8 was procured on Feb. 27, 1897, or 131 days after removal from the stomach, and that there was no digestive test made of No. 1.

No. 1.—October 10, 1896, at 12:45 P.M., after fasting five hours, 19 cubic centimeters of gastric juice were removed from his stomach. Tests showed both lactic and hydrochloric acid present.

No. 2.—October 13, 1896, at 8 A.M., after fasting twelve hours, 10 cubic centimeters of gastric juice were removed and both acids found present. July 9, 1897, this fluid completely digested boiled egg albumin and readily coagulated milk, demonstrating its active properties.

No. 3—October 13, 1896, at 1:30 P.M., after fasting five hours, 45 cubic centimeters of gastric juice were removed. Both acids were found present. July 9, 1897, this specimen possessed all the qualities of normal gastric juice, readily digesting boiled egg albumin, and coagulating milk.

No. 4.—October 14, 1896, at 8:30 A.M., after fasting thirteen and a half hours. 12 cubic centimeters of gastric juice were removed. Both acids were present. July 9, 1897, this specimen was not very active in digesting albumin, but promptly coagulated milk. The coagulum was solid and not flocculent like that produced by gastric juice under ordinary circumstances.

No. 5.—October 14, 1896, at 2 P.M, 65 cubic centimeters of gastric juice were removed. He had been fasting five hours and forty-five minutes. Both acids were present. July 9, 1897, this specimen gives no reaction whatever upon albumin or milk; that is, it will not dissolve albumin, nor does it coagulate milk; showing that it has undergone complete degeneration, possessing none of the properties of a digestive fluid.

No. 6.—October 15, 1896, at 8:30 A.M., 45 cubic centimeters of gastric juice were removed. He had been fasting twelve hours. Both acids were present, however only a trace of the lactic. July 9, 1897, this specimen possessed comparatively active powers in digesting albumin and coagulating milk.

No. 7.—October 16, 1896, at 3 P.M., 20 cubic centimeters of gastric juice were removed. He had been fasting five and one-half hours. Both acids were present. July 9, 1897, this specimen was moderately active in digesting albumin, and very prompt in coagulating milk.

No. 8.—February 27, 1897, after a fast of six hours, 27 cubic centimeters of gastric juice were removed *from his stomach. It contained both lactic and* hydrochloric acid. July 9, 1897, 131 days after removal from the stomach, it dissolved egg albumin *and promptly coagulated milk. Its digestive powers* were decidedly more active than any of the other specimens. Nos. 2 and 3, however, resembled it very much in activity.

The specimens of gastric juice which were removed after long periods of fasting, showed almost no lactic acid, which goes to substantiate what is now conceded to be a fact, viz., that the stomach in its normal healthy condition does not produce lactic acid.

Another point of importance that I observed in connection with this case, was the rapidity with which the fluids passed out of the stomach. On one occasion, particularly, I remember to have given him four ounces of water by actual measurement. I had at the time an endoscope introduced into his stomach for the purpose of examining the lining membrane of that organ. I held the glass to his lips until he had done swallowing, and then stepped across the room to get a tumbler to catch the fluid that would come from his stomach, and immediately proceeded to drain the stomach. I secured a little less than two ounces of fluid, the remainder of it having been absorbed by the stomach, or forced over into the duodenum. Very little of it was absorbed, as the whole time occupied in swallowing and draining could not have been more than two and one-half or three minutes.

This also goes to confirm observations that have been made by others concerning the disposition of the fluids that enter the stomach from the mouth, viz., that they are rapidly carried from the stomach into the duodenum. It is worthy of note, that in the observations of the fluids taken from this boy's stomach, that the longer the fast, the less the amount of lactic acid; there being only a trace of it in all instances where the fast was twelve hours or more.

A glance at the report will show that the smallest quantity of fluid obtained at any one sitting, was 12 cubic centimeters, or nearly half an ounce.

Again, it will be noted that after a fast of twelve hours, there was as much as 45 cubic centimeters of fluid found in the stomach, which proves that the stomach always contains some fluid.

Another point is, that after 271 days it is well preserved, showing almost no evidences of chemic deterioration.

A NEW TEST FOR LACTIC ACID IN THE GASTRIC CONTENTS AND A METHOD OF ESTIMATING APPROXIMATELY THE QUANTITY PRESENT.

Presented to the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY J. P. ARNOLD, M.D.
PHILADELPHIA, PA.

In view of the value of the detection of lactic acid in the gastric contents, especially in the diagnosis of gastric carcinoma, the importance of which has been increased by the later work of Boas, and because of the uncertainty and unreliability of Uffelmann's test, I present the following.

The test which I detail is simple and easily applied, the reaction is characteristic, the results reliable. It also affords a method of approximately estimating the quantity of lactic acid present. The test solutions used are:

Solution No. 1, consisting of saturated alcoholic solution gentian violet, 0.2 c.c.; distilled water, 500 c.c.

Solution No. 2, solution ferric chlorid (U. S. P., 1890), 5 c.c.; distilled water. 20 c.c.

The method of applying the test is as follows: Into a small porcelain capsule place 1 c.c. solution No. 1 and add from a pipette 1 drop of solution No. 2. The violet color of solution No. 1 changes to a bluish violet after the addition of the ferric chlorid. To this mixture add drop by drop the filtered gastric contents. If lactic acid is present the color of the solution changes from a *bluish violet* to a *green or greenish yellow.*

Alcohol, glucose, butric acid, acetic acid and phosphates, in quantities below 2 per cent. do not interfere with the reaction as they do in Uffelmann's test. The reaction is not interfered with by acetone or albumoses; sulphuric, nitric and hydrochloric acids do not give the reaction.

Delicacy of the test.—One drop of a 0.02 per cent. solution of lactic acid gives a very distinct reaction. The usual limit set down for Uffelmann's test is the detection of 0.05 per cent. If phosphates are present there is at first a reddish violet color produced, which in the course of a second or two gives way to green. If phosphates be present to the extent of 0.5 per cent. it may take two or three drops of a 0.02 per cent. solution of lactic acid to bring out the reaction distinctly.

To determine approximately the quantity of lactic acid present the procedure is as follows: It is well to prepare a 0.2 per cent. solution of lactic acid to use as a standard. Take two narrow test tubes of equal size and to each add 5 c.c. of test solution No. 1 and 5 drops of test solution No. 2. To one tube add 0.5 c.c. of a 0.2 per cent. solution of lactic acid: the mixture turns green and all traces of violet or blue disappear. To the other test tubes add, drop by drop, the filtered gastric contents until the color is the same shade of green as in the first test tube. Comparison may be made more accurate by equalizing the volumes of the solutions in the test tubes by adding to the first tube as much distilled water as was added of gastric contents to the second tube. To get the percentage of lactic acid present, divide 0.1 by the number of cubic centimeters of gastric contents used.

This is not given as a means of determining accurately the amount of lactic acid present, but with care the amount present can be estimated within 0.1 per cent. and to one accustomed to the use of the test a per cent. as low as 0.05 can be estimated.

3722 Walnut Street.

THROMBOSIS OF THE JUGULAR VEINS.

Presented in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY HELEN BALDWIN, M.D.
NEW YORK CITY.

When Lasègue in 1879 reported a case of phlebitis of the neck, he stated that after painstaking search, he was unable to find a similar observation published, either in France or elsewhere. Since then a number of cases of this kind have been reported, yet they are sufficiently rare to make each one of peculiar interest.

The following record is that of a patient admitted to the New York Infirmary for Women and Children, in the service of Dr. Josephine Walter, to whom I am indebted for these clinical notes.

Ida D., aged 19 years, American, seamstress. Admitted to hospital Nov. 30, 1896.

Family history. Negative. Mother died from an accident, father and two brothers living and well.

Personal history. Measles when 8 years old. Rheumatic fever when 10 years old, with two subsequent attacks on two succeeding years. Her heart has troubled her from early childhood, beating rapidly whenever she ran or exercised vigorously. This became much worse after the attacks of rheumatism, so that now she has palpitation on every exertion. For several years she has not been strong. During the past year the menses have been irregular, and for the past four months she has had amenorrhea.

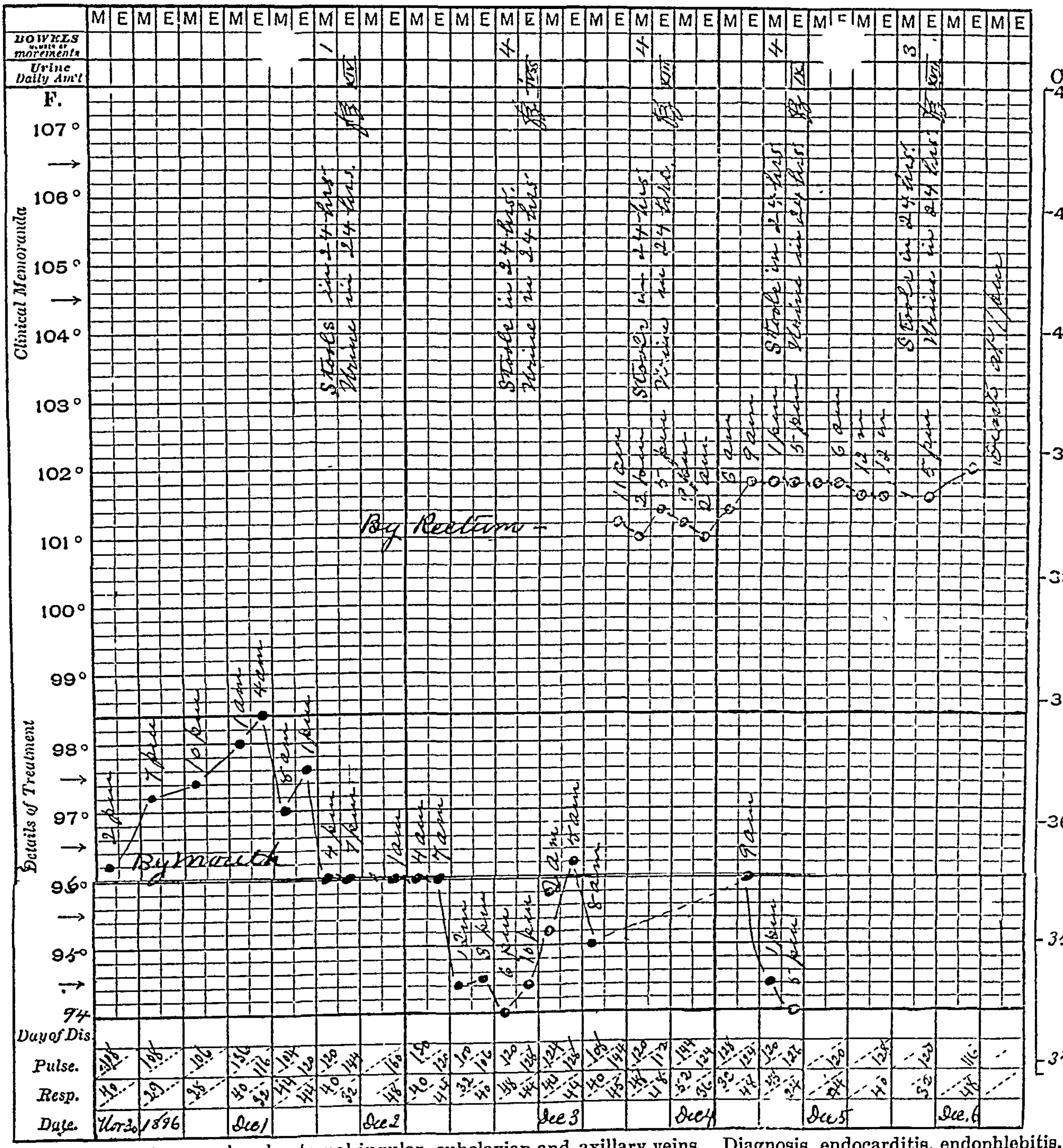
Present illness. About five weeks ago patient noticed that her feet became slightly swollen. The swelling, which was painless, has become gradually more marked since then. A few days ago an aching pain developed in the left axilla and in the left side of the neck. There was also swelling in the neck, which when first noticed would disappear when she sat up, and reappear when she lay down.

On admission to the hospital, the patient appears very weak. There are cyanosis and dyspnea present. Temperature 96.2 degrees F. (35.7 degrees C.). Pulse 108, respiration 40.

Examination December 1. There is lividity of the lips with dilatation of the veins on the edge of nostrils and tip of nose. The pupils are widely dilated. The tongue is slightly coated. The pulse is small, rapid and compressible. The dorsum of the left hand is markedly swollen. Both legs are swollen and pit on pressure. There is marked cyanosis of the skin. The glands in the groin are not enlarged. *Heart.* Left border, 1.3 cm. outside nipple line; right border, 2.5 cm. to right of sternum. Double aortic and mitral murmurs. Apparent dilatation near base of heart, which suggests an aneurysm. Very slight murmur heard in the vessels of the neck. This is out of proportion to the sounds at the base of the heart. A systolic murmur is transmitted down the sternum.

On the *left side of the neck* there is a hard, tender swelling of the lower part of the external jugular vein, which is tortuous. There is a hard lump in the left axilla, extending down the arm for about five inches. The left arm is edemat
quite pale, not cyanosed. The liver is enlarged. Ther
in the abdominal cavity.

Urinalysis. Amount in twenty-four hours 420 c.c. Turbid, reddish brown in color, reaction markedly acid. Sp. gr. 1033, albumin present. Urea 2.8 per cent.; no sugar. Amorphous urates. A few uric acid crystals. Granular, hyaline and epithelial casts.



Thrombosis of internal and external jugular, subclavian and axillary veins. Diagnosis, endocarditis, endophlebitis.

December 2. Patient slept very little during the night. Pulse small but regular. There is a slight puffiness in the palm of the hand, but the edema on the dorsum is less marked today. She does not have earache. The external jugular vein is felt as a cord running up the side of the neck to about one-half inch below the lobe of the ear. There is bifurcation of this cord about half way up the neck. Nothing felt passing posteriorly. The whole left side of the neck is fuller than the right, following the course of the sterno-cleido-mastoid muscle. A prominence, circumscribed, about two inches long, is found on the inner aspect of the arm just below the axilla. The axilla is not as hard or as tender today, and the feet are less edematous. In the lungs, posteriorly there is dulness in the lower part on both sides, and voice sounds are heard over this region. There are fine crepitant râles heard near the bases. Urine in twenty-four hours only about 135 c.c.

The temperature, which was taken by the mouth during the first five days of her treatment, was persistently low. During the first day it reached 98.2 degrees F. (36.8 degrees C.), but after that it varied between 94 F. (34.4 C.) and 96 degrees F. (35.5 degrees C.). On the fourth day it was discovered that while the temperature was 95 F. (35 C.) by mouth, it reached 101.2 F. (38.4 C.) by rectum, and after this, although there was especial precaution taken to avoid an error in registering, there was a difference of from 6 to 7.8 degrees F. (3.3 to 4.3 C.) between the temperature by mouth and that by rectum. (See temperature chart.)

December 4. Pulse seems stronger and there is less tenderness in the arm and hand. There is slight vibration felt in the first intercostal space near the sternum. In the same position there is slight dulness on percussion, which extends to the second intercostal space, and lies a little further to the left than to the right. The first and second sounds of the heart are heard in the first intercostal space. *The character of the pulse is slightly weaker in the left than in the right wrist.*

December 5. Slept a good deal during night, but restless during sleep. At one time coughed up a little blood. Dulness in both lungs posteriorly from the angle of the scapula to the base. On auscultation, over the upper part of chest on both sides, the inspiratory murmur is harsh. Fine crepitant râles are heard at the end of inspiration. The heart murmur is not heard in the back behind the posterior axillary line. Percussion reveals presence of fluid in the thoracic cavity. Thickened cord extending more markedly down side than arm, this morning.

Urine. Amount in twenty-four hours, 510 c.c. Very clear, amber in color, markedly acid. Sp. gr. 1020, albumin 5 grams to liter. Urea 1.5 per cent.; no sugar. Epithelial and hyaline casts.

December 6. Patient failed rapidly, and died in the afternoon.

The postmortem examination was made by Dr. Elizabeth Mercelis. As permission for the section was restricted to that which could be made through the ordinary median incision, the veins of the extremities could not be examined. The record is briefly as follows:

Body moderately nourished. There is general edema, which is most marked in legs and feet, least in upper extremities and chest. On opening the abdominal cavity, there is a free escape of turbid yellow fluid. In both pleural cavities there is also a considerable amount of fluid, with a few firm adhesions between parietal and visceral pleuræ. The apex of heart is in the fifth intercostal space in the mammillary line. In the pericardial sac there is a considerable amount of a clear amber fluid.

The *heart* is much enlarged, being 16.5 cm. in length, 10 cm. in width and 7.5 cm. in thickness. The right auricle is very greatly distended, measuring 13.5 cm. in length. It is completely uncovered by lung. It presents somewhat the appearance of a great distended vein. The left auricle appears normal. Right ventricle shows lines of fat distinctly marked. On the posterior surface is a considerable area of puckering, as of sclerotic change. The vessels on the surface are distended. The ventricle is filled with fluid blood. Length of cavity 8.5 cm.; thickness of wall 1.6 cm. The tricuspid valve is thickened throughout in ridges, and the edge is curled and thickened. There are no vegetations, and no ulcerations. *Pulmonary valves.* Two of these are fairly thin and flexible; along the free edge of the third (the aortic cusp) there is much thickening, having a firm, almost cartilaginous feel.

Left ventricle. The wall is the same thickness as the thickest part of the right. The endocardium is smooth. The aortic valves are thickened on edges. The aorta is soft and smooth. The mitral valves are very much thickened, and adhesions between the different cusps form an almost uniform piece about the ring. There are no ulcerations or vegetations.

The left innominate, left subclavian, and the external and internal jugular veins, extending up nearly to the lobe of the ear, are filled with firm thrombi. There are ragged bits of thrombus extending down into the superior vena cava.

Behind the left auricle, and pressing upon it, is an enlarged, hard lymph-node, 3.7 cm. in length, 2.5 cm. in width and 1.2 cm. in thickness. Extending up each side of the trachea is a chain of enlarged lymph nodes, each about the size of a pea. One of this size is situated at the junction of the subclavian and internal jugular veins. None of these seem to press upon the veins. There is a small extravasation of blood, which has dissected up the left side of the trachea and around the enlarged lymph nodes behind the left auricle. The origin of this blood can not be found.

The *lungs* are congested throughout and both show, on microscopic examination, an early stage of lobar pneumonia. There are areas of infarction in both lungs.

The *kidneys* show cloudy swelling, with scattered areas of old connective tissue degeneration.

The *liver* extends 5 cm. below the margin of the ribs. It is the seat of very extensive fatty change.

The *mucous membrane* of stomach and intestines is congested.

The *spleen* is markedly enlarged, congested and friable.

The large veins of abdomen are free from clots.

The uterus and appendages are normal.

On microscopic examination of the thrombosed veins, the internal and external jugulars present the usual picture of organizing thrombi. There are delicate lines of connective tissue extending into the mass of cells which obliterates the lumen of the vessel. The endothelial cells are slightly increased in number, as are the connective tissue cells in the walls of the veins, but these changes are evidently secondary to the thrombus formation. In the subclavian vein, on the other hand, there is an endophlebitis which is evidently of longer duration and primary to the formation of the clot. Around nearly one-fourth of the circumference the intima is fairly normal, and here the clot lies free in the lumen. The greater part of the intima, however, is much thickened and very irregular along the inner border. In places the lumen is encroached upon to one-fourth or one-third its diameter by this thickened intima. At one portion, the blood clot and intima have become so blended, through the proliferation of intima cells and formation of fibrous bands, extending from the media into the center of clot, that the line of demarcation between them can not be determined. The middle and outer coats are thickened throughout the corresponding portion of the vessel. It appears as if the thrombus formation has been caused by the obstruction to the current of blood caused by this endophlebitis, the stasis being favored by the failure of compensation in the heart.

Bouillard considered that there was a rheumatic phlebitis, similar to rheumatic endocarditis or pericarditis. In this patient's history there is a record of three attacks of acute articular rheumatism, but the last occurred seven years before the present illness.

In 1887, Friedrich Pohl published an article on thrombosis of the subclavian and jugular veins. In this he reported a case, and reviewed the literature of the subject, finding seven cases in which the jugular veins were involved. The records are briefly as follows:

1. Case reported by Pohl, of carcinoma of the vagina, with metastatic growths throughout the viscera. An enlarged carcinomatous lymph node, pressing upon the junction of the subclavian and jugular veins, led to thrombus formation in the left brachial, subclavian and jugular veins, which extended downward for the distance of 1 cm. into the left innominate vein. There were no areas of infarction in the lungs. Death ensued six days after the appearance of the thrombus.

2. An imperfect record of a case reported in 1860, in which the innominate, subclavian and jugular veins were the seat of thrombi caused by the compression of neighboring organs.

3. Ramskill, 1874.—Case of cancer of the uterus, with thrombosis in left external jugular, internal jugular, subclavian and innominate veins and in the superior vena cava. The immediate cause of thrombosis if not given. The patient died one week after the symptoms of thrombus appeared.

4. Walter Smith, 1870.—History of this case not known. The autopsy revealed a large, dark bronchial gland pressing on the superior vena cava, which had caused stasis and thrombus formation in the right internal jugular, the subclavian and axillary and the right innominate veins. There were no metastases, no pyemia or other phlebitis. The heart was dilated, the tricuspid valve thickened, the other valves normal.

5. Clodomiro reported a case of phthisis with cavity formation at the left apex, and adhesions between the pleura and left innominate vein causing stasis and thrombosis in the subclavian, axillary, deep brachial, cephalic, basilic and jugular veins. The patient died fifteen days after the appearance of the clot.

6. Moizard, 1875.—A case of sarcoma of the mediastinum, obliterating the lumen of the superior vena cava, and causing thrombosis of this vessel as well as of the right innominate and right external jugular. The patient died after three or four months.

7. Robert, 1880.—A patient in the later stages of "lung disease," with an enlarged lymph-node, pressing upon and adherent to the left innominate vein, with thrombosis in this vessel and in the internal jugular. The patient died four months after the thrombus formed.

8. More, 1882.—A case of aneurysm of the ascending aorta, with pressure on the superior vena cava, with a large clot occupying the right innominate, subclavian and external jugular veins. Death eight days after the appearance of the thrombus.

Besides these cases reported by Dr. Pohl, I have found records of the following:

9. Lasègue, 1879.—A case of phthisis with thrombosis of the external jugular, subclavian and humeral veins. The thrombus softened and all symptoms of phlebitis disappeared ten days after its formation. No direct cause was discovered in this case.

10. Languebeck, 1881.—A case of tumor of the neck, adherent to, or growing from the internal jugular vein, with thrombosis at that point. Operation with removal of tumor and of thrombosed portion of vein. Recovery. Tumor supposed to be a syphilitic gumma.

11. Pettit, 1882.—A case of yellow fever followed by symptoms of pyemia. At autopsy the right subclavian, external jugular and cephalic veins were occluded and filled with coagulated blood and fibrin. There were areas of infarction and metastatic abscesses in the lungs. Death twelve days after clot formed.

12. Lejard, 1882.—A case of caseous pneumonia with cavity formation. Thrombus, which was supposed to be due to the cachectic condition of the patient, formed in the external jugular and its anastomosis with the anterior jugular, and in the deep veins of the forearm. Death two days after the formation of the clot.

13. George Wilkins, 1883.—Case in which the superior vena cava was converted into a firm, fibrous cord with organized thrombi extending into the innominates and internal jugulars on both sides. The thrombus was thought to be due to an endophlebitis, caused by strain. Death four months after the symptoms of thrombosis in the neck.

14. Kelsch, 1887.—A case of carcinoma of the stomach. Thrombi found in the left external jugular and subclavian, also in the inferior vena cava, from the renal vein to the bifurcation of the vessel, and in the iliac and crural veins on both sides. The patient died one month after the formation of clot in the external jugular vein.

15. Picot, 1884.—Case of phthisis, with the brachio-cephalic trunk of left side obliterated by a clot which extended into the jugular and axillary, but not into the vena cava. This thrombosis was due to compression by a hypertrophied lymph-node.

16. Comby, 1892.—A case showing symptoms of occlusion of the superior vena cava with thrombi in the left external jugular and left axillary veins. The cause was not found. There was a history of syphilis, but no improvement under antisyphilitic treatment. Under treatment with Fowler's solution the patient made a perfect recovery.

17. Younge, 1895.—Case of thrombus formation in superior vena cava, left innominate and jugular veins and left lateral sinus, occurring in Bombay. The condition probably due to exposure to extreme heat, with possibly malarial infection.

18. Gatay, 1896.—A case of rheumatic phlebitis, with death following thrombosis of the subclavian, jugular and innominate veins.

19. Renouard.—Case of rheumatic phlebitis, involving internal jugular and subclavian veins.

20. Nicolle, 1897.—A case of endocarditis, attacking the mitral valve with phlebitis of the external jugular vein.

I was unable to examine the original papers in the last three cases. In all the above cases, the thrombus was found in the jugular vein alone, or in that, together with the larger trunks below the vein.

In the internal jugular there may also be thrombus formation secondary to diseased conditions in the lateral sinus. Indeed, Gatay makes the assertion that phlebitis of the deep jugular vein is regularly secondary to inflammations of the sinus.

In 1880, Lemoine reported a case of death from thrombus formation in the lateral sinus and internal jugular vein in a tuberculous patient, the other veins of the neck being normal.

Allport, in an article on "Purulent brain deposits and phlebitis and thrombosis of the cerebral veins and sinuses following ear disease," found that out of the 169 cases which he reported, in nine the internal jugular was involved. All of these nine died.

Pitt in 1890, in an analysis of fifty-seven cases of ear disease and of the complications which led to death, found that in eleven of these cases the clot extended into the internal jugular, with death from pulmonary pyemia.

Herczel in 1893 reported a case of thrombosis of the transverse sinus and jugular vein, with recovery after operation.

Jansen, in an article published in 1893, on brain thrombus following middle ear disease, found the internal jugular vein involved in twelve out of 215 cases reported.

In studying the causes of thrombosis of the jugular veins, from an examination of the above records, we find that, as in any situation, the conditions favoring coagulation are: 1, sluggish or arrested circulation; 2, inflammatory processes in the vein due to injury or to bacterial invasion, or to the presence of irritating substances held in solution in the blood; 3, morbid conditions of the blood rendering it more readily coagulable.

Out of the thirty-four cases found, in eight, or nearly a fourth, there was pressure on the vein leading to stasis. In sixteen, or nearly half, there was a grave blood dyscrasia, three having carcinoma, one, sarcoma; six, tuberculosis; two, tertiary syphilis; one, pyemia following yellow fever; two, acute articular rheumatism, and one probably malaria combined with changes due to heat exposure. In five cases there is endophlebitis, three probably due to rheumatism, one to syphilis and one to injury. In thirteen cases, or 38 per cent., the condition is secondary to middle ear disease.

In only one of these cases, that of syphilitic gumma, does the morbid process seem to have originated in the jugular vein itself. In the others it formed secondary to thrombus in the innominate vein, extending away from the heart, or secondary to clot in the lateral sinus, extending toward the heart. In many of the reports it is stated that the clot was adherent to the vessel wall, showing that there had been an endophlebitis, either secondary to the thrombus formation, or primary and leading to it.

The symytoms are those of phlebitis in any vein. Following the description of Gatay, these are pain, tenderness, edema, venous arborization, the presence of an indurated cord, and a line of redness if the vein be superficial. In one case the edema was limited by the median line of the neck. In that of Dr. Walter, there was a peculiar subnormal temperature by mouth, while that by rectum was elevated. The general symptoms are usually masked by those of the original disease.

While the prognosis of venous thrombosis is, in general, not very grave, it would seem from a study of the above cases, that in the jugular veins it is seldom found excepting in the last stages of fatal diseases. In sinus thrombosis, the involvement of the jugular vein makes the prognosis much more grave from the liability to pulmonary infarction. In only four of the cases noted above was there recovery. One, occurring in the course of phthisis, made a spontaneous recovery; one, of doubtful etiology, recovered under the use of Fowler's solution; one of syphilitic tumor recovered after operation, as did one of sinus thrombosis following ear disease.

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MEDICINE AS AN EXACT SCIENCE.

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The study of the human body involves the consideration of the framework, the muscular, vascular and nervous systems. In these we find the highest development in mechanical and physical skill. The composition of the structure is the assimilated material secured from the nutritive substances ingested and conveyed to the various parts of the body. The whole system is a laboratory of chemic evolutions and synthetic combinations presided over by the mysterious monitor called life. Science, in the supreme sense, is applied in the construction of this handiwork by the creator of a mechanism unequaled in beauty, symmetry and potentialities, far beyond the highest achievement of the finite being, man.

It is man's privilege to investigate this creation and interrogate every step in its development, in its normal existence, in its decline and destruction. To do this it is, however, necessary to follow along the line which governs its existence and keep in view that its nature is a scientific problem of the most intricate character.

In health the whole being moves on without the slightest deviation in its activities, and if the scientist understands its workings he is prepared to note any change that may take place should this misfortune occur, and from the scientific study of the physiologist we pass over into the realm of the pathologist when some destructive energy has interfered with the normal condition of the body.

The physiologist considers every organ and every tissue and every element in the formation of tissue and in the secretion of the fluids of the body, before he is fully conversant with every phase in the existence of the human being.

On the other hand the pathologist marks every deviation from the normal and notes the abnormal formations, the accretions vitiated, the germs developed by the ptomains in the system, and formulates their chemical elements, and observes the reasons why the conditions of health have been disturbed. To illustrate, the physiologist tells of the presence of certain secretions in the stomach, in the liver, in the many organs of the body, so that we may know what is required to keep the body in a healthy condition and, aided by the analytic processes of chemistry, we may know the requirements to maintain the health-giving influences necessary to this existence. The pathologist aided by chemistry notes the departures from the laws of health and is prepared to demonstrate the necessity of a change in the assimilative and elaborative activities of the human system.

In this work the pharmaceutist comes forward with the remedial agencies of his laboratory. Each medicine having been duly analyzed and formulated, the therapeutist may now take cognizance of the relations between the disorganized properties composing the tissue of the body, the causes that lead to disease, and the chemically indicated elements necessary in *replacing the wanting or disorganized elements necessary* to health.

In advocating this method for the establishment of the laws necessary to the scientific treatment of disease, and in devoting our best energies to the practice of medicine as an exact science on the lines herein advocated, nothing more is done than what is the outgrowth from the experience in other but more common fields of investigation.

Take for instance the intelligent farmer in the cultivation of his fields. He notes the character and quality of the soil, and until he has chemically investigated its constituents he can not tell to what fruitage it is best suited or what may be necessary to restore it to the proper condition for the growth of luxuriant crops or blooming foliage.

The iron furnace does not gleam with its dazzling flame, neither does it glow with its intense heat, nor does the white stream of its liquid metal flow from its imprisoning walls until the chemist has tested every ore, every coal, every limestone and manganese, and every element tending to give the result. Having determined by chemic investigation, we know absolutely what metal may be produced.

The value of the scientific investigation necessary to the highest attainments is still better exemplified in the latest methods employed in the management of obtaining gold from refractory ores. There was a time and not long since when great fortunes in gold ore were thrown aside because the means of separating the gold from the sulphurets of iron, copper and zinc was unknown. It was not until the chemist, by years of toil, found the key that unlocked the treasures hidden in the tomb of buried ages.

The cyanid process, together with the aid of electricity, now extracts gold that once was lost to the world and where not lost required great labor and often unrequited efforts to secure it only in part.

May we not, then, learn something from the scientist whose stimulus is the acquisition of wealth while the profession of medicine is the hand-maiden of love, whose mission is to lengthen out the cord that binds us to life and set forward the mile-stone on the journey that moves through devious pathways to the unknown.

In a paper prepared for the Medical Society of the State of Pennsylvania, the arrangement of the remedial agents were indicated according to their formulas and it was shown that this was possible and in the line of progress. From the investigations made, it appears that medical agents possess properties which are similar wherever the formulas are expressed in like characters. When, therefore, we possess a complete system of definitely arranged pharmaceutic agents, according to their chemic formulas, then we are prepared to treat disease upon the same certain methods applied in the chemical laboratory. The time will come when we shall also have the formula of the condition of the organ of the patient in health. We will also have the pathologic state expressed in a legible way, and then as skilled practitioners we will have a positive remedy with which to correct the abnormal condition under consideration, because we have known factors in the problem to be solved.

There will then be no doubting, guessing or hoping for a plausible diagnosis or prognosis, but the medical profession will be engaged in doing a work which deals with facts and will rank as the most learned among all the erudite of the human races. This work *is already accomplished in part.* The anatomist goes to the beginning of the formation of the material constituting the several parts of the body. He expresses the elementary composition in chemic language. The physiologist in his functional investihad control of the doctors and army surgeons, "so that arms and legs would not be amputated wholesale, and that in general no amputation should be undertaken until mortification had set in, for which the captains were also responsible." If the surgeons did not do their duty, did not give the patients food regularly, or if they appropriated anything belonging to the hospital, then the captain was "to immediately arrest the guilty man, whoever he might be, and put him in chains," whereon the case would be prosecuted with the greatest severity. One consequence of the above mentioned conversation between the king and Zimmermann was that the court counselor Fritze of Halberstadt, who in an anonymous article had exposed with great candor the evil conditions of the Prussian military hospital system, was called to Potsdam by the king, and about a month before his death (1786), was charged with the management of the field hospitals. He said in that article ("Das konigl. Preus. Feldlazereth u. s. w.," 1780), among other things: "The Prussian army in Saxony consists of 72,000 men and the Saxon army of 22,000. Of the former about 4,000 have died in the hospitals and of the latter only 48. What a striking comparison! Certain conditions must necessarily exist in the Prussian army and their hospitals to have caused the greater mortality," and further, "Just the same old methods in economy and medicine which were followed in the war from the year 1756 to 1763 have been followed in this last war, to the destruction of the patients and the ridicule of the whole civilized world, without use having been made of the fruitful experiences of twenty years. . . . The honest fraternal Saxon showed his sympathizing comrades the misery and death which his brethren, the Prussians, often innocently suffered, and the Prussian physician, full of zeal and energy, stood by ashamed and could answer nothing but, 'I can not help it.'"

Let us follow our Prussian colleagues into the Seven Years' War. At the pinnacle of the medical world stood the general staff-physician Cothenius, who, with the two army physicians representing him, exercised the highest authority over the hospitals, physicians, etc, while the surgeon-general directed the surgical part. In a second army the chief staff-physician and the second surgeon-general held commanded. Schmucker, Bilguer and Theden were surgeon-generals. Under them were all the surgeons in the army; first of all the so-called supervising surgeons, staff surgeons, chief surgeons and pensioned surgeons who treated the wounded in the hospitals. Subordinate to these were the ordinary army surgeons who were engaged with cases of internal sickness, as well as in attending the wounded, and received half the salary of a chief surgeon. When it came to battle, a surgeon-general with a few supervising and lesser surgeons, took a position as near as possible to the fighting troops, in order to bandage the wounded on the battlefield. Ditches and other protected places served to cover them while they worked. All the Prussian military physicians were exposed to the fire. Schmucker received a shot in the chin and another in the neck, at Soor, while he was applying a bandage, and later, as surgeon-general, in the battle at Prague, a shot on the edge of the orbita, so that he fell from his horse unconscious and spat blood for four days. In spite of severe pain he did not spare himself from attending to his many duties. When the first bandage had been applied, the wounded soldier was given diluted vinegar (which every Austrian soldier had in his canteen, while the Prussian carried brandy with him), saltpeter, or other medicine to ward off inflammation and to avoid a violent wound-fever. If necessary the wounded soldier was bled and then taken to the *movable hospital.* These were for the most part located in castles, churches or granaries in the neighborhood of the principal magazine, the military chest and the field bakery, so that the patients were under protection, were well cared for and could be easily transported. Here, under the supervision of a surgeon-general, the higher surgeons and the German and French pensioners, an accurate examination took place, the necessary dilations and incisions were made, bullets and splinters were extracted and trepanning and amputating were done Often an extracted splinter became a relic. Prussian as well as Austrian officers had their extracted bones polished and set in a ring or cross, beset with brilliants, and the name and date of the battle engraved thereon in black. Those sick with internal diseases were separated from the wounded and taken to special hospitals where staff physicians were in attendance. In simple surgical cases here either a higher surgeon was called in consultation or the patient was removed to a surgical hospital. The staff physician visited the patients twice a day, kept journals and supervised the diet and ventilation. In case of a lack of physicians the higher surgeons took charge of internal ailments; on the other hand, the physicians visited the hospitals of the surgeons if the first or second physician gave an order to that effect. The sick and wounded remained in the movable field-hospitals until they could be brought to a permanent hospital. It was a great misfortune that after the battle the wounded were not immediately taken in charge, because often a safe place for the field-hospital had to be first sought out; sometimes four, sometimes six days passed before the wounded were all brought together. At Prague one side of the city was being stormed and the hospital was located on the other side on the white mountain, and there it was almost eight days before the last of the wounded came into the hospital. The consequence was that, as Schmucker complained, most of the amputations were not made until a few days after the battle, and then as a rule resulted fatally, while many soldiers were so weakened by the transportation that an operation was no longer possible.

Transportation was in a bad condition under Frederick the Great. The instruction on this point in his "Unterricht von der Kriegskunst an seine Generals," reads: "When the victory has been gained I command that a detachment shall be made of those regiments which have suffered most, that the wounded shall be cared for and brought to the hospital, which must be prepared beforehand. Further, in caring for the wounded let men not forget the human sympathy toward those of the enemy." As a rule they used the empty flour and provision wagons, which had also to bring forage, to convey the patients to the hospital. "The dysentery patients were for the most part carried to the hospitals in the wagons which were to take back rations for the army. Into these same wagons which were filled with the foulness of the disease and the rank poisons of the prisons, the bread for the healthy soldiers of the army was loaded, even on the same day" (Fritze). If the army decamped immediately after a battle there was necessarily the greatest haste in bandaging the wounded, for they were taken along. Thus it was in 1760 after the battle of Liegnitz, where the king commanded that all the wounded be immediately bandaged and brought to the wagons, because the army must march twelve miles on that same day. Only two hours were allowed for the bandaging. When the time had expired the severely wounded were laid on the baggage, bread and provision wagons. Those slightly wounded were obliged to march near by, but without their equipments. That was indeed a relief in itself, since the Prussian infantryman had to carry sixty-five pounds on the march. There were still five hundred, mostly injured in the upper extremities, who were unable to march but found no conveyances. Schmucker decided quickly, and obtained from the king a command to have a regiment of dragoons dismounted. Within half an hour all the wounded were on horses and the dragoons marched beside them. In this way the three days march to Breslau was accomplished. When it was necessary they even transported those who had lately suffered amputation. For these Schmucker had the field-bed of an officer fastened to two poles, and handles attached, so that it could be carried by two horses. Often many days elapsed before the wounded, attended by the company army surgeons, arrived at the *permanent field hospitals* (Hauptlazarethe), where they remained until their complete recovery. The king or the commanding officer decided on the location of these, whenever possible in large cities and not too far from the army. They took for this purpose castles, churches, monasteries and barracks. In the Seven Years' War such chief hospitals were in Breslau, Glogau, Stettin, Dresden, Torgau and Wittenberg. They were directed by a staff officer, who had the general supervision of the entire management of the hospital, especially of the supplies and nursing and of the men ordered into the hospital. Under him inspectors and commissaries paid the wages, took care of the apparatus and kept the lists of the stock of the hospital. Every regiment that had many sick therein ordered an officer to the hospital; in case of a few sick, an under-officer; and these had charge and reported concerning their own people. Also the regiments after a battle gave several company surgeons over to the hospitals that they might not lack help; as soon as they could be spared they were sent back. Each under-surgeon cared for twenty to thirty wounded or fifty to sixty inwardly sick, who lay upon straw sacks, with the exception of the severely wounded who had beds. Four to eight under-surgeons were under the command of a supervising surgeon who instructed them, made daily visits, treated those most severely wounded and performed the operations. Only in severe cases and important operations was the over-surgeon obliged to ask advice of the staff-surgeon and follow his directions. The lower surgeons assisted, attended to the night watching, had to administer the prescribed medicines four times a day, and keep a journal, but they could undertake nothing of importance. Their business was also more or less that of the hospital attendants and nurses of the present day. Only the most skilful among them was sometimes permitted, under direction, to make an incision or to trepan. So-called waitresses (Aufwäterinnen) attended to the fomentations, etc. The surgeon-general had supervision; he visited the hospitals unexpectedly, was consulted orally and by letter and frequently performed the most important operations himself. At eleven o'clock in the morning everything had to be in order, because then, by the order of Cothenius the entire hospital force, physicians, surgeons, commissaries, apothecaries and officers met in conference to discuss hospital matters. (In later years the so-called head hospital commission had charge of the directors of each hospital: this commission consisted of the general staff physician, the first surgeon-general and a staff-officer, who at the outbreak of the war ordered everything for the mobilization, appointed physicians and surgeons and met daily to decide together on everything. 1787.) A report was made to the first surgeon of the army, as well as to the surgeon-general, and twice a month an accurate list of patients was furnished, so that from all the lists they could obtain a summary of all the sick in the army. One evil result of the recruiting system instituted at that time, which appeared especially in the examination of those suffering from internal diseases, was the different languages spoken among the sick, since there served in the army of Frederick the Great, Russians, Danes, Swedes, Poles, Hungarians, Dutch, Turks, Italians and French.

"The Prussian soldier kept his weapons with him as long as he lived as an evidence that he was born to the use of them." From this point of view he enjoyed in the hospital, during the Seven Years' War, a freedom which was very injurious to him. He received wages, bread and meat, in the same amounts as when in active service, and was master concerning his mode of living; nothing was taken from him. The physician could only give him friendly advice in the matter of his diet; he had no further authority; the Prussian soldier also guarded with great care the freedom which his king had extended to him. In this respect the Prussian hospital regulations were behind others, for in Austria the soldier was required to observe a prescribed diet and, as in England and France, he received no wages so long as he was cared for in the hospital. After Theden had taken the lead in the improvement of the hospital of his artillery corps, the matter of diet was (1787) arranged by a new regulation in Prussia. From that time on the physician prescribed the diet. He fixed a full portion at three-fourths of a quart of meat soup with barley or rice, one-half pound of meat and one and one-half pounds of bread. Besides, he prescribed half and quarter portions; if necessary, wine also, which formerly the physician had to pay for out of his own pocket when he ordered it. Wages and cash were taken from the soldier and deposited.

The *apothecary shops* were attended by a chief field-apothecary, several field-apothecaries and assistants, a continuous control of whom made peculation scarcely possible. Since the first army physician alone made the selection of medicines, for the most part only such were found as agreed with his views. The formula which Cothenius introduced as well for external as for internal remedies were often nonsensical mixtures and frequently contained ten or fifteen ingredients. For the sake of curiosity we will quote a menstruum of vulnerary water, composed of thirty-four substances, which was used by Bilguer; it was an aqua vulneraria s. sclopetaria *vinosa pharm. Parisiens.*

S. Sclopetaria vinosa pharm. Parisiens:

Rec. Radicis symphiti majoris, Foliorum ejusdem, Bellidis maj. et minoris, Bugulæ, Saniculi, Betonicæ, Scrophulariæ, Plantaginis, Agrimoniæ, Hyperici cum summitatibus, Vincæ per vincæ, Hederæ terrestris, Artemisiæ, Veronicæ, Verbenæ, Telephii majoris, Millefolii ana uncias quatuor—Salviæ, Angelicæ, Tanaceti, Absinthii, Chelidoniæ majoris, Fœniculi, Aristolochiæ clematitidis, Menthæ, Hysopi, Nicotianæ ana uncias octo—Rutæ, Chamomillæ, Scordii, Majoranæ, Rorismarini ana uncias quatuor—Summitatum et florum lavendulæ, Origani, Caliminthæ ana uncias sex—Macerentur per quatriduum in Vini generosi libr. quinquaginta ponderis civilis, postea destillentur ad dimidias.—Si spirituosa expetitur hæc aqua Vulneraria, loco Vini, herbis modo præscriptis spiritus Vini rectificati super affundantur libra quinquaginta, atque destillentur.

There is still in existence an apothecary's outfit of Frederick II. which was found on the battlefield at Hochkirch in 1758, contained in a spacious cabinet inlaid with brass. Purgatives occupied the principal place (rhubarb, jalap, aloes, sulphate of magnesia, Rochelle salt, etc.), then many emetics (ipecac, tartar emetic), antispasmodics (spirits of ammonia, camphor, musk), antimony and iron preparations, many powdered herbs, opium and a mass of remedies now entirely antiquated. For surgical purposes there were especially balsams (balsam of Peru, of Mecca, of white amber, etc.), besides much sugar of lead and a great quantity of sublimate. Half of the compartments in this apothecary's cabinet are empty. An absurd custom, originated by the Frenchmen in the Prussian army, was the giving of French names to all the materials for bandaging in the field hospitals, although not a single one of the army surgeons could pronounce or write these names correctly. For example, Bilguer taught that the bandage for the stump of the upper arm was called *le bandage pour l'amputation du bras*, and the plane for the exarticulation of the elbow, *le doloire pour la luxation du coude.*

It might be of interest to inspect some certain hospital more closely, and we will choose for that purpose the *siege hospital of Schweidnitz* which the surgeon-general Schmucker erected in 1762. The large village of Neudorf, a short mile from Schweidnitz and half a mile from the depot was selected for the purpose. There ten days before the opening of the trenches Schmucker arrived with a great number of staff, chief and pension surgeons, more than sixty hospital surgeons and many stores, so that he could put everything in proper order. Immediately four great massive barns belonging to the court of a noble were cleaned and bunks built a foot above the ground. Schmucker quartered himself in the master's house with the staff physician, hospital inspector and the field apothecary. Four large rooms in the village were reserved for those injured about the head. The patients with internal diseases were taken into the barns before they could be transported to Breslau, the wounded officers were put in the other houses. At the entrance to the trenches they built a great wooden shed, which was protected from the bullets of the enemy. Into this depot for the wounded ("Blessirtendepot"), all those wounded in the trenches were brought, the first bandages were applied, and when necessary they were bled. As soon as a number of wounded were gathered they were taken early in the morning or in the evening in wagons to the siege-hospital. A regiment surgeon with four company surgeons kept watch every night in the depot and were relieved after twenty-four hours. In the hospital itself a staff or chief surgeon, with a pensioned surgeon and four hospital surgeons performed continuous watch service in order to immediately provide for the newly arrived wounded; if there were any among them in a very serious condition the matter had to be at once reported to the surgeon-general. Each directing surgeon had about fifty wounded, with five hospital surgeons under his supervision. Schmucker detailed a few surgeons for the patients having head injuries, and relieved them from all other work. A journal was kept in each ward in which the course of the disease was recorded often from hour to hour. This day-book could easily be kept up in Schweidnitz where they worked leisurely, since it was not crowded with too many cases at one time, as it was not possible to do at the great battlefields. Every five days a number of wounded were sent to Breslau on wagons, but those having injuries to the head and the seriously wounded were kept in the hospital. When at the end of September the severe cold began with snow the patients could no longer remain in the barns, so a great sheep-stable had to be cleaned. Twenty men were occupied eight days in carrying out the manure, and cleaning and purifying everything. In the four great doors and in various places in the walls Schmucker had square holes cut and windows inserted. There the patients were sufficiently warm, suffered less from draughts than in the barns and were very well satisfied. The stable was fumigated once a day and aired after every bandaging.

Although the Prussian surgeon-general insisted on cleanliness and fresh air in the field-hospitals, and ordered that the patients be removed into new rooms every three or four weeks in order to clean and air the old ones, and had windows and doors opened and the ventilators of Theden used, and would not tolerate too high a temperature in the rooms, yet this common sense was by no means general. Moreover, there was crowding together of the sick. In the hospital in Dresden "the beds of the patients were usually crowded so closely that one straw bed touched the other and there was scarcely enough space left to allow one to pass between the rows. Indeed, very often one was obliged to step over the patients, and the feet of one were almost in contact with the head of another. Even when the hospitals were sometimes relieved by the transportation of many patients it was rare that they could sweep or scour the floor" (Fritze). The consequence was that a violent epidemic prevailed in the hospitals and many attendants and army surgeons died. Another disadvantage in the field-hospitals of which Bilguer and Baldinger especially complained was the frequent transportation of the patients to and fro, which cost many a one his life, and also the frequent change of the acting surgeons, in so much that a wounded soldier often came under the hands of four, six, ten and more before his recovery.

(To be continued.)

DISCUSSION ON THE SEVERAL PAPERS ON TUBERCULOSIS.[1]

Dr. DENNISON of Denver, Colo.—We are indebted to Dr. McFarland and Dr. Rochester for their excellent papers read this morning, and I wish particularly to commend Dr. McFarland for his excellent statement of what tuberculosis is. I have no controversy with those gentlemen as to their treatment or the results of their experiments. I object to Dr. Cohen's warning against seeking after a specific for tuberculosis as if it were a will o'-the-wisp. I commend the work of Prof. Klebs, Dr. von Ruck, Dr. Trudeau, and those men who are in search of a specific for tuberculosis. Their work is to be commended because it is painstaking, and for the hard lines which they are following. In the first place it seems to me impossible that we can prove anything by testing tuberculin on healthy persons, for tuberculin can only affect individuals previously infected with tuberculosis. The assertion of one of the gentlemen that there is such universal infection in the human race is to my mind proof that immunity exists to a certain extent, otherwise all must die. Each one of us must have a certain proportion of immunity, yet if immunity exists it is only relative. It is relative immunity, then, which we have in mind when we put in an argument for immunity.

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[1] See preceding JOURNALS for the papers read. The stenographer's copy was not received in time to print with the papers.—ED. JOURNAL.

I have no controversy with the gentlemen who emphasize the necessity for individualizing patients and the necessity of building up the resisting cells. I am myself under the ban of having said that the good results which I obtained from the use of antiphthisin and antituberculin were due partly to the climate of Colorado. I admit the charge that we have a great help in fighting tuberculosis in that fact. Altitude is an important element. I am, too, as much a crank on exercise in tuberculosis as anybody. But I approve of the efforts of gentlemen to discover something which will produce immunity. From experiments now being made, I believe it exists in the extract of dead bacilli. Prof. Koch's new remedy, I believe, is made from the extract of live bacilli. But somewhere there is an antitoxin influence in the bacilli themselves which, in very small repeated doses, will eventually set up an immunity in the system which increases the natural immunity. We are thus coming to recognize that all infectious diseases are to be fought by either artificial or natural antitoxin, and, through experimentation on animals we are yet to learn just what that element is and how it can be obtained. Prof. Klebs and Dr. von Ruck are getting nearer and nearer to it every few months.

Dr. Klebs of Asheville, N. C.—Concerning this question there are two kinds of work which are most important; one is work in the laboratory, the other is clinical work. These are to be separated absolutely. But what has been found in laboratories can be tried in hospitals. To assert the contrary is to put a stop to all scientific result. Regarding antitoxin, etc., tuberculosis is so various in its forms that, to say a remedy, even after long observation, will cure it every time, is not possible. We must have animal experiments. To judge simply by clinical observation is not possible. Many remedies have been praised too quickly simply because the patient has improved for two or three weeks. In tuberculosis that will not do. We must have many observations on animals, and long study. We must first go to the laboratory. Clinical results come later. All sorts of remedies have been brought forward, some of them without any scientific basis whatever. The list includes many which are not mentioned in our pharmacopeia.

Hygienic management has been properly commended, but it is not so easily carried out. We can say to our patient, go into the fresh air and stay there, and live on a proper diet. But it will fail simply because your instructions will not be carried out a sufficient length of time, and time is most important in tuberculosis. If we want to cure tuberculosis we must treat the constitution of the patient, or he may become infected again after five or eight years and the whole process have to be gone over again. To enforce hygienic rules we must have suitable surroundings and keep the patient under observation for a long period. This treatment has been much perfected in this country. Dr. Trudeau stands foremost with his sanitarium in the Adirondacks, where his patients are treated according to the strictest hygienic principles. After they have spent a year there, they go out and observe those rules outside. They know how to take care of the expectoration, they know everything which will tend to prevent infection of other people and themselves again. To bring hygienic care forward properly it is necessary to have institutional treatment, and the State can do in this line more than the individual. If an Association like this will take steps to promote this idea the death rate from tuberculosis will certainly diminish.

Dr. Herrick of Cleveland, Ohio—What I shall say at this time will be somewhat in controversy with opinions which are prevailing, and I must beg your indulgence and ask your consideration in the matter. The whole doctrine of today, on tuberculosis, rests upon the theory that it is an infectious disease due to a specific germ. The doctrine has come into vogue the last twelve or fifteen years. We knew something about tuberculosis twenty years ago. I have practiced medicine more than thirty years, and have been a clinical observer and a fair student of the question, and I must say that I belong to the doubting Thomases. I can not fully accept the idea of tuberculosis being due to infection. I am inclined to regard it rather as a disease due to disturbance of the blood-making process, to disturbance of the digestive organs, to the air we breathe, and to a number of factors. I never look for a specific cause of this condition. I think it is futile to do so. The gentleman who has taken his seat has admitted as much—a high authority for the bacterial idea of the disease. I have no expectation of finding a specific in the form of tuberculin or anything else. We must go back to physiologic principle.

Dr. J. M. Allen of Kansas City, Mo.—The life of all bacteria depends as much upon other life as does that of human beings. Now in the human family about one-fourth furnish pabulum on which tubercle bacilli can live and develop. That, I think, is in accord with statistics of today. The tubercle bacillus begins its attack upon some structure, and causes certain pathologic changes which are fixed and definite. The aim of treatment is destruction of this pabulum by means of which the germ has its existence. If that pabulum is not present, you may inject the germ into the blood and it will die right there. Those who believe in dietetic treatment often ignore all else that is hygienic. That is not fair. We use all—hygiene, diet, climate, etc. The theory of the climatic treatment is that the elements necessary for the growth of the tubercle bacilli do not exist; for instance, in Colorado. Hence Colorado is an excellent climate for the consumptive.

I have tried the Paquin serum treatment in four cases. One patient has recovered. Why do I say that? Simply because he has been under observation for two years and not a single bacillus can be found. They were abundant before. I do not say that this person, if tubercle bacilli should become located in his lungs, would not again take the same disease. You can not yet say that of diphtheria. We are looking in that direction. In another case the tubercle bacilli have become attenuated, and the man is now performing hard work and is improving every day. Still he has not fully recovered, and is under treatment. The other two cases were much benefited, but in them there was large destruction of tissue.

I conclude that with serum coupled with hygiene, the use of creosote and tonics and every other thing which can be brought to bear, and sending the patient to a climate where tubercle bacilli have not the conditions for their growth tuberculosis can be cured, provided these measures are adopted early.

Dr. J. N. Upshur of Richmond, Va.—I believe the underlying factor in tuberculosis is malnutrition. I believe that immunization, which exists in the majority of the human race, exists because these is not a fertile soil in which the bacilli can develop. We of the South have an object lesson in the negro. It was an exceedingly rare thing, before the war, to see a negro with phthisis. We saw cases where there was scrofula upon the neck where it was inert, but it was rare for it to develop in the lung. Since the war, the tendency of the negroes has been to migrate to the city, where their conditions are different from what they were before the war when they had fresh air and abundant nutritious food, eating a great deal of liver and bacon and corn bread, with an abundance of vegetables, having warm clothing and plenty of light in their rooms,—since they have gone to the city where they are overcrowded, where they are frequently out of work, where they are frequently thrown upon the city government for support, where many have become thriftless, in summer living upon watermelons and spending what money they have upon what they call "society" for the purpose of having a big funeral when they die; as a result of these unwholesome conditions and malnutrition tuberculosis of every variety has become rife among them.

Dr. George M. Sternberg of Washington, D. C.—I must express my surprise on hearing, at the present day, a gentleman talk about the doctrine of the infectiousness of tuberculosis. I think one might as well talk about the doctrine of there being an American Medical Association. The demonstration has been made long since. It is satisfactory to the profession. It can be repeated for the benefit of any one who desires, at any time and in any pathologic laboratory, that the tubercle bacillus causes unmistakable tuberculosis in suitable animals.

As to the question of susceptibility and immunity, the general laws do not differ from those relating to other diseases. There is a specific infectious agent. There can not be tuberculosis without a tubercle bacillus, any more than there can be any other infectious disease without its specific infectious agent. But there must be something more for infection. There must be a susceptible individual. We all know that there is a great difference in the susceptibility of individuals; and that that difference depends partly upon inherited characteristics. Certain animals are more prone to it than others. The susceptibility depends partly upon the early life. Leading a sedentary life, being shut up in close rooms—those individuals who have not the necessary tone which is obtained by living in the fresh air in Colorado and elsewhere, are more susceptible. Any debilitating cause, as insufficient diet, hemorrhage, or anemia makes the individual less resisting. Another important point is that there is some degree of immunity in every individual, but probably not enough but what it may be overcome in the most resistant, and its being overcome depends mainly upon two factors: 1. The virulence of the tubercle bacilli, which varies very much at [illegible]t times. 2. The dose. In all of our laboratory experiments we find that in most infectious diseases a small number of bacteria may not give rise to infection when a considerable number may do so. So that people who live in air loaded with tuberculous sputa are much more likely to be infected than those who live in a climate where there is nothing of that kind. In short, we have the specific cause, the predisposition which is inherited to some extent and is developed by environment, and then the exciting cause; a person lives in an atmosphere loaded with dust, irritating the lungs; or there may have been some recent inflammatory condition of the mucous membrane which makes him prone to infection.

Dr. JAMES TYSON of Philadelphia—As one who has made a clinical trial of Dr. McFarland's antituberculin I may say a few words. I am not one of those who decry the effort to discover an antituberculin, a direct serum cure for this condition, although my own clinical results were absolutely negative, as I so reported to Dr. McFarland. They were necessarily so because of the very short time I was permitted to carry on the observations. But in that very short time I learned what seems to me to be a most serious difficulty in the determination of the clinical value of this remedy and the mode of administration. Until we can devise some other mode of administration than by the hypodermic syringe the difficulties will be almost insuperable in making a clinical trial of this remedy. With the urticaria and the extremely painful effects which attended the use of the remedy a short time in my wards, the patients were in a state of actual rebellion. The treatment is dreaded, so I was glad for some reasons that the serum gave out.

Dr. PAUL PAQUIN of St. Louis, Mo.—It would seem that tuberculosis is a mixed infection, and it has been thought useless for anyone to search for a specific remedy. That is probably true. I doubt if the world will ever find a remedy which will be called specific for any form of tuberculosis, whether pure or mixed. But we must recollect that, although this may not be possible, yet on that very line of argument and research it has been admitted here that certain cases of tuberculosis, perhaps all forms of at some stage or other, recover without the assistance of the doctor. Therefore, we must conclude that there exists in nature a power that can cure tuberculosis. What is that power? It is this very thing that we want to imitate in our researches. If a child recovers from diphtheria without medicine or in spite of medicine, nature gets the credit, and we exclude the case from the results obtained by antitoxin or attribute the result to antitoxin produced in the system itself. Now what the medical profession can do in diphtheria is to use antitoxin developed in the system of the horse instead of in the system of the patient suffering from diphtheria. It has been tried in tuberculosis, but with quite different results in many instances and for many reasons, chiefly because pulmonary tuberculosis is complicated with other germs besides tubercle bacilli which produce mixed toxins in the system.

One statement, which I think is not justified, is that we ought to wait seven or eight years before we come to a conclusion that any treatment of tuberculosis is rational. I do not think you will find a treatment which is specific in a hundred years. But I do think we ought to give credit to any kind of treatment which produces an improvement in the condition of the patient. What we want in clinical work is not, perhaps, laboratory work. The patient wants work on himself. He wants to be cured, and I think we are justified in giving the benefit of any measure which causes improvement to the patient and the profession.

I agree with Professor Klebs that the more we have of verification of clinical work by laboratory or experimental work, the better. At the same time, the medical profession has to confront a condition in tuberculosis and can not wait for experiments. When we do find beneficial results in clinics we have the right to give the profession the benefit of our experience.

Dr. MCFARLAND—To the gentleman who does not think the tubercle bacillus causes tuberculosis I would suggest that he make a few experiments and I think he will have no difficulty in convincing himself. In answer to the gentleman who says we have no serum treatment for any chronic disease, if such an argument had any weight and had been advanced a few years ago as to antitoxin, we would today have no antitoxin for diphtheria. It has been said that tuberculosis is a disease which gets well. Nobody doubts that. Laboratory men are directing their attention to the question of *how it gets well.* I have been surprised to see how much sympathy clinicians have with laboratory men. We ought to be the best of friends, and I hope that what we laboratory men are doing will in time be to your great advantage.

Dr. DE SCHWEINITZ—Dr. Cohen overlooked one point emphasized by Dr. McFarland and myself, namely, that tuberculin, as ordinarily prepared and used, is a solution of *some* of the products of the tubercle bacillus, but not of *all* of those products, as when the live germs instead of the dead are used. That has been my object and that of some others—to put to use *all* of those products or elements. The gentleman who does not believe in the infectiousness of tuberculosis says we ought to go back to fundamental physiologic principles. That is just what the laboratory men are working at.

Dr. ROCHESTER—There is not much to be said in reply. I think one or two things ought to have a little emphasis. One is that mal nutrition is one of the serious conditions associated with tuberculosis, and it ought to be fought as one of those things that interfere with the recovery of the patient. I do want to make a strong outcry against Dr. Herrick's heresy. He tries to underrate the work of laboratory men. I am not a laboratory man. I am a clinician. But during the last ten or fifteen years all the greatest work in medicine has been made through laboratories, and for clinicians to get up and say we ought not to pay attention to workers in laboratories is unpardonable in every way.

With regard to treatment, I reported a number of cases, and I feel that I ought to apologize to the Section for having reported upon one of the agents I used, namely, aseptolin. I think the profession ought not to use a remedy advertised as that was, and I wish to say that I used it at the request of a number of patients, and the results were as I stated them in the paper.

With regard to the remark of Dr. Tyson concerning the serum which he used—that the patients had a great deal of urticaria, and he had to stop the treatment on that account—the same thing occurred in my use of the Paquin antitubercle serum. It was not used long enough to say that it counteracted tuberculosis, for it produced too great pain. It produced actual dermatitis and swelling of the lymphatic glands, so that it had to be stopped. As to Vaughan's nuclein, some say it is not the proper thing to use; that it is unscientific. Now Vaughan's nuclein is not an antitoxin, but is intended to improve nutrition and the resisting power of the white corpuscles and blood serum. I have had results from nuclein which I have not had from any other remedy, and I shall continue to use it.

Dr. FLICK—It was necessary to be so very brief in my paper that I could only give results, and I fear I have been misunderstood in some of my statements. When I stated that we ought not to publish results as to cure in phthisis for five or six years, I meant cure, not improvement. In tabulating my cases I had that idea in mind. The use of iodoform and europhen in the treatment of tuberculosis is, I think, in line with the use of antituberculin, with a view to establishing immunity. I think this is the line along which a cure for tuberculosis will have to be found, for the very nature of the disease is such, as Dr. McFarland so well pointed out, that a direct cure is impossible. A cure can be found only along the line of immunity, and I believe that a cure along this line not only possible, but is within sight.

Dr. HERRICK of Cleveland—I had no intention of denouncing laboratory work, as might be inferred from the remarks of one of the speakers. But I find it difficult to accept all the conclusions from such work. I think free expression of opinion is justifiable. I am not able to connect the experiments with the results claimed.

Dr. BORLAND—In presenting my paper I did not and I do not underestimate the work of the bacteriologist. I did not wish to create that impression, for I value the bacteriologist as highly as any physician can value any specialist. My plea was mainly for those not engaged in bacteriologic work to give attention to the frequency of latent cases of tuberculosis, and thus save many valuable lives while laboratory experiments are going on. I would be the last man to decry experiments which would lead us to a means of securing immunity from tuberculosis, or to a specific cure for the disease. I have this to say about the medical world: We are twenty-five years behind the surgical world. The two great discoveries of the century are anesthesia and Lister's antisepsis. Now the surgeons are using antisepsis and the physician's are twenty-five years behind. We have external antisepsis. Why should we not have internal antisepsis?

Dr. S. SOLIS-COHEN of Philadelphia—Dr. Flick said that no case of tuberculosis should be reported until four to six years have elapsed, for no conclusion whatever can be drawn before the expiration of that length of time. There are a great many cases which get well under no treatment or any treatment apparently, and then get sick again, and that will go on indefinitely. For instance, a case of apparently acute tuberculosis came under my care eight years ago, in which the patient seemed to have recovered, but he returned to my office a few days ago nearly moribund. Now, that patient might have been reported as cured half a dozen times had he come under the care of different physicians in different attacks. The idea of prolonging life, however, is not to be overlooked, and I think Dr. Flick may give his treatment less credit than it deserves from that standpoint. No disease requires so much investigation to prove the effect of treatment as does tuberculosis. The response of the individual to different methods of treatment varies so greatly that each case must be an individual study, and for the indications presented by that case different methods of treatment will have to be adopted. There are, however, certain fundamental principles which we are all so familiar with that it would be superfluous to dwell upon them.

Dr. Rochester has well called attention to the importance of fresh air, exercise and diet. I for one should insist at this time on the necessity for the pneumatic treatment in the form proposed and carried out so well by Waldenberg and those who have followed in his footsteps. All the cases which I have reported as having recovered under this treatment have held their recovery up to this date, some of them fifteen years. I have seen some cases in the practice of my brother which have held their recovery twenty-five or thirty years. So that if there is any definite conclusion to be drawn from results in individual cases, I certainly think the results placed on record by reputable observers in favor of this measure prove that it is far superior to others.

I think Dr. McFarland has done well in calling our attention to the fact that tuberculin does not cause reaction in healthy animals, but only in animals already the subjects of tuberculosis. He has called attention also to the late occurrence of toxemic symptoms in cases of tuberculosis. Those two points taken together would seem to indicate that if there was the possibility of the production of an antitoxin through influence acting upon any susceptible subject whatever, it would be produced in patients in the long course of a chronic disease. Now, the immune animals, such as the ass and horse, from which antituberculin serums are being sought, do not react to tuberculin, and therefore whatever is taken from them is not of the same nature. The antitoxin does not bear the same relation as the antitoxin of tetanus and diphtheria. I believe in susceptibility to the disease, and that there are immune human beings just as there are immune animals. Whereas the guinea pig will almost invariably succumb if inoculated with tubercle bacilli, antitoxin or not, and the horse and the ass will rarely die, so we have among human beings some who are guinea pigs and some who are asses. Our treatment must be directed toward changing the guinea pigs into donkeys, building up this vital resistance which will prevent the person from reacting to the tubercle bacilli or tuberculin. Whatever method will have that effect, whether diet, exercise, massage, drugs or anything else, is what we are to use, and not go in a will-o'-the-wisp chase after specifics. Now, the drugs which have been mentioned can all be used and have been used. The journals, the dispensatories, the text-books, are filled with lists of drugs which have been used in tuberculosis. When the reports are reliable, and from good men, and the drugs are not harmful, let us try their remedies.

Dr. Rochester spoke of the use of certain remedies for fever; my own experience is that the best remedy for fever in chronic tuberculosis is rest, with an ice-bag over the heart—the method of Bremer. Dr. Vaughan in his early experiments with nuclein also sent me some samples, which I used on a number of patients at the hospital, with much satisfaction to myself, but with dissatisfaction to the patients. Several of them complained of intense pain from the injection. One of those patients I have placed in the list of recoveries. The other patients were improved and passed from under observation. I believe there is a scientific basis for the use of various nuclein products (some are better than others), in the building up of the vital powers of the patient. I do not look upon it as a specific against tuberculosis or any other disease. I wish to thank Dr. McFarland, too, for the opportunity he gave me to test his antituberculin serum. I saw it produce considerable mitigation of symptoms. The two deaths which occurred in my practice were certainly not due to the treatment, because at the time the treatment was begun we expected the patients to die at any minute. One of them lived three months, the other lived a shorter time. But these patients, too, complained of intense pain.

In conclusion, I would like the Section to look up the works of Waldenberg and the advantages of pneumatic measures in the treatment of tuberculosis. Do not search for specifics, but build up the patient's vital resistance, and use whatever drugs are necessary for the control of symptoms.

DISCUSSION ON GOUT.

Dr. James Tyson of Philadelphia—I want particularly to refer to the diagnosis of gout. I feel quite certain that fully one-half of the cases diagnosticated as gout are instances of erroneous diagnosis. One of the conditions most frequently mistaken for gout is that peculiar deformity of the knuckles known as Heberden's nodosities. Heberden's nodosities do not mean gout. Heberden stated that they were not gout. But they are constantly said to be gout by practitioners. The nodes have not the same composition as those of gout. I agree with Dr. Stockton, that uric acid in the urine is by no means always an evidence of gout. Indeed, the man who has uric acid sediment will not have gout, and the man who has gout will not have such sediment—I mean in the shape of calculi. How shall we know gout? By the occurrence of two or three things: 1. An attack of true podagra. 2. The presence of tophi in the eyelids, etc. 3. Heredity. If you find a person with these manifestations, whose father or grandfather was undoubtedly gouty, you may again be justified in concluding that these conditions are gouty. It seems to me one or the other of these three facts must be found before you can say the case is gouty and hold to your diagnosis.

There is a point with regard to treatment which I believe has not been alluded to, namely, the continuous use of alkaline mineral waters between the attacks of gout. Gout can not be cured. Gout may, in the course of years, pass away. There must be a constant attempt to keep the symptoms in abeyance. It is treated with salicylates better than with any other remedy, but we can not do away with the continuous use of alkaline mineral waters, especially the foreign vichy. Citrate of potassium is a good artificial substitute. Of course diet is important. I must confess to using salicylate of sodium, also salicylic acid and sodium bicarbonate. I can support Dr. Wood in the statement that salicylate of strontium is easier on the stomach.

Dr. D. L. Rochester of Buffalo, N. Y.—The very scientific papers of Dr. Hutchinson and Dr. Stockton impress one with the idea that we have two distinct conditions, one of gout and one of uric acid. These two papers have pointed out the ways in which we are to examine our patient in order to treat them properly, and I simply rise to emphasize the points made in them.

Dr. Carpenter of Pennsylvania—For thirty years I have treated gout principally on the basis of hints which I got from Prof. George B. Wood, whose lectures I had the pleasure of hearing when a young man. I have noticed during this discussion, that no allusion has been made to one important fact with regard to gout, and that is the periodicity of its attacks. Years ago I noticed that it was likely to recur once or twice a year—spring and fall. There are other ways in which gout manifests itself periodically, one being gouty eczema of acute variety. I watched such a case, that of a worthy lady, for about sixteen years, who had attacks of true podagra or of eczema about once a year. The last year of her life she had no attack, and that suppressed outbreak of stored-up poison was followed in a few months by heart and other troubles and she died.

Having seen periodic manifestations of gout in the joints and in the skin, there is a third variety which I have been convinced of many years, namely, hay fever. The exciting cause may be some germ or irritant from the vegetable kingdom, but I believe the large majority of the people who are subject to hay fever are gouty. This question of the periodicity of gout not having been alluded to, I thought it desirable to have it spread upon the records as an important point in diagnosis.

Dr. H. A. West of Galveston, Texas—I was very forcibly impressed by the remark of Dr. Wood as to the comparatively few cases of true gout which had come under his observation. That has not been my experience. I have seen a good many cases of genuine gout. With regard to the etiology, I have seen cases in which I could attribute the gout to nothing else than the excessive use of nitrogenous food, especially eggs. I have observed gout from the same cause, excessive use of nitrogenous food, in butchers, and also in cooks. The necessity for regulating the diet has been fully insisted upon.

Dr. Woods Hutchinson of Buffalo, N. Y.—Exercise, exercise, and again exercise—training your patients as if it were the intention to get them into trim to run a hundred yards in ten seconds; get them up to the highest possible pitch of human development! On one point I differ, namely, the distinction and absolute separation between gout and lithemia and intestinal toxemia. One thing which Dr. Wood said I cordially agree with, that is that our knowledge of gout consists largely of what I think he called "[illegible]rumbling expectations." We know little abou[illegible] thi[illegible] [illegible]all have to qualify my statement that we [illegible] [illegible]umatism except that two-thirds of it is gout, by the further statement that we know little about that. But we are in the way to learn something. One thing which we do not know is whether this peculiar ancestral reversion on the part of the metabolism cells begins in the muscle cells, or liver cells, or cells lining the alimentary tract, or the kidney. I think it unquestionably begins, in many cases, in the intestinal tract.

DISCUSSION ON PAPER OF DR. D. L. ROCHESTER, OF BUFFALO, ON "THE PROGNOSIS AND THERAPEUTIC INDICATIONS IN HEART DISEASE."

(*Vide* Journal, Vol. xxviii, p. 1207.)

Dr. J. B. Herrick of Chicago—I rise to say a word for one method of treatment which has passed somewhat out of fashion—venesection. The benefit of this method has been brought home to me in three cases of cardiac dilatation where the dilatation was due apparently to fibrous myocarditis. The patients entered the hospital with extreme dyspnea, amounting to orthopnea, extreme cyanosis, edema, with feeble arhythmic pulse, feeble heart sounds, and with systolic murmurs believed to be connected with the mitral and tricuspid valves. In these cases, believing that stimulation of the heart would not do as much good as relief from the work which the heart was required to do, abstraction of eight to sixteen ounces of blood was practiced, and in all three of these cases with the most gratifying results, in one temporary, in the other two more permanent. So I would speak favorably of treatment by venesection in certain selected cases of cardiac dilatation.

Dr. H. A. West of Galveston, Texas—I would mention two factors in connection with aortic incompetency that are not always recognized, and not always considered as affecting the condition of the heart and its muscle. One of these is the continued hydrostatic pressure of the column of blood acting through the incompetent aortic valve upon the cavity of the left ventricle—a very important factor in producing dilatation. The other factor is the local disturbance of the circulation in the heart itself, depending upon the mechanical interference with the entrance of blood into the heart through the coronary arteries in consequence of the incompetent valve. These two factors are exceedingly important. They point to the rationale of treatment by rest as a means of decreasing the hydrostatic pressure; hence, also, the value of treatment by vene section, decreasing the volume of blood. This, taken with rest, meets very important indications indeed. The disturbance of the nutrition, the degeneration of the heart muscle depending upon the disturbance of the circulation in the coronary arteries is an exceedingly important factor and one whose influence it is frequently difficult to forsee. I have no doubt that it often explains the fatal result in cases that otherwise would be difficult to explain.

Dr. J. B. Marvin of Louisville, Ky.—This paper contains lessons which many of us need to bear in mind. Preceding prognosis should come diagnosis. Certainly the time has passed when a man bases a prognosis on the mere presence of a murmur heard over the cardiac area. As the author has well stated, there are other factors to be taken into consideration besides the murmur, such as the condition of the peripheral circulation, of the arterial system, of the heart muscle itself—and of these three factors certainly the last is most important. A murmur may mean very little, but if it is taken into consideration with the other two factors it may mean a good deal. Another point which might be mentioned in connection with this paper is the fact that there are cases of what may be called acute dilatation, occurring, as indicated by Dr. Osler, in persons of middle age, and which yields most readily and most happily to rest in bed, to dietetic management, and to the Schott treatment. Other cases are more chronic, occur in older people, older not as we measure time necessarily, but older with regard to the integrity of the heart muscle, where there may have been valvular trouble and compensatory hypertrophy now followed by acute dilatation. Such cases do not give brilliant results from any method of treatment.

In therapeutics I must add one or two other things to those named by the author, for while in hospital practice those do sometimes yield most brilliant results, yet I must ask in addition for strychnia. I do not care so much for digitalis, but I would greatly dislike to be called to treat a case of cardiac trouble without strychnia. And I am satisfied that many follow our homeopathic friends and give too small doses. I want an appreciable dose, and I prefer to give it hypodermically, with increasing amount, starting with one-twentieth of a grain. I have yet to see a toxic influence from strychnia given in increasing doses by injection.

Dr. J. N. Upshur of Richmond, Va.—I rise to endorse what the gentleman has just said with regard to strychnia. To me it is *par excellence* the remedy and, as the gentleman has said, in full doses. It is the most honest of all remedies, giving fair warning of its ill results when its physiologic effects have been produced. To strychnia I would add one other remedy, nitroglycerin. It diminishes the resistance in the arterial system and enables the strychnia to stimulate the heart in a way to get the best results.

Dr. S. Solis Cohen of Philadelphia—As I understand Dr. Rochester's paper, his purpose was to lay down the principal lines of treatment rather than enumerate all the remedies which might be used. I would go farther than the gentleman who has just suggested nitroglycerin. We might speak of spartein, of strophanthus, etc.; but what I would like to emphasize once more is the great satisfaction I have had with the method spoken of by Dr. Herrick, venesection. I think we of the younger generation, who were not brought up to bleed, have been entirely too much afraid of it. During the last ten years I have been resorting more and more to the use of the bistoury on proper occasions, and I am becoming more and more convinced that those of our predecessors who advocated venesection for relief of the heart, and for control of inflammations, knew what they were talking about. The advantage of the procedure was strikingly illustrated in a recent case in the Philadelphia Hospital. The resident physicians who have charge of my patients know that as soon as they have a proper case they are to bleed, without waiting for me. A patient with fibrous senile heart came into the hospital, cyanosed. As there was no time to send for me, the resident physician opened a vein, took away about sixteen ounces of blood, and the result was that the woman, who had come into the hospital almost *in articulo mortis*, rapidly improved and has been discharged. She is not well of her fundamental heart disease, but has been relieved from imminent danger of death and promises to live a number of years under proper hygienic management. If nothing else should come out of this discussion except the renewal of testimony in favor of the advantage of relieving the weak heart by taking out of the system blood loaded with toxins which can do no good to the patient, but only obstructs the free flow of the circulation, I hope at least that much will come.

Dr. Wainwright of Kansas City, Mo.—I wish to say one word with reference to the prophylactic treatment of cardiac lesions. I believe the profession is largely responsible for a great many valvular lesions because of lack of knowledge of what is now held to be causative of such lesions, and failure to diagnosticate their presence during the inflammatory stage. According to authority, 50 per cent. of all valvular lesions are accompanied in the beginning by inflammatory rheumatism, and I believe that if the conscientious physician would study the heart in all cases of inflammatory rheumatism he would be able to prevent disease of the valves. I speak for rest in prophylactic treatment. Rest will prevent those extensive changes in the valves which we are now frequently called upon to treat. When it comes to the treatment of existing valvular lesions, it seems to me physicians are too apt to treat the condition before treatment is indicated. Take the average practitioner throughout the country, when he hears a cardiac murmur he thinks it is an indication for digitalis or strophanthus. He interferes with the laws of nature when nature is compensating perfectly for that lesion, and by his interference he disturbs the compensation and brings about dilatation.

Dr. J. F. Jenkins of Michigan—I have heard a good many things attributed to the neglect of the medical profession, but this is the first time that I have heard of the medical profession making patients have heart disease. In fact I do not think there is a case of rheumatic endocarditis in which the doctor has had anything to do with inducing the disease. In all probability the disease was there before the doctor saw the case. In fact, cardiac disease is one of the commonest affections produced by rheumatism and I should dislike to see the physician accused of being the cause of it.

Dr. Rochester—As Dr. Cohen said, the paper was devoted to the prognosis and therapeutic indications rather than to an enumeration of all the drugs. The therapeutic indications which I spoke of were the relief of peripheral obstruction and improvement of the musculature of the heart and arteries. The various methods by which this might be secured were not entirely gone into, but merely touched upon. I am glad venesection has been mentioned, for I am one of the younger members of the profession who practice it when the time comes for it. The indications for venesection pertain to failure of the right heart. I did not speak of disease of the arterioles of the heart especially, but included those with the arterioles of the rest of the body. The use of strychnia and nux vomica is one of the hobbies of the reader. A great many physicians are frightened when I tell them that I have frequently given a drachm of tincture of nux vomica at a dose, three times a day. Strychnia I have given in the same proportion, after gradually working up to that dose. The use of strychnia and nitroglycerin alternately simply produces the same condition which we can bring about by baths and exercise—dilatation of the arterioles, etc. If we can bring about these effects without introducing poisons into the body, we can do much better for our patients, and I want to enter a strong plea here for the employment of exercises, such as are used in the Nauheim treatment, and for the use of baths whether they do or do not include salt or carbonic acid. Use baths, rubbing of the skin, and all measures which we can without drugs, and when these fail we can fall back on drugs.

DISCUSSION ON DR. F. A. PACKARD'S PAPER "TRICHINOSIS IN THE UNITED STATES."

(*Vide* JOURNAL, page 59.)

Dr. CHARLES STOCKTON of Buffalo, N. Y.—I agree that this disease is often overlooked. I feel convinced that I have myself overlooked it because after having once recognized it I could look back with a more or less clear vision upon previous cases and come to the conclusion that I had overlooked it several times. I think the point to which Dr. Packard has called attention should be borne in mind, and I hope he will allow me to add to this important sign those of sweating and edema. It seems to me that if we add these two signs to the other two, it will constitute a picture which can not well be overlooked.

Dr. A. P. OHLMACHER of Cleveland, Ohio—I wish the author had added something about treatment. The trichina is killed by lime salt. Now, if in some way lime salt could be got into the blood, would it not get rid of the trichina?

Dr. PACKARD—I have mentioned sweating. I would put with it as of equal value, thirst. With regard to treatment, this man got salicylate of soda during his stay in the hospital, principally for the reason that it was cheap and in the doses given it was harmless. The only other treatment which he received was in the way of cathartics, calomel, salines, and an occasional dose of castor oil. With regard to giving lime, the trouble is that it is too late. As soon as the trichina becomes encapsulated it can do no harm save by being eaten by the rat or pig.

DISCUSSION ON PAPER OF DR. S. SOLIS-COHEN, "THE TREATMENT OF EXOPHTHALMIC GOITER AND OTHER VASOMOTOR ATAXIAS."

(*Vide* JOURNAL, page 65.)

Dr. C. F. HOOVER of Cleveland, Ohio—I may mention the case of a woman with marked scleroderma, bronzing of the skin, leathery binding feeling of the hand, inability to close the hand on account of the scleroderma, cessation of menstruation, irregular heart. There was no sweating, no exophthalmus. Within four or five days after commencing thyroid feeding the cardiac rhythm was perfectly restored; in the course of three or four weeks menstruation returned, and I was astonished to find that the scleroderma and bronzing entirely disappeared.

Dr. S. SOLIS COHEN—I do not know in what way the thymus gland administered in these cases acts. The thymus and the adrenal extracts should be given tentatively. I get the best commercial preparation which I can find. I give tabloids of five grains each, beginning with one a day and increasing until in some cases I get up to six a day. In other words, testing the susceptibility of the patient in each case, first dividing the one tabloid in three parts, giving the three parts in the course of the day, and finally in some cases going up to two tabloids three times a day. Dr. Owen has used much larger doses of thymus, but I have begun with the smallest dose, and in some instances have run up to 30 grains a day, or as far as I think the patient will stand it, both of the thymus and adrenal extract.

Dr. HERRICK of Cleveland, asked whether other medicines were given, and Dr. Solis-Cohen replied in the negative.

DISCUSSION ON PAPER OF DR. HENRY BEATES, "THE USE OF DIGITALIN WITH REFERENCE TO DOSE."

(*Vide* JOURNAL, Vol. XXVIII, p. 1209.)

Dr. HERRICK of Cleveland, Ohio—We are coming to the region of therapeutic agents for the treatment of disease, a region of great skepticism, great doubt with regard to specifics and special agents. This paper is valuable for what it has given. I think, however, that there are some problems involved in the administration of digitalin. As the author has intimated, its action is through the pneumogastric nerve, and it is applicable to a certain class of cases. Would the Doctor administer digitalin in inflammations of the heart? I think the common custom among physicians is to give digitalis in any heart disease. Heart disease: digitalis! I would put in a word of caution; never give digitalis in inflammation of the heart. But in other conditions, through the pneumogastric nerve, I think we may somewhat limit the region of its activity.

Dr. BEATES—As to whether digitalis should be used in inflammation of the heart, if the Doctor means simple inflammation or conditions in which there is active inflammation of the heart, it certainly should not. If, however, he includes in the term inflammation the consequences of the acute condition after the latter has subsided, I would say that I myself would not then use *digitalis* because it is complex; I would not use *every* digitalin, because they are so different, but I would use *this* digitalin. In acute inflammations of the heart the drug is certainly contraindicated, but in the results of the acute forms of inflammation of the heart I would certainly urge this particular digitalin as a therapeutic measure.

DISCUSSION ON PAPER OF DR. J. M. ANDERS OF PHILADELPHIA, "MYXEDEMA WITH REPORT OF TWO CASES."

(*Vide* JOURNAL, page 63.)

Dr. RUSSELL—A mistake in diagnosis is frequently made, even in pronounced cases. In the Howard Hospital a very marked case in all its characteristics had been treated, as long as a year, for chronic gastric catarrh as well as liver trouble instead. A knowledge of the clinical features of the disease is essential to diagnosis, a fact which should be better known to the profession. Within two years I have seen a case very similar to one of Dr. Anders. The patient was a woman who had been treated about two years for parenchymatous nephritis. The urinary changes were markedly pronounced, but at no time were there cardiac changes or edema, and it was only as a tentative treatment that thyroid was tried, not so much with the idea that there was a myxedematous complication. The result was eminently satisfactory, for the urine has been normal for a period of eighteen months. The case at the Howard Hospital rapidly improved under thyroid, but at no time were we able to administer more than five grains of thyroid extract three times a day. Within seven weeks the patient lost some thirty pounds, and has been in every possible way benefited.

SELECTIONS.

On the Question of the Removal of the Second Ovary in Ovariotomy.—Dr. D. Thomson relates his experience in exemplification of the above question, saying: I firmly believe there can be no fixed defined and inalienable rule in these cases. I remember years ago removing a cystic ovary from a young woman, unmarried, leaving the other, which was enlarged and tender. She made an excellent recovery, but when well enough to be discharged and get about she began to complain of symptoms pointing to the ovary which was left behind, and she was repeatedly sent to me to know if she had not another tumor coming and if it was not advisable to have another operation. I saw no reason for it and refused, and this young woman is now perfectly well. There was pain and tenderness, but I did not consider these sufficient to justify another operation. One can not avoid the feeling that in this case the second ovary might have been removed had I been strongly impressed with the need for it at the time of operation. We might have had this case to swell the number of double removals, and the tender condition and enlargement would have been employed as arguments in justification. I know of a case of cyst of the broad ligament which I was about to remove five years ago, but which, owing to the very alarming symptoms occasioned by the anesthetic, I was obliged to desist from doing when just about to enucleate it. The operation was immediately stopped and the abdomen closed. From that day to this the cyst has not been enlarged; indeed, it underwent some degree of diminution. I have seen the patient at intervals of a few months since and she has continued very comfortable and able to attend to her business. During the time I had the patient under observation previous to the operation the cyst had been increasing, and I only decided to operate because of the disturbance and pain it was causing in its neighborhood, as well as rendering the woman unfit for her duties and giving her great general discomfort. Its presence does not now cause these symptoms in anything like the same degree, and, as I have already said, she attends to her daily duties, which are of an arduous kind. Why the cyst ceased to increase is another question, but it may have been *in some measure* due to the fact that I made her rest absolutely for six months. I accidentally discovered a cyst of the ovary, when attending a woman four years ago for another matter. It had not increased when I last attended her a few months ago, and she at present suffers only a little from it. She does not know of its existence. Why should she so long as it gives such slight trouble and she is quite able for her duties? She has had two children since I discovered the cyst, and if it has remained *in statu quo* for four years (and perhaps for four years previous to that) may it not remain so for four, or even fourteen, more? I may also instance the case of a young married woman in whom a tumor (cystic) of one ovary has existed to my knowledge for years. It has at times caused a good deal of suffering, and on one occasion I almost decided to remove it. Several months of absolute rest, however, with some treatment, helped her greatly, and she has been able to attend to her household affairs with a considerably greater degree of comfort than previously. I have known of the existence of this cyst for six or seven years, and it does not increase.

The advocates for removal may say that it would be better to remove the organ than for the woman to undergo the trouble, anxiety and suffering of a second operation, with its consequent risk and expense. The risk is small now, thanks to progress made in surgery during the last quarter of a century, but there is a risk, and it ought to be avoided, to say nothing of the other concomitants of an operation. But if there is a reasonable hope that the ovary may not get worse or may recover, I think the woman, especially if a young one, ought to have a chance and the ovary should be left, and I think it may be fairly said that the cases cited show that ovaries to some extent diseased may be left sometimes with a very fair prospect that they may not only not cause increased trouble in the future, but that they may remain stationary even recover. If, then, some diseased conditions of the ovaries remain quiescent for years, improve and even get well, we ought not too hastily to conclude that operative interference is necessary, but should keep our patients under observation and treatment. I am confident that some operations may be avoided by this plan, and the subjects of the disease be enabled to pursue their daily duties with comfort.—London *Lancet*.

Clinical Experience with Formaldehyde.—In the *New York Medical Journal*, January, Dr. M. S. Alexander states that he has used this drug in whooping-cough and numerous other conditions with gratifying results. It should be remembered that formalin solution has no caustic properties. It does not hurt the instruments, not even as much as blunting the edge of the cutting instruments. The same solution was always used for irrigation when the dressing of wounds was changed; this too gave such satisfaction, that it has been altogether used in a great many operations. "I have used it altogether in my practice for almost a year. I have no more need for corrosive sublimate or carbolic acid. I wish to emphasize the fact that formalin does not attack metals at all. It is best adapted for antiseptic solutions (1 to 500) in which to keep instruments. I have had no alarming results with formalin locally; indeed, in cases of chancroid and chancre, the pure (40 per cent.) was applied without any bad results other than pain, with the benefit of rapidly healing the ulcers with a single application. I have never failed to get better results from it in skin troubles than from any other remedy. I use it by blowing it into the skin by a compressed air sprayer.

"I have cured an old case of pruritus vulvæ that had been treated by many different specialists for three years. In all affections when any of the old disinfectants, such as carbolic acid, corrosive sublimate and many others cause trouble by irritation and poison if not applied very carefully, this is all lost sight of and overcome by the happy and safe use of formalin.

"Cases of whooping cough are treated successfully by spraying with an atomizer three times daily, using a 1 per cent. solution for fifteen minutes. I have never had an opportunity to use it in scarlet fever, but no doubt it would prove of great utility in all infectious and contagious diseases for the following reasons: 1. It has extraordinarily active antiseptic power, similar to that of corrosive sublimate; 2. It attacks only the substances of the contagious material, leaving unattacked the articles treated, whether organic or inorganic; 3. It is very readily employed under all circumstances either as a liquid or as a gas. Another marked advantage of the vapor of formalin is that its specific gravity closely approximates that of air, so that there is no difficulty in keeping the atmosphere of an inclosed space uniformly impregnated. For this reason it suggested itself to me as a happy remedy in catarrhal troubles. In hay fever it surpasses all other agents known. I use a 0.5 per cent. solution as a spray, and by taking a drachm phial and filling it with a 2 per cent. solution and allowing the patient to inhale the fumes, I can come as near curing the most obstinate forms of catarrhal troubles as by all other means known. The fumes seem to reach portions that can not be penetrated by the spray or douche. I treated fifteen cases of infantile diarrhea with only one death. Half a grain to a grain and a quarter at a dose every two hours. In conclusion I will say that I can clinically recommend formalin as being in the lead among intestinal antiseptics, and far superior to all other agents known in its sphere."

PRACTICAL NOTES.

The Favorable Effect of Hydrastis Canadensis in Bronchitis is announced by Saenger (*Cbl. f. In. Med.* 17, 1897). The cough diminishes, expectoration becomes easier, secretions lose their putridity, while it is superior to opium or morphin in its soothing effect in such cases and even in phthisis, as its effect is more powerful and lasts longer.—*Nouv. Remèdes*, July 8.

Massive Injections of Artificial Serum in Extensive Burns have been found remarkably beneficial in combination with antiseptic and soothing dressings, by Prof. Tommaselli of Palermo. Two observations are described in the *Semaine Méd.* of July 21. In one case more than two-thirds of the front of the body was burned. The first day 250 grams were injected, increasing to 500 the fourth and continuing this to the nineteenth day.

Formol in Dental Surgery.—Didsbury announces in the *Journ. de Méd. de Paris* of July 18, that it has been his experience that formol applied at once to the cavity, when the pulp of a tooth is removed, and hermetically enclosed, renders the extraction of the nerve unnecessary. Ten cases in twelve proved absolutely successful. The pain is severe for four or five minutes but then passes away. He also finds formol efficient in deodorizing carious cavities.

The Omentum Used to Close Perforation in the Stomach from Gastric Ulcers.—Prof. H. Braun has thus treated two cases with success, and recommends the method when the tissues are too friable to suture alone. In one case the wall was perforated and extremely thin; to cover it he drew up a thick fold of the large omentum and sutured it over the spot, before commencing his gastro-enterostomy. The operation was completely successful and the woman is in good health now, three and one-half years since. Bennett also reports using an omental plug to close an otherwise intractable opening in the stomach. —*Cbl. f. Chir.*, July 10.

Iodoformed Ether in Catarrhal Metritis.—Doleris recommends touching the cervical cavity with a cotton pad dipped in iodoformed ether. The ether causes the muscles of the cervix to contract and empties the glands of their infected mucus, while the iodoform disinfects. He has been very successful with this method, the only one which completely evacuates the glands of their contents.—*Nouv. Remèdes*, July 8.

Thyroid Medication in Fractures.—G. Gauthier has found that fractures in which consolidation does not promptly occur, can be favorably influenced by administering thyroid extract. He reports two cases thus treated, and states that the successful consolidation took place rapidly and was complete, after the failure of other treatments, for 110 days in one case and three months in the other. He urges others to experiment in the same line, which was indicated by the success of the thyroid extracts in the development of bony tissue in myxedema.—*Semaine Med.*, July 14.

Large Doses of Ether in Uremic Dyspnea.—Lemoine and Gallois report great benefit derived in acute nephritis, congestion, etc. (except where the uremia is due to arteriosclerosis), from hour to hour doses of 2 to 3 teaspoons of ether in sweetened water, or alternating it every third hour with 2 to 3 cm. injected subcutaneously. In some cases 300 grams *pro die* were administered without inconveniences. Copious diuresis was induced, the pulse became stronger and quieter, the respiration deeper and fuller.—*Wien. klin. Woch.*, July 8.

Substitute for a Suspensory.—After shaving and disinfecting the skin, the assistant seizes the lower part of the scrotum, the patient in the decubitus dorsal, and draws it up tight, the testes settling down close to the inguinal rings. Around the scrotal pedicle thus formed between the hand of the assistant and the testes, a strip of very adhesive sparadrap is applied, 3 cm. wide by 75 long, compressing the scrotum to the size of a thumb in a horizontal ring, two other strips are applied over it and three more just above and half overlapping it. In acute gonorrhea, with or without epididymitis, this compressing ring will be found more effective than a suspensory, especially if the patient keeps his bed. After the first half hour it ceases to be felt. As the tumefaction subsides, additional circles can be applied above it.—K. Gerson, Berlin, *Semaine Méd.*, July 21.

Cardiac Syncope in Great Altitudes.—A correspondent of the London *Lancet*, in explanation of the mountaineering accidents in Switzerland, eliminates as causes, at least among the chief, loss of balance, misplaced footing and recklessness. He even turns somewhat coldly from the phrase, "accident due to misadventure," as explaining the disasters expected to befall the foolhardy climbers. He alludes to the many grave considerations which loom up in such enterprises as the Jungfrau Railway with a height of 12,000 feet above the sea level, and refers as well to a congress of the Swiss faculty held at Arona, where an impressive warning was given to travelers "not to venture on rapid ascents above the snow line without a physician's sanction."

An Unusual Complication of Lithotrity.—White (*Lancet*, July 17) reports the case of a man, 52 years old, who came under observation for the removal of a vesical calculus of many years' standing. In the course of the operation of crushing the lithotrite jammed, with the blades three-fourths of an inch apart. A surgical instrument-maker was sent for, but he was unable to liberate the blades, which were too far apart to allow of the withdrawal of the instrument. Suprapubic cystotomy was therefore performed, and after the removal of the calculus the blades of the lithotrite were protruded through the wound, placed in a vice and pressed together until the female blade fractured. The male blade could now be driven home and the instrument was removed. Had the vice failed preparations were made to file through the projecting end of the male blade. The bladder could not be distended, owing to the presence of the lithotrite in the urethra, but the use of a large rectal bag removed all difficulty of reaching the bladder. The stone, with the crushed débris, weighed an ounce and a half and was a typical calcium oxalate calculus. The lithotrite was an old one that had seen much service.

Occluded Vermiform Appendix.—Dr. Arthur Latham exhibited before the Pathological Society of London a vermiform appendix which had been removed from a man, aged 46 years, who had died from lobar pneumonia. There was no history of any symptoms connected with the appendix having occurred during life. The specimen was nine centimeters long and considerably dilated throughout its course. There was no comunication between the appendix and the cecum, the lumen of the former having been obliterated at its junction with the cecum by adhesive enteritis. The appendix was completely filled with numerous small bodies which had the appearance of ova. The largest of these was about the size of a dried pea. On microscopic section they showed an irregular fibrinous structure, which in places was somewhat laminated. They did not give a mucin reaction and stained readily with acid dyes. The wall of the appendix was irregularly honeycombed owing to pressure exerted by the above bodies. It was further thickened, and on section showed loss of mucous membrane and also of lymphoid tissue, possibly due to membranous enteritis. He had been unable to find any similar case on record.—London *Lancet.*

Radiant Heat in Ulcers of the Leg.—Dr. Colleville, professor in the Rheims School of Medicine, treats ulcer of the leg by exposure to heat without any very elaborate apparatus. All that is required is a square plate of metal which will stand heating, and a Bunsen burner. The blue flame of the latter impinges on the metal so as to bring it to a dull red heat, and the ulcer is exposed to the action of this at a distance of about ten inches, the rest of the limb being protected by bandages. The temperature is about 45 degrees C., which is easily borne, and the flame is regulated so as to maintain this temperature at the wound during the whole of the sitting, which lasts for from twenty minutes to an hour. At the conclusion the surface is found to be glazed over, large granulations being visible through the semitransparent coating. It is best to leave the ulcer exposed to the air for some time, and when it is dressed care should be taken that its surface is not touched by the aseptic gauze or other material used, Some improvement is generally experienced by the patient even after the first sitting, and cicatrization is completed in from five to twenty-five applications. In the latter sittings, when the ulcer is nearly healed, a more moderate degree of heat may be employed. Where gas is not available the heat of the sun or that of a fire may be utilized. Dr. Colleville attributes the beneficial effect of this method to the combined action of heat, light and ventilation.

A New Method of Treating General Suppurative Peritonitis.—Finney (Johns Hopkins Hospital *Bulletin*, July) reports five cases of general suppurative peritonitis (including one of typhoid perforation) successfully treated by a new method. The same procedure was followed in a sixth case, and although the patient was at the same time *in extremis*, life was prolonged for thirty-six hours. It is not claimed that the principle involved in the operation is a new one but only that the manner of its application is original. The operation consists first in a sufficiently long incision to admit of easy access to all parts of the peritoneal cavity. Next the coils of small intestine are quickly withdrawn, beginning wi [illegible] worst

All or as much of the small intestines as is necessary is removed and placed outside of the abdomen and covered with warm gauze or towels. Then the peritoneal cavity is thoroughly and systematically wiped out with large pledgets of gauze wrung out of hot salt solution, particular attention being paid to the pelvic portion. In some cases it may be well in addition to flush out the cavity with warm salt solution, but this is rarely necessary. Next the small intestine should be systematically examined loop by loop while still outside the abdomen and rendered macroscopically clean by wiping with gauze compresses wrung out of hot salt solution. It is necessary to wipe with considerable force at times in order to remove adherent flakes of partly organized lymph. This should be done thoroughly and conscientiously, as upon it depends in a large measure the success of the operation. The cleansing process is facilitated and the shock of the operation is lessened if the wiping of the intestinal coils is carried on under a constant irrigation of warm salt solution. After being cleansed macroscopically of all foreign material, pus, feces, lymph, etc., the intestines should be replaced in the abdomen, the worst or sutured coil being the last or most superficial, in order that it may be the better drained by being packed about with gauze if necessary. The abdominal wound is then tightly closed, just enough room being left between two sutures for the gauze drain. If there are any evidences of distension or pain the Paquelin cautery should be thoroughly applied to the abdomen and the bowels moved early by calomel in broken doses, followed by salts and a turpentine enema. An experimental study by Elting and Calvert (Johns Hopkins Hospital *Bulletin*, July) of perforative peritonitis submitted to the foregoing treatment showed that mere mechanical irritation of the peritoneal surfaces will lead to the formation of adhesions; that peritonitis in dogs caused by a perforation of the intestine is of an intensely hemorrhagic character and if left to itself rapidly proves fatal; that generalized peritonitis of this character in dogs can be cured as late as six and a half hours after the operation by the cleansing method described, and that mere closure of the perforation, without this cleansing operation will rarely if ever cure a case of generalized peritonitis in dogs.

The Sclerogenic Treatment of Tuberculous Affections.—Sematzky has been carefully investigating this subject, which was first introduced by Lannelongue of Paris in 1891. His method of treatment consists in the deep injections of the chlorid of zinc around the diseased part. During the years 1893-96 thirty cases of every variety of tuberculous disease were thus treated by him. From these, however, ten, the observation of which could not sufficiently be carried out, must be deducted. Of the remaining twenty, in ten cases highly satisfactory results were obtained, in seven fairly good ones, and only in three no effect whatever resulted. It is noteworthy that the presence of pulmonary tuberculosis greatly reduces the chance for this local treatment. The solution used by Dr. Sematzky for these injections was of 1 in 10 strength, and according to the age of the patient, from seven to ten drops were injected in a number of places (from twelve to twenty) around the periphery of the affected area. As regards the form and technique of the operation he, on the whole, followed the rules laid down by Professor Lannelongue in his first detailed communication on the subject to the Academy of Sciences (July 7, 1891). In some respects, however, he was forced by experience to modify them. For instance: 1. As to the time of repeating the injection, he did not wait as long as three weeks, as was recommended by Professor Lannelongue, but performed a second injection as early as on the seventh or even third day after the first injection, being guided by the indication if the pains did not cease within that period. 2. The administration of anesthetics he regards as quite unnecessary in adults, and even in children the operation can be easily done without them, since the pain is merely that associated with all subcutaneous injections; indeed, they were slight and fugitive in character in almost all cases of his observation. 3. By observing rigid aseptic precautions, the appearance of swelling, redness and signs of any inflammatory reaction, as described by Professor Lannelongue, taking place in the vicinity of the injected area are avoided. Dr. Sematzky was accordingly able to employ an immobile dressing immediately after the injection, which proved to be exceedingly useful. The skin was first covered with collodium elasticum or traumaticum, and a solution of silicate of potash served for the immobile bandage. Professor Lannelongue's statement that this mode of treatment has no effect, or little, on the general health, we find so far fully confirmed by Dr. Sematzky's record, but in the matter of the action of chlorid of zinc on tuberculous tissues he greatly differs from the first-named observer's opinion. He acknowledges that it gives rise to a condition of sclerosis, but what is fatal to the existence, or at any rate paralyzing to the activity, of the bacillus is, according to the writer, the great antiseptic power of which that drug is possessed. At the conclusion, he remarks that this method of treatment, on account of its being very simple and easily accessible to every practitioner, deserves far more attention than it has as yet received, and if employed at an early period, and especially while the formation of granulations sets in, good results will always follow.—London *Lancet*.

Pathology of Morvan's Disease.—In view of the recent death of Dr. Morvan, the following interesting review of the latest status of pathology of the disease that bears his name will be opportune. The Paris letter-writer of the *Medical News* states, that Marinesco and Jeanselme have made public their researches on that disease. He says that it has until recently been the custom in France, to always regard the disease as an abortive, incomplete, atypical form of syringomyelia. In the East, especially at Constantinople, the similarity of the symptoms ascribed to Morvan's disease, especially its completely anesthetic mutilating panaris, and the fact that Morvan, in a country district of less than 50,000 inhabitants, found some fourteen cases of it, led them to suspect indigenous but deteriorated forms of leprosy. There, where leprosy is so common and its varying characters so familiar, the thought does not seem so strange as it would farther West. Not long ago, Zambuca of Constantinople found, in what was symptomatically a typical case of Morvan's disease, the cavity in the cord which would be expected in syringomyelia, but he found, in addition, in the broken-down material of the cavity, Hansen's lepra bacillus. This attracted a great deal of attention and even led to some doubts as to the etiology of even the more typical cases of syringomyelia.

Marinesco reported the careful autopsy of a typical case of Morvan's disease on which Charcot, in 1890, based one of his clinics, while Jeanselme reported the necropsies of two cases of the disease made in Bretagne, where Morvan's original study of the disease was made. Marinesco found the usual lesion of syringomyelia, a cavity in the cord, more or less triangular in shape, in this case, and extending from the sixth cervical to the sixth dorsal roots. The part involved was almost entirely the left posterior horn, the anterior horn being left almost completely intact. The interesting aspect of the pathologic anatomy for Marinesco lies in the fact that lesions of the left posterior horn should give the trophic troubles incident to Morvan's disease, localized entirely in the left hand. The inference is that the the medullary lesions of Morvan's disease have their seat in the posterior horns, and that it is here, as a consequence, that the trophic centers for the integumental and skeletal tissues of the extremities are to be found. A careful bacteriologic investigation did not disclose the presence of bacilli. The cavity in the cord was, as is usual in syringomelia, the result of a gliomatosis of the periendyma, the process seemingly starting in the canal, and spreading to the posterior horns. Jeanselme reported that he had not been able to find bacilli in the anesthetic spots, either over or under pigmented, as they accur in Bretagne, the home of the disease. As Hansen's bacillus is not often found in the trophic lesions of leprosy, however, Jeanselme did not consider that he could base any satisfactory conclusion on his negative results.

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SATURDAY, AUGUST 21, 1897.

POLITICS AND THE MEDICAL PROFESSION.

Whatever may be one's private opinions as to public questions, to whichever party he may have belonged in the past, it is clear to all independent intellects that there are other duties to one's fellow-men and to the future far more imperative and binding than allegiance to any political party—so far at least as such parties are at present constituted and used. Both great parties in American politics have at times fallen away from their principles and have wallowed in such bogs of corruption that they have nauseated their best members into a condition of alienation and independence, or at least into one of irritation and half contempt. One votes as he does now-a-days not because he likes Cæsar less, but that he likes Rome more; not because he believes much in the men, their acts or principles, on the ticket, but because he believes rather less in the men and their doings whose names are on the other tickets. It is too frequently a choice between two evils, in which one has some difficulty to determine which promises or rather which will fulfil the least evil. All of this is not, perhaps, wholly to be deplored; it has many advantages, not the least of which possibly are a more intelligent conception of and participation in government affairs; a use of parties and partizanship as mere instruments and tools for purposes beyond their surmise; and a habit of independence which may come in time to control the corruptionists. When these schemers and bribers and hoodlums, "in it for what it is worth," are dictating legislation and controlling law for their unscrupulous selfishness, men who have better purposes in life may be not only excused but encouraged to put in such delegates and lawmakers as will protest against abuses and use their offices for the public good.

Beyond all question things have come to such a pass that for medical men matters pertaining to professional and sanitary welfare must henceforth outweigh all considerations of partizanship. Questions of tariff, whether for revenue or for protection, questions of currency, etc., are infinitely unimportant in comparison with questions of professional progress and the health of the people. It is a shame for medical men to sell themselves in future for the advantage of politicians and commercial interests, while the far higher and more vitally important questions of scientific advance and the cure of disease are utterly neglected. It is our inescapable duty henceforth to judge of men and parties from the professional standpoint, and to make our power felt with administrators and legislators for purposes other than those represented by lobbies and bosses.

There are several methods whereby medical men can influence their administrative and legislative servants: 1. The first and most important is by corporate action, resolutions, committees, etc., through medical societies. Strange as it may seem, this, by some physicians, is considered unprofessional and *ultra vires*. The very thing we should do, that precise method of making our influence felt which is most effective and most imperatively demanded is, wonderful to say, actually the thing at which we balk and stop. No matter what disgrace to medicine may be threatened, no matter how clear the professional duty that confronts us, there are today not a few of the so-called leaders—professional tories and aristocrats, they might be termed—who say, "Oh, yes! It is all a miserable shame, but *non possumus*! Our organization gives us no right or power to go into politics." Bah! This is the voice of laziness and cowardice; it is not the way of scientific advance or of the cure and prevention of disease. Medical societies have not only the right and power, they have the inobviable duty laid upon them, shirk it and deny it as they may, to make their influence felt in all public questions relating to the public health. The work of the British Medical Association and of its parliamentary and other committees in eradicating abuses and in instituting reforms, gives the lie to our pusillanimity and, by example, illustrates what may be done by men whose motives are pure and whose bravery puts their motives into action. Every American medical society from the smallest to the largest is under the most stringent obligation to make matters of the public health its most direct concern. Each one, and especially the AMERICAN MEDICAL ASSOCIATION and the Medical C [illegible], shoul [illegible] ss reso[illegible] tions pertaining to bad [illegible] se [illegible] od l that should be proposed, in reference to medical education, quarantine, health-protective measures, etc., and should see that copies of these resolutions are placed in the hands of every legislator and administrator to whom they concern. Only thus shall we make our professional will and power known, and in becoming known it shall bring about reform and social education. Our organizations should also appoint committees, and see that these committees do their work to bring to the consciences and consciousnesses of the public officials their duties as to the prevention and cure of disease.

2. Not only by means of our organizations can we further our cause, but hardly less effective, if strenuously carried out, would be the work of individuals of the profession should they try to influence their lawmakers and administrators in a private way. If these men are known to us personally, by all means protest and advise by word of mouth. Incalculable good could be done so. If the powers that be are not our acquaintances or patients, there remains the letter-carrier to help us. And a powerful influence is the written letter! When a vicious piece of legislation is proposed, or when good measures are neglected, we should write to legislators and governors and mayors in condemnation or in commendation. Many a shameless bit of medical jobbery is smuggled into law simply because the men with power hear only the quacks' side and not a word is uttered by us who are the appointed guardians of the nation's health. The few quacks combine, hire a lobby, write a thousand letters, appoint committees, personally intercede and win the day, while we, who are 100,000, meet in a thousand societies, local, State and National, and talk about headaches, sprains and sore toes, but never a word about prevention or cure of the common professional and social miseries that afflict and murder millions. The profession by such silence is not only renegade to its humanitarian function, but it is renegade to its own self-interest. A man may not always be his brother's keeper, but a physician is always so, and when he denies or neglects the fact he is a shirker and at heart and in fact an enemy of his own guild.

While we acquiesce in silence, physicians who value their selfish aims and interests above those of the world and of their profession, form a compact and make a raid on the public treasuries for endowments and "divvies" for the benefit of hospitals, dispensaries and medical colleges founded and carried on not for the public good but for the benefit and profit of the lobbyists. All the time there is not one in a thousand of the epileptics of the land cared for, his life turned from a curse to a blessing by the one sure method which we all know. Is this medicine? Is it humanity? A hundred such examples of abuse and disgracefulness arise spontaneously in every reader's mind, and need no further listing. The antivivisectionists, the meat-sellers and milk-dealers who are only kept from sewing the seeds of disease by inspectors and legal control, go on with their infamous traffic because, forsooth, we do not care or because the stoppage of the misery is *ultra vires!* Can a more flagrant example of professional cowardice and stultification be cited? Shall it go on forever, while eternally postponing we sing the old woman's song:

"Consider, good cow, consider!"

THE COMPARATIVE PATHOLOGY OF MALARIA.

Of late years there have been described by various investigators certain forms of parasitic blood diseases in animals that undoubtedly correspond to the now quite well understood malarial diseases of man.

BABES[1] of Roumania, was one of the first to investigate the occurrence of parasites in the red blood corpuscles of cattle. It concerned an acute febrile disease, occurring in the summer, lasting from four to seven days, and characterized by a hemoglobinuria that made its appearance on the second or third day and which was constant in the fatal cases. Postmortem there was found hemorrhage in the kidneys and in the walls of the stomach and intestines, and acute splenic swelling. The red blood corpuscles contained one or more parasites shaped like cocci, but BABES could not follow the stages of development of the parasites, whose exact nature was not established.

The most important investigations concerning this disease have been made by THEOBALD SMITH[2] now of Harvard University, whose studies of Texas fever have called forth universal admiration on account of clearness, accuracy and penetration. In the acute form, which usually occurs in the summer, there is fever, anemia and hemoglobinuria, the disease being generally fatal. The postmortem shows acute splenic swelling and hemorrhage into the substance of the kidneys. The red blood cells show, in the fresh preparations, ameboid protoplasmic masses, often paired and bean-shaped; in the fixed and stained preparations red corpuscles laden with chromatin fragments are also found due to the destruction of embryonal cells. The chronic form occurs in the autumn and may pass unnoticed, hemoglobinuria being rare; the parasites are usually round, small-like cocci. The disease can be produced experimentally by inoculation of the blood of one animal into another. SMITH calls the parasites *pyrosoma bigeminum* and regards them as related to those in the red corpuscles in malaria, human and animal; in all probability certain suctorial parasites (*ixodes bovis*) play an essential role in spreading the disease.

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[1] Sur l'hemoglobinuria bacterienne du bœuf. Acad. des Sciences, 1888 and 1890. Die Aetiologie der seuchenhaften Hemoglobinurie des Rindes, Virchow's Archiv. Vol. cxv, 1889.

[2] Preliminary observations on the microorganism of Texas fever, Med. News, 1889 Also eighth and ninth annual reports of the Bureau of Animal Industry, 1893.

Ali Krozius and v. Hellens[3] described endemic hematuria of cattle in the swampy regions of Finland. These authors regarded the parasites they observed as most likely identical with those already described by Babes and Smith.

Sanfelice and Loi[4] examined the hematuria of cattle in Sardinia, where it is wide-spread, and concluded that the disease is identical with Texas fever, and the hemoglobinuria of Roumania and Finland.

Very recently Celli and Santori[5] have published the results of their studies of a similar or identical disease occurring in that home of malaria, the Roman Campagna. Their paper is accompanied by a plate illustrating the blood findings. The disease is characterized by fever, acute anemia and endoglobular parasites that probably occur in two forms, but the complete developmental cycles of the parasites have not been traced. In some of the severe cases of the disease hemoglobinuria appears, but this is not so constant or frequent that hemoglobinuria or hematinuria of cattle can be considered as suitable names for the disease. Quinin exercises a curative action in this infection, and for this and other reasons the disease is designated by these authors as *rinder-malaria* or malaria of cattle, a term that seems to the writer at once appropriate, accurate and significant.

Celli and Santori regard this parasitic affection as in the main identical with the hemoglobinuria of cattle in Roumania (Babes), Texas fever (Smith), the hemoglobinuria in Finland (Krozius and v. Hellens), and the hematinuria in Sardinia (Sanfelice and Loi). The wide-spread occurrence of malarial diseases of cattle may therefore be regarded as established on account of the clinical manifestations, the form and endoglobular situation of the parasites, the nature of the anatomic changes, the development of the disease in malarial regions and in malarial seasons and the curative action of quinin.

This malaria of cattle, though it resembles in the main that of man, presents certain differences. It seems that while the parasites destroy the blood corpuscles and thus cause anemia and not infrequently hemoglobinuria, yet they do not form black pigment and hence melanemia does not occur; in this respect the disease resembles more the estivo-autumnal and rapidly malignant human malaria. Bovine malaria is transferable from animal to animal belonging to the same race or species. The anatomic changes are quite analogous to those of certain forms of human malaria; the changes in the kidneys, the spleen and the liver are stated by Celli and Santori to be quite similar to those found in malarial hemoglobinuria in man by Bastianelli.[6] The geographic and seasonal occurrence of bovine malaria corresponds, as indicated in the foregoing, very strikingly with that of the human form. And finally the favorable action of quinin completes the analogy of the two kinds of malaria (Celli and Santori).

In connection with this it is interesting to note that the comparative parasitology of the red corpuscles recognizes not only a human and, as set forth, a bovine malaria, but also endoglobular or malarial infections in frogs, reptiles and birds. Quite recently the investigators in the Johns Hopkins Hospital of Baltimore[7] have demonstrated the occurrence of malaria in certain indigenous birds, showing that the endoglobular parasitic avian diseases are also wide-spread distributions. Observations are also at hand that indicate that sheep, horses and dogs may be subject to similar invasions.

TRAUMATIC ENDOCARDITIS.

It is pretty generally recognized that serious lesions of deep-seated organs may result from traumatism that is unattended with obvious external injury, and especially when the affected viscus is already the seat of disease. Thus the lung may be torn, the brain lacerated, a heart-valve rent asunder in consequence of violence expended upon the bony coverings of these parts, though perhaps without severance in continuity. Through the same mechanism may take place laceration of an eroded pulmonary vessel or rupture of a cerebral abscess or of a thoracic aneurysm. In all likelihood similar influences may give rise to inflammatory reaction, as manifested by pleuritis, or meningitis, but additional evidence is needed to convert probability into certainty.

In an interesting communication presented recently to the Berlin Society for Internal Medicine Litten (*Berliner klinische Wochenschrift*, June 28, 1897, p. 571) makes a valuable contribution to the subject of traumatic endocarditis. He points out that the injuries to which the heart-valves are susceptible consist in detachment, separation, contusion and laceration of the endocardium, with subserous hemorrhage. These may occur in the absence of all evidence of external injury, even in cases that progress to a fatal termination. Cases in which merely existing compensation for a preëxisting valvular lesion is deranged as a result of traumatism are of course not instances of traumatic endocarditis and do not belong in the category of those under consideration. Those cases also are to be excluded in which as a result of traumatism at any portion of the body microörganisms gain entrance to the circulation and localize themselves upon the endocardium. These represent instances of septic endocarditis secondary to general infection. Most of the cases heretofore described [illegible] traumatic endocarditis have been [illegible] those cases are considered in this connection in which simple benign verrucose endocarditis develops in direct relation with a previous injury to the chest. In the accurate determination of this relation it is essential that the state of the heart before or at the time of the reception of the injury shall have been known, as well as that at varying periods afterward. Litten relates three in cases which he believes such a relation to have been established. One occurred in a young man, previously healthy, who was crushed between his horse and a resisting surface. The resulting pain was so severe as to cause the man to fall. When examined he complained of a feeling of anxiety, palpitation of the heart, a sense of oppression and dyspnea, with fever and cyanosis. After the lapse of several months a loud systolic murmur was heard at the apex of the heart and one also over the aorta, together with enlargement of the right ventricle and in less degree also of the left. A diagnosis of mitral insufficiency and aortic endocarditis leading to aortic obstruction was made. While in this case the endocarditis was followed by a valvular defect, in the second case reported perfect recovery ensued.

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[3] Des hematozoaires de l'hemoglobinuria du bœuf, Arch. de Méd. experim., 1894.

[4] Sull' etiologia della ematinuria dei bovini in Sardegna, Mod. Zooiatro, anno vii, 1895.

[5] Die Rindermalaria in der Campagna von Rom, Centralbl. für Bact. u. Parasitenk., Bd. xvi, No. 15 and 16, May 10, 1897.

[6] Annali di medicina navale, 1896.

[7] Johns Hopkins Hospital Bulletin

A laborer employed in the construction of a bridge received a heavy blow in the left side of the chest which rendered him, unconscious. He suffered from dyspnea, palpitation of the heart and pains in the chest radiating toward the shoulder, with cyanosis and a small, frequent pulse. The heart appeared to be normal, and recovery had taken place after the lapse of four days. The heart sounds were pure, though feeble. On the fifteenth day a systolic murmur was audible at the apex and gradually increased in intensity. No hypertrophy of the right ventricle could be made out. After the lapse of nine months the murmur had entirely disappeared and could not be induced by active muscular exertion.

The third case occurred in a man who had long been under observation on account of an esophageal diverticulum and had never presented any cardiac abnormality. While ascending a ladder with some stone he fell backward and received a heavy weight upon the left side of the chest. When shock had been recovered from, the heart sounds were found normal for several days. After the lapse of a number of weeks a systolic murmur could be heard, indicative of mitral insufficiency, with hypertrophy of both ventricles.

Numerous cases like the foregoing have been reported, but they lose much of their significance because the condition of the heart immediately after the accident is not noted. Many months may elapse before a murmur becomes audible. A distinction must be made between the traumatic rupture of healthy and that of diseased valves. The latter may take place spontaneously; it is the more common and usually affects the aortic valve. Under these circumstances manifestations of aortic insufficiency set in suddenly and the condition is readily recognized. Laceration of the mitral valve has thus far not yet been observed but only that of the chordæ tendineæ and of the papillary muscles. The prognosis of traumatic aortic insufficiency is more unfavorable than that of the spontaneous variety. Death often occurs before hypertrophy of the left ventricle can take place.

CAISSON DISEASE.

The extraordinary strides which have been made in science and in the arts during the last fifty years have developed ailments which practitioners of medicine previous to the last half century were entirely unfamiliar with, and one of the most interesting of these, from an etiologic and pathologic standpoint, is that condition which has, because of its causative factor, been named the "caisson disease." The great number of large engineering ventures has increased the opportunity for the study of this interesting condition, and in this country the most noteworthy studies which have been made concerning it have been those of Jaminet, who studied the condition of the workmen who were affected by this ailment during the building of the St. Louis bridge, and A. H. Smith of New York, who has carefully recorded the observations which he made upon a similar class of patients during the excavations which were made for the foundation of the Brooklyn Bridge. Still more recently a most careful and accurate study has been made by Dr. Hugh Snell during the excavations required for the foundation of the piers of the celebrated Forth Bridge in Scotland. This observer has published the results of his investigations in a little monograph which has recently been published by H.K. Lewis of London, and in it he discusses the history of the disease, the studies which have been made in regard to its physiology and pathology, and the researches of Triger, Paul Bert, Francois and others. After doing so he draws upon a rich store of over 200 cases which he has carefully observed for his own remarks.

It is useful in this connection to notice some of the other work which has been done in regard to the study of this affection, which from the time of its earliest recognition has proved itself a never-ending source of interest. It will be remembered that the symptoms of the malady usually develop only when the patient returns to the ordinary atmospheric air, emerging from a caisson in which the atmospheric pressure may have been several times that of the normal atmosphere. The mildest symptoms are dizziness and vertigo with some neuralgic pains in the head, but if the pressure has been high, or the individual is susceptible, these neuralgic pains become most excruciating, darting with fearful velocity about the arms and legs and the head and trunk, and becoming so intense that the patient often declares that the flesh is being stripped off his bones. At the same time there is complete abeyance of the tactile and pressure sensibility. Nausea and vomiting may come on preceded by violent paroxysms of epigastric pain and sometimes, although more rarely, there is relaxation of the sphincters. In some instances the pain is absent and the paralysis is the dominant symptom. If coma follows the vertigo or paralysis, death is invariably the result, although in the absence of this symptom the prognosis is fairly favorable. It is a matter of interest to note that the pain is the most constant and well-defined symptom from which the patients suffer.

The theories which have been advanced to explain this extraordinary series of symptoms have been numerous and antagonistic. Snell believes that they depend upon the pressure itself, the length of stay in the compressed air, improper ventilation, too rapid return to the normal atmospheric pressure and lastly to personal idiosyncrasies. From a careful study which we have made of this subject we believe that the symptoms are frequent in direct ratio to the degree of pressure to which the patient has been subjected, for statistics certainly prove that whenever the pressure is two or three times that of the atmospheric air these symptoms develop in a large number of workmen; whereas if the pressure has been only slightly raised above that of the ordinary atmosphere "caisson disease" seldom asserts itself. That a greater pressure than that of atmospheric air is a direct etiologic factor in producing the primary condition which ultimately results in the development of these symptoms seems to be proved by the fact that careful clinical studies by Junod, Sandahl. Pravaz and von Vivenot show that there is great peripheral displacement of blood in patients exposed to high pressures in a caisson, with the result of producing great congestion of the internal viscera. To such an extent may the peripheral circulation be cut off by high atmospheric pressure that even the radial pulse may be lost, as in the experiments made by Waldenburg. The resistance which is offered to the peripheral circulation often slows the heart from 30 to 36 beats per minute, although such a degree of slowing is not common.

The question therefore arises, do the symptoms of caisson disease depend upon this altered circulation with the sudden return of blood to the peripheral capillaries upon the return of the patient to ordinary atmospheric pressures, or is there a more deeply underlying cause for these symptoms? A certain number of investigators have believed that there is an underlying cause which consists in the fact that under the high pressure named the blood absorbs an excessive quantity of the gases of the atmospheric air, of oxygen or nitrogen, and that the sudden setting free of these gases produces the hemorrhages and other lesions of the nervous system which are found in those cases in which death occurs. Liebig and Bert have proved positively that the absorption of oxygen in compressed air is increased. Paul Bert also claims that the quantity of nitrogen in the blood is materially increased, and he asserts that he has found bubbles of this gas in the blood vessels when the pressure was as high as five or six atmospheres.

It seems to be pretty well proven, however, that the symptoms can not and do not depend upon the excessive absorption of either oxygen or nitrogen, and we therefore turn with interest to the theory advanced by Jaminet of St. Louis, that the symptoms are due to the overloading of the system with effete matter which is set free throughout the entire circulation by the return of the patient to the ordinary atmospheric air. Careful studies which have been made of the ordinary and respiratory exhalations made in the caisson seem, however, to contradict this theory. We accordingly return with interest to the statistics which have been collected by Snell, in the work already quoted, which seem to prove that inadequate ventilation exercises a very material influence in developing the symptoms which we are considering. Snell has made a series of convincing experiments which seem to prove his assertions. Thus when the men were working in a pressure up to 20 pounds above the normal atmosphere with a supply of fresh air of less than 4,000 cubic feet per man per hour 16 cases of illness occurred. When from 4,000 to 8,000 cubic feet per man per hour were supplied only 9 cases occurred, and when above 12,000 cubic feet per man per hour no cases occurred.

It seems evident, therefore, that very high pressure and poor ventilation are two causes which certainly exist, and we can pass on to a study of two other causes which are apparently equally potent factors, namely, the too rapid passage of the patient from a high pressure to that of the ordinary atmosphere and the presence of personal idiosyncrasies. In the first place it is reasonable to suppose that the patient passing from a high atmospheric pressure to a low one with great rapidity, immediately after passing through a number of hours of exhausting toil, might develop symptoms similar to those which have received the name of the "caisson disease," and in the second place it has been proved that if the workmen pass slowly from a high pressure to a low one they as a rule escape the manifestations of the malady. For this reason a number of engineers have provided caissons containing air at different pressures, and have forced their workmen to spend from half an hour to an hour in passing from the lowest caisson to the surface of the earth, thereby saving a number of lives and preventing much illness.

In regard to personal idiosyncrasy it is interesting to note that certain types of men are much more prone to the disease than others, and this fact seems to us to militate strongly against the view promulgated by

Bert, the more so as the workmen usually become habituated to the exposure so that veterans are far less liable to the disease than novices. If the symptoms were due entirely to physical causes such as the absorption of increased quantities of oxygen and nitrogen it is fair to imagine that immunity could be speedily obtained. It certainly is a fact that in those persons who have a large peripheral circulation caisson disease manifests itself more frequently than in those who have a more limited area of peripheral capillaries. Thus in Smith's observations at the Brooklyn Bridge out of thirty-nine men with a tendency to corpulency only three escaped illness, while out of fifty-three lean and lanky men twenty-five escaped. Of the thirty-nine stout men eight were more or less paralized, while of the fifty-three slender men only two were paralyzed, and the deaths which were three in number were entirely among stout men.

It is interesting to note that Snell also believes that rapid decompression is a causative factor in the majority of cases and also thinks that it is the increased solution by the blood of the gases contained in the compressed air, and the liberation of these gases on the pressure being removed, which is chiefly responsible for the pressure symptoms he has described. Whether he be correct in this view or not we at least have obtained the therapeutic point that slow decompression is a *sine qua non* in the prevention of this ailment, as is also good ventilation and also that in superintending the engaging of men for this form of labor only those should be engaged who lack corpulency, and who therefore have not a predisposition to the disease.

THE APPARENT INCREASE OF SUICIDE.

The *Spectator*, a life insurance publication, gives the mortality from suicide in 1895 and 1896 in thirty of the chief cities of this country containing nearly ten million inhabitants or a little over 50 per cent. of the total urban population of the country. The statistics are reliable, having been carefully compiled, and they show that the number of suicides increased from 1,826 in 1895 to 1,999 in 1896, or 9.5 per cent. The estimated average annual increase of population in these cities is only 4.6 per cent., or less than half the increase in the suicides. Of the thirty cities, only nine showed a decrease or a stationary figure, which, allowing for the normal increase of population, is the same thing as a decrease; and it is noteworthy that among these were several of the largest centers of population, as Chicago, Brooklyn, Cincinnati and St. Paul. In New York the increase was very slight and the same might be said of some other large towns. The largest proportional increase seems to have been in some of the smaller cities, as Portland; but this indicates little, as any increase would be proportionally large if the original figure were small.

The apparent important fact in the above figures is the proportionate increase as compared with that of the population, which is in its way significant. An increase is by itself not specially noteworthy, as that is the rule in civilized countries, as was demonstrated twenty years ago by Lombroso in his monograph on this subject. A jump, however, in one year of over 9 per cent. while population only increased at half that rate indicates a more active set of causes for this crime of self-destruction. Hard times is the most obvious of these, but this can not alone be credited with the phenomenon; the political and other excitements of the past year have undoubtedly been, to some extent, efficient in bringing about the result. The country is not necessarily getting insane, suicide is not in itself an evidence of mental derangement, but it does seem, judging from events that are occurring daily, that there has been and still is an abnormally hysteric tendency existing at the present time in our population, and to this we may perhaps credit a part of the unusual increase of suicides. While hard times do not appear to increase the aggregate consumption of alcoholic liquors, one can not say that the well known effect of these in the causation of suicides is materially diminished; the decrease of alcoholic consumption is among those who are not seriously the victims of intemperance, the class that furnish the suicides from drink.

Reckoning the aggregate population of these cities in round numbers as ten millions, we have a lower figure per million than existed even twenty years ago in most European urban populations, and this is, so far as it goes, an encouraging fact. Even if it is assumed that many cases are unrecognised or otherwise escape registration, the figures are still comparatively favorable, for the same possibilities exist elsewhere. Brierre de Boismont, for example, estimated that fully half the cases in Paris were unrepresented in the statistics, and Strahan more recently has expressed the opinion that, for most civilized countries, this estimate is well under rather than over the truth. Statistics are, however, constantly becoming more accurate and complete, and it is probable that these figures are less open to the charge of imperfection than most of those considered by Strahan. The fact, therefore, that they show an increase is only to be expected, and this may possibly only correspond with a proportionate decrease in the unrecognized cases. The further fact that they show an actual decrease in some of the largest cities is encouraging, especially when account is taken of the special conditions that have existed, as already noted, and which might naturally be expected to favor an increase of suicides. The ineffectiveness of any legal prohibition is indicated by the slight increase in New York, where attempts at suicide are a penal statutory offense. The successful carrying out of a crime in this case, unless it be considered its own penalty, which is evidently not the view taken by the offender, practically bars out its punishment and possibly something in the nature of the old-fashioned postmortem penalties might be more effective.

The causes and motives of suicide are so various that any generalizations that may be made are open to criticisms, but one thing is probably fairly established, viz., that its increase is favored and promoted by the stress and competition in modern civilized life. It is one way and that not the least obvious one, in which the degenerates and weaklings eradicate themselves from our populations; to a certain extent it is feature of our social evolution. The statistics such as we have given above are not on the whole discouraging; they do not point to such a state of affairs as exists in many countries as regards this particular indication of national degeneracy. Considering the mixed character of our population, the tendencies to discontent existing and encouraged at the present time, the spread of irreligious and pessimistic doctrines among the uneducated or partially educated masses, all facts that favor suicidal increase, it can not be said that the data, so far as known, show even as great a frequency of self-murder as might be looked for. Apart from those cases due to the natural increase of insanity, the figures seem almost encouraging, if such a thing is possible in statistics of this kind.

BRITISH MEDICAL ASSOCIATION—SPECIAL RATES.

The Grand Trunk Railway System will sell reduced rate tickets to all physicians attending the British Medical Association meeting at Montreal, August 31 to September 5. Tickets will be sold August 28, 29 and 30. good returning three days after adjournment of the convention, at rate of one and a third fare for the round trip. Through Pullman palace vestibuled sleepers daily between Chicago and Montreal. For tickets and sleeping car accommodations apply to L. R. MORROW, G. P. & T. A., 103 Clark St., Chicago.

CORRESPONDENCE.

The Treatment of Typhoid Fever—Final Reply of Dr. Woodbridge.

CLEVELAND, OHIO, Aug. 14, 1897.

To the Editor:—Will you accord me a little space to reply to Dr. Upshur's most remarkable communication in the current issue of the JOURNAL? (*Vide* JOURNAL, August 7, p. 293.) "It is true, I do not possess a knowledge, either 'theoretic or practical,' in line of the Woodbridge methods."

The above excerpt from Dr. Upshur's letter coupled with the author's admission that he took the quotations for his recent paper from an advertising circular will enable physicians to form a just estimate of the value of his criticism of the "Woodbridge Treatment of Typhoid Fever," and suggests a new title for the paper. In view of the antiquated methods which he advocated, how would this do: "Scraps of Ancient Medical History, with a Criticism of the Scientific Treatment of Typhoid Fever, that is based on total ignorance of the subject, supplemented by free and elaborate quotations from an advertising circular."

Dr. Upshur, apparently to emphasize his ignorance, even of the best methods of disinfection, asks questions about the use of formaldehyde gas, with which he ought to be perfectly familiar, since a knowledge of it has been freely circulated through the medium by which *he* seems to obtain his knowledge of medicine, *i. e.*, advertising circulars. The space in the JOURNAL that would be required for full explanations is too valuable to waste in communicating knowledge which may be easily obtained from books or "advertising circulars" and with which every physician in the United States, except Dr. Upshur, is probably already familiar, but for his benefit I reproduce the following quotation from Dr. Kinyoun's report of the disinfection of a room of the "capacity of 7,400 cubic feet; percentage of formaldehyde, 0.5; time, 23 hours . . . d. cultures spread on cover-slips, placed in double envelopes, the inner one sealed with paraffin, and enveloped in thirty-six layers of new cotton sheeting; anthrax, no growth; diphtheria, no growth; typhoid, no growth; s. pyogenes aureus, no growth."

If Dr. Upshur had attended the meeting of the American Public Health Association last year, or if he would read its journal, he would not have to "leave it to a discriminating profession" to decide whether a room will be better disinfected by the use of formaldehyde gas or by his troublesome and obsolete methods, or if he will turn to page 96 of volume 12, number 5, Public Health Reports, he will find the answer to his question, "What does he send it in with?" in these words (following the description of the apparatus used) "a small one eighth inch pipe is attached and passed through the key-hole of the door of the apartment." If the Doctor will procure some advertising circulars and read up carefully the subject of formaldehyde gas he will find his witticism "it seems to me a consistent suggestion and as gassy as his other assertions" turned against himself, since there is abundant evidence of the superiority of formaldehyde gas over all other disinfectants, if the distinguished gentlemen who have investigated the matter so thoroughly have made no mistakes.

The Doctor thinks it "strange" that I have not criticised his quotations from Tyson and Wilson. There are two reasons: 1. I have not their books and hence I have no reliable information that *they* have noticed me or my work, and also I have no assurance that the quotations are correct or were not taken from an advertising circular or a medical almanac. 2. I am replying to Dr. Upshur not Drs. Tyson and Wilson. I am criticising Dr. Upshur, not because he criticised me or the method I advise, but because, in a state of confessed ignorance he assumed the role of teacher, and within a few hours of his admission to membership in the AMERICAN MEDICAL ASSOCIATION he stood up in one of the Sections of that learned body, made statements that are not sustained by facts, violated the spirit and letter of its code of ethics, made an unprofessional assault on a large number of its most progressive members, transgressed the unwritten law (which makes the word of a medical man on medical questions supreme) by saying, "the testimonials" (the clinical and other reports of physicians) "are not worth any more than the testimonials given by hundreds" (by quacks or their patients) "to the so-called cancer cures and kidney cures *et id omne genus*," and when his attention was called to the seriousness and extent of his offense, he attempts to justify his transgression by slandering the medical profession again in the following words: "There are hundreds of good men who fail to analyze cases and treatment." Does Dr. Upshur wish it to be understood that there are "hundreds of good men" who assume the responsibility of guarding the lives of their patients through such a disease as typhoid fever, and who do not make sufficiently careful analyses to know what they are treating and how? Does Dr. Upshur know of any grosser outrage against the dignity and honor of medicine or any greater perversion of truth than to declare that the reports on any method of treatment made by educated physicians who have given the subject careful study at the bedside of large numbers of patients, are comparable to those "testimonials" that accompany "quack nostrums," or does he insinuate that there would be any difficulty in drawing the distinction between them.

The Doctor says: "If he is *disingenuous* enough to take my quotations in my article and compare them, he will find the quotations accurate to the letter," etc. My answer is that while I may be "*disingenuous*" enough to make the comparison, I have not the advertising circular to which he alludes; so here we have his admission that he reviewed a great medical question, on the solution of which hundreds of thousands of lives may depend, from an advertising circular, and when he is driven to the wall he confesses that he has neither "theoretic nor practical" knowledge of the method which he condemns. Such recklessness of human life would do honor to the spirit of the Borgias!

Dr. Upshur boasts that he is in "very good company" and names gentlemen who would probably not subscribe to his ideas of treatment, who would certainly contradict his assumption that his method of disinfection is better than the use of formaldehyde, who would unquestionably repudiate his derogation of the dignity and honor of physicians and medicine, and yet it is probably true that at the present time they would agree with him in rejecting the abortive treatment of typhoid fever. I am sorry, for I would gladly have these princes in medicine with me and with the host of progressive men who know that the disease *can be aborted* and are brave and true enough to say so. How quickly victory would perch upon our banners. But when human lives are at stake, I would rather be right and be alone, than be wrong and be the intimate of kings and emperors. JOHN ELIOT WOODBRIDGE, M.D.

A Circular Letter to Leprologists.

NEW YORK, Aug. 13, 1897.

The following resolutions will be presented at the Berlin Lepra-Conference, Oct. 11 to 16, 1897.

Resolved, That it is the opinion of the delegates of Government, and the leprologists here assembled, that all goverments shall be invited to appoint official delegates (one from each country) to form a *permanent* committee for the suppression and prevention of leprosy, to meet first in Berlin in October, 1898; these delegates to be salaried by their respective governments, and to have full charge of all matters pertaining to leprosy in their own countries.

Resolved, That the German Government be requested to send this invitation through its state department to all governments concerned.

May I count on your support for having these resolutions passed? ALBERT S. ASHMEAD.

NON BIS, SED CENTIES, IN IDEM.

Independently of any differences between Dr. Ehlers and myself, which can only be side issues; independently of any priority question between Dr. Goldschmidt and Dr. Ehlers, as to the proposed measures against the progress and continuance of leprosy, I stand and have always stood for the formation of a *permanent* international committee for the suppression of leprosy. This is *my* idea, and my perseverance in presenting it, advocating it, defending it, fighting for it is the only originality I claim. Whoever has opposed it, whoever will oppose it before the conference at Berlin, during that conference or after it, will always find me ready to open this discussion again. The solution of the leper problem, which is a more tremendous problem than any privat docent sent to Iceland, where he looked at *102* lepers (not 159, as I thought before), can possibly *understand*, can only be reached by systematic, enforced, legal isolation. It is really no use writing books on etiologic studies in Iceland, for instance. These may bring recompense to the publisher, and glory to the author (who thus becomes one of the *renowned* leprologists, whose works are *known*), but what good does it do to the lepers? What to those who are exposed to the contagion? However "general" a secretary may be, of whatever lepra conference he may be the ruler and shining light, however grave and portentous a noise the conferential confabulation may produce, there still remains only one thing that can do any good, it is the thing which I have always proclaimed, and shall proclaim as long as I live.

I am in this question, situated like the old Cato, who never tired of saying: *Carthago delenda est.*

ALBERT S. ASHMEAD, M.D.

An Ancient Manuscript.

PHILADELPHIA, Aug. 9, 1897.

To the Editor:—I take it that nearly all physicians, and surely all the members of the AMERICAN MEDICAL ASSOCIATION, are interested in matters pertaining to our profession, be their source ever so indirect or remote.

It has seemed to me quite worth while to bring to the notice of the readers of the JOURNAL who are not already acquainted with the extraordinary find of Messrs. Grenfell and Hunt in Egypt last January, this item through your kindness. The discovery is that of a piece of papyrus containing in the Greek text eight unrecorded sayings or *logia* of Christ. The fifth saying has two gaps, rendering it incomplete; the eighth saying is not decipherable. Each saying begins with the words Λέγει Ιησοῦς—Jesus saith. Historic and archeologic critics and authorities seem to agree in believing that the *logia* are genuine, and the work of a transcriber of the second century (150 to 200 A. D.).

To physicians, interest will be directed especially to the latter half of the sixth saying, which reads: "No prophet is accepted in his own country" (similar to Luke iv: 24); "*neither doth a physician work cures upon them that know him.*" This reference to the therapists of Christ's time may perhaps be interpreted as a keen and penetrating observation of oriental medical results in ancient Judea, Samaria and the surrounding provinces. But, shall we be justified in restricting its applicability to the days and people of antiquity? Rather, does not candor and experience compel us often to acknowledge, with silent and sensitive disappointment in failure, the truth and force of this probable saying of Christ in modern practice?

Perhaps a train of wholesome thought may arise from a consideration of this long hidden testimony concerning the physician. Respectfully, H. S. ANDERS, M.D.

Resolutions of the New York County Medical Association.

NEW YORK, Aug. 13, 1897.

To the Editor:—The comprehensive and emphatic letter signed "Justitia," published on page 89 of the JOURNAL, July 10, comments upon a peculiar and unusual condition of affairs medical in New York city, and while Justitia would appear to be impartial, I am certain he wishes to be correct as well. I therefore quote part of line eight of the first resolution, viz., "was *vicious* in principle," etc., which should read "was *wrong in principle,*" etc., as recorded in the minutes of that meeting. Readers of the JOURNAL will appreciate the difference in the terms. M. C. O'BRIEN, M.D.

Recording Secretary New York County Medical Association.

PUBLIC HEALTH.

Co-operative Sanitorium.—An association has been recently organized at Vienna to erect a sanitorium for persons of moderate means, to which the physicians interested can send their patients and continue to treat them there personally. The charges for board at the institution will be no more than is required to cover the actual expenses.

Health of Denver, Colo.—The Bureau of Health reports eighty-nine cases of infectious and contagious diseases during July, with thirty-nine deaths therefrom. This is an increase of sixty two cases and twenty-five deaths, as compared to the month of June. Seventy-six were cases of typhoid fever with seven deaths. The total number of deaths was 166, an increase of forty as compared with June, 1897, and of twenty compared with July, 1896.

Protest against Our Quarantine Regulations.—At the meeting of the Cologne General Medical Association, June 29, Nockher spoke on "Hygiene on Shipboard," urging the necessity of hospital space with one bed to each twenty five persons, rigorous medical examination of intending emigrants, etc., concluding with a protest against the unrestricted powers allowed the quarantine doctors in North America and their often seemingly inappropriate and extreme quarantine regulations.—*Deutsche med. Woch.*, July 15.

Prophylaxis of Tuberculosis at Erfurt.—Our foreign exchanges are commending the new regulations at Erfurt, a town of 80,000 inhabitants, which not only requires the notification of every death from tuberculosis and free disinfection of the apartments, but also examines free of charge specimens of suspected sputa, on application to the bacteriologic laboratory, the first public institution of the kind free to the public for this purpose. If Koch bacilli are found the individual is carefully instructed in the necessary measures.

Fresh-air Fund for Paris.—Under the direction of M. Rambaud, of the Ministry of Public Instruction, a "children's fresh-air fund" has been started in Paris, on the same lines as that of the New York *Tribune* and similar to the one recently organized in London. The Paris fund is styled the "Maison de Campagne," and the children benefited thereby are those who attend the city schools. The mayors of the various districts of the metropolis form a part of the committee of management, and the scheme is conducted as in New York, by means of voluntary contributions.

The Water Supply of Boston, according to the *Sanitary Era*, is to be derived from a lake nine miles in length, covering 4,195 acres, 385 feet above high water mark and with an average depth of 46 feet. A busy manufacturing district in the valley of the upper Nashua River is to be obliterated, while mills, churches, schools, farms and the homes of 1,711 people are to wiped out in providing for this enormous reservoir. The State of Massachusetts, however, assesses itself for damages to property and losses of business and employment to the extent of from $30,000,000 to $50,000,000. The project is not yet out of discussion.

Convicts Gladly Producers.—A clipping from the *Brooklyn Eagle* informs us that work on the East Side lands was begun by fourteen convicts who were set to building sheds for the use of their fellows who are to undertake park-making. The problem of the Kings County Penitentiary is now likely to reach a satisfactory conclusion. "There are better ways," says the *New York Tribune*, "to relieve starving families than to keep convicts idle." Other accounts say that the prisoners, who were notably disturbed by the increase of suicidal forms of mania in their midst, were even hilarious over the probability of continuous work. It is well to state that "the chain and ball" on this occasion was not at all in evidence.

Anthrax Epidemic; Precautions May Avail.—A news item dated August 12, Clearfield, Pa., gives out that the Falls Creek tannery of Dubois, Pa., has closed down, owing to a foreboding anthrax epidemic. Four rather rapid deaths occurred among the employes who had bathed in a stream of water used by the tannery. Several cows suffered to roam at large also drank of the water and likewise died. Hides from China are suspected of being the cause of the unlooked for visitation, and the New York Board of Health having heard that "the Swamp," the great leather exchange of the city, had received some of the importation, made haste to trace out the lines of distribution. *Let us have a Department of Public Health!*

No Cigarettes for Indiana Minors.—A law has been passed in Indiana which makes it unlawful under heavy penalties for any corporation, company, firm or person to sell, barter, furnish or give, directly or indirectly, to any minor any cigarette, cigarette wrappers or any substitute for either, or to procure for, or to persuade, advise, counsel or compel any child under said age to smoke any cigarette. And it is made the special duty of prosecuting attorneys to enforce the provisions of this act, and they may summon any minor who may have or have had in his possession any cigarettes and compel him to testify before the mayor of a city or a justice of the peace as to where and of whom he obtained such cigarettes.

Costa Rica and the Yellow Fever.—Dr. T. M. Calnek of San José, member of the International Executive Commission of the Pan-American Medical Congress for Costa Rica, reports to the secretary, Dr. Charles A. L. Reed of Cincinnati, that practically all of the Pacific ports from Guayaquil to Acapulco are at this time infested with yellow fever. In consequence of the efficient inspection service maintained by the government but one notable case has occurred in Costa Rica. Marquis Gerolamo Martignone secretly visited the steamship *Don* of the English Royal Line which was lying at quarantine at Limon. He returned to the interior and developed the fever, from which he promptly died. Happily, the contagion was stamped out and no other cases have occurred. Costa Rica maintains an efficient service at Port Limon and other ports and has in contemplation the immediate establishment of a thoroughly equipped disinfecting station.

The Section of Hygiene at the Brussels Exposition.—The historic exhibits are interesting and the model dispensary, match and rubber factories, tannery, spinning room, etc., show the latest ideals in sanitation and hygiene. The exhibits of surgical and medical appliances are complete to date, among them an ingenious small case containing everything needed for bacteriologic examinations on the spot (Voituron and Screvens), with a display of specimens of microbian fauna. The exhibit of the magnificent results attained by the Superintendent of Schools at Limbourg with his Scholars' Temperance Societies, is much more impressive than the lurid pictures on the walls exhibited by the Anti-alcohol League, which, as the *Gaz. Méd. de Liège* remarks, only show the evils of drunkenness, but do not call attention to the greater evils that result from chronic intoxication from so-called moderate drinking.

Liable for Practicing Medicine.—Among the decisions handed down by the appellate court of Illinois, first district, is one affirming the judgment of the lower court for the plaintiff below in the case entitled Matthai v. Wooley. The latter party sued the former, a druggist, for ill consequences to him of alleged malpractice by the former as physician and surgeon. According to the evidence in behalf of the party suing, he thought the druggist was a doctor and went to him with a hurt finger, which the druggist wrongly treated for ten days, the result of which was inability to work for a long time and the final amputation of the finger. If the druggist did in fact "treat, operate on or prescribe for any physical ailment of" the plaintiff, the appellate court says the statute would regard him as "practicing medicine," within the meaning of Chapter 91, Revised Statutes of Illinois. And if by so doing held himself out to the plaintiff as a doctor and the plaintiff believed him to be a doctor, then, it says, he was chargable in that character. But the only question argued on appeal was as to the sufficiency of the evidence, which was very conflicting, to support a verdict for the plaintiff, and the decision was in his favor, as first stated.

Fire Closets.—A fire closet has been installed at the Nedlitz barracks near Potsdam which works admirably. The evacuations from the water closets are conveyed into a furnace below, where the solids are collected on a grating, while the fluids drain into a central receptacle. There are two fireboxes in the furnace, one opening directly into the chimney. This is always lighted first and not until it is burning clear is the other lighted. The latter consumes the fecal matters and evaporates the fluids, the draught from the first firebox carrying the fumes up the chimney and burning out all the gases. Coke or peat is used for fuel and about ten hours are required to incinerate the evacuations of 400 persons four days. For this 200 to 300 grams of fuel are needed per day and per capita, the expense of which is ten to twelve pfennigs. With this system incineration is not constant but only applied as needed.—*Journal d'Hygiène*, July 8.

The "Tiger Nut" Adulterant of Condensed Milk.—The convenience and cheapness of condensed milk, and its supposed better keeping properties, have led to its very wide use in spite of the serious drawbacks, arising from adulterated brands, to its adoption as a staple article of food for infants. The mysteries of composition of these inferior brands have not yet been satisfactorily revealed, but it is known that milk is by no means the only ingredient. The writer has it on good authority that at the present time a vegetable article is being largely imported, and being bought by certain milk manufacturers for the purpose of adulterating their wares. The adulterant is known commercially as the "tiger nut," and has the appearance of a rhizome, is no larger than the last joint of the little finger, and resembles a diminutive root artichoke. It is not unpleasant to taste, the flavor being strongly suggestive of condensed milk.—*Sanitary Record.*

Poisonous Ice Creams.—Evidence comes almost day by day, at any rate in the summer season, of the desirability of placing the manufacture of ice creams under definite control. There is no reason why an inspector should not be appointed to seize any materials intended for the preparation of ice cream that prove to be unfit for food, just in the same way as meat or any other article which is in an unwholesome state may be seized. As has been shown, the surroundings under which cheap ice creams are very commonly made are seldom cleanly, often loathsome in the extreme, and it is not surprising that recent bacteriologic inquiry has demonstrated the presence in them of the organism that is a normal inhabitant of the human bowel and it is well to bear in mind that any objectionable taste that the ingredients may have is not noticeable owing to the numbing effect of cold upon the tongue. Only recently an inquiry was held touching the death of a child, aged 14 years, who, four days after partaking of some ice cream obtained from a barrow in the street, died from ptomain poisoning. The postmortem examination showed that all the organs were healthy except the stomach, which was greatly congested, evidently by the action of an irritant poison. A verdict of accidental death was returned. There is little doubt that the ptomains were derived from bad eggs or perhaps highly decomposed milk. Seeing the great number of innocent juvenile partakers who are to be found round the barrows almost every day, it is high time that ice creams and the ingredients employed in their manufacture, should be subjected to the same control as are unsound meat, fruit, and tinned and other articles of food.—*Brit. Med. Jour.*

Sale of Adulterated Milk.—Rarely does a court brush aside technicalities and do more to carry out the spirit of the law than did the appellate term of the supreme court of New York, when it reversed the judgment given the defendant in the case of People v. Koch. This defendant was a wholesale milk dealer, buying and selling milk. He had no regular place of business, but took the milk which he bought from the railroad depot, in cans, in his wagon, and delivered it to his regular customers in the city. It was while he was thus delivering twenty-three cans of milk, early one morning, that he was stopped by an inspector, and a sample of milk was taken from one of his cans. This sample was analyzed by a competent chemist and found to be impure. Being sued for the penalty imposed by statute upon one who "offers or exposes for sale" impure milk, the defendant contended that he was not committing the offense charged, because he did not deliver to any customer the can from which the sample was taken, but returned it to the dealer at the depot from whom he bought it, and was credited with the price. If this contention should be considered well founded, then, said the court, whenever a dealer who has placed impure milk on sale is detected, and withdraws it before any of it is actually disposed of, he can not be convicted. But it does not think it could be contended that a milkman going his daily rounds to retail customers, to supply them with impure milk, would not be deemed to be offering and exposing milk for sale, and the defendant's case, it said, was no better. The justice should therefore have held that an offense was committed, and should have imposed the penalty fixed by law. The fact that the defendant subsequently returned this particular can to the party from whom he bought it, the court said, did not bear upon the question in dispute, because it was not shown that he intended to submit the milk in his wagon to an examination or test before delivery.

Progress Toward an Official Recognition of Bovine Vaccine by the British Government.—The London *Lancet* states: The answer given by Mr. T. W. Russell in the House of Commons, on behalf of the president of the Local Government Board, on the question of vaccine lymph, indicates the probability of a very important change of practice in England. Sir William Priestley had asked a question relating to the future government lymph service and he elicited two pieces of information. The first was that changes had already been made permitting public vaccinators to use calf lymph. This we had announced some time since and, as we explained, the permission means that no public vaccinator resorting to calf lymph will lose his award by reason of his failure to maintain a series of arm-to-arm vaccinations. The second statement related to inquiries that had been made, in foreign countries, by Dr. Thorne and Dr. Copeman, and to the probability that, in consequence of these inquiries, glycerinated calf lymph will come to be the future supply of the National Vaccine Establishment, and that this supply is likely to be a gratuitous one. If the supply turn out thus to be gratuitous a considerable change will be effected. Hitherto the proceedings of the Vaccine Establishment have been limited to the gratuitous supply of a small amount of lymph with a view of starting a series of vaccinations which were to be continued by a vaccination direct from arm to arm. But a gratuitous supply of glycerinated calf lymph in itself carries with it the abolition—in so far as the Government is concerned—of the use of humanized lymph; and hence the new supply can not be limited as formerly, but must be so contrived as to meet all demands of registered medical practitioners for all their vaccinations. This will mean a complete change of the existing system; and we can quite understand, as implied in the answer given in the House of Commons, that there may be difficulties in giving effect to the new system until the whole question of our vaccination law has been dealt with by new legislation. The existing law is based on the assumption that it is desirable to vaccinate with fresh humanized lymph from arm to arm; our future law will probably be based on the assumption that it will be best to vaccinate with stored glycerinated calf lymph. The two systems are scarcely reconcilable, and we can well understand that the latter system can hardly be brought into efficient working so long as it is controlled by legislation intended to secure a totally different result. However satisfactory the answer may therefore be, we shall probably have to wait until next session before effect can be given to it.

Disinfection by Steam.—Dr. Alvah H. Doty, health officer of the port of New York, in an article with this caption in the current number of the *American Journal of Medical Sciences* says: "The certainty of its (steam's) germicidal effect, the rapidity of action and its high penetrating power under proper conditions give it the highest rank. Unfortunately, the cost of apparatus necessary for its proper application limits its use mainly to quarantine and other public services. Although potent when intelligently employed, steam is worthless when improperly applied." The writer thinks that 230 degrees Fahrenheit is needed and an exposure to this heat for fifteen minutes. Then the steam exhauster is to be used to secure the same degree of vacuum. "After the vacuum of twenty inches has been obtained the fresh air inlet is opened and a current of fresh air allowed to pass through the chamber and its contents. This, it must be understood, is in conjunction with the steam exhauster, which is still kept at work. The entrance of the air, of course, breaks the vacuum, but the exhauster carries the air rapidly through the chamber. After an exposure of eight or ten minutes to this treatment the clothing, after being unrolled and exposed for five or six minutes, becomes dry and can be at once worn." To continue our quotation, "it is unsafe to compute too closely the degree of heat necessary for germicidal action; therefore, considerable margin should be allowed. For this reason I believe that a temperature of at least 155 degrees must be secured inside the packages to be disinfected." Dr. Doty believes that the disinfection of ships' cargoes on board the ship is valueless. He says: "I do not believe the low temperature of the hull can possibly be raised to a sufficient degree by the amount of steam which can be thrown into this part of the vessel, taking into consideration the numerous leaks which are always present. Fortunately, the ship's hold and cargo are rarely infected, and are too frequently subjected to a worthless disinfection."

Heavy Sanitary Requisitions at Dublin.—The unfortunate coincidence in that city of three different epidemics, namely, scarlet fever, measles and whooping cough, has rather overstrained the resources of the public health officials and left them and their department open to much unnecessarily harsh criticism. At the annual meeting of the Dublin Sanitary Association the Registrar General stated that according to the returns at that precise date, "the only place that beat Dublin in the height of its death rate was Bombay, which had a mortality of 102 per 1,000." The mayor has recently said in public that the present mortality is largely owing, in his opinion, to poverty and wretchedness among the laboring class in Dublin, brought about by the prolonged building strike of last year. The Dublin Sanitary Association should remember that while Sir Charles Cameron, the medical officer of health, and Mr. Stafford, the medical inspector under the Local Government Board, proposed the establishment last year of a special hospital outside the city for the treatment of infectious disease, the project was strongly and effectively opposed by the Association. The main drainage works are being pressed forward by the corporation with commendable energy, and at an expenditure which will ultimately reach at least one million dollars. An inspection of all the tenement houses has recently been made, while the 5,000 dairy cows in the city have been examined. Circulars have been sent to all the city schools recommending that they should be closed, the corporation not having any power to close them compulsorily or to inflict the money loss on the teachers, which such a measure would entail. Many of the schools have, however, been closed. The private slaughter-houses can not be closed without a considerable expenditure in the shape of compensation. The whole problem is a difficult one, and at bottom to a large extent a question of money. The city rates have gone up by leaps and bounds and are now nine shillings in the pound, and the municipal accounts for 1896, which have just appeared, show that they are likely to become much higher. The cost of the sanitary department rose last year from $105,000 to $118,000. Nearly $40,000 was added to the cost of the cleansing department, which advanced from $200,000 to $240,000; and the sewer rate expended in two of the districts was increased by $25,000. These items may be classed as "sanitary"; and they show in the gross an increase of nearly 20 per cent. The population of Dublin being estimated at 350,000, these expenses represent an outlay of nearly $1.10, per capita.

BOOK NOTICES.

King's College Hospital Reports.—Being the annual report of King's College Hospital and the Medical Department of King's College. Edited by NESTOR TIRARD, M.D., F.R.C.P.; W. WATSON CHEYNE, F.R.C.S.; JOHN PHILLIPS, M.A., M.D., F.R.C.P.; W. D. HALLIBURTON, M.D., F.R.S., Vol. III, Oct. 1, 1895 to Sept. 30, 1896. London: Printed by Adlard & Son, 20 Hanover Square. Price 7s, 6d.

The volume has been delayed owing to the many changes that have taken place in the staff. These changes say the editors "have been very numerous. Shortly after Sir George Johnson's death Dr. Lionel Beale and Dr. Duffin resigned the Joint Professorship of Medicine, and the former was appointed Consulting Physician to the Hospital." Mention of the new appointments follow, and the editors continue, "it is with peculiar gratification that we record here the honor conferred upon the Hospital and upon the profession in the elevation to the peerage of Lord Lister, President of the Royal Society."

The volume opens with a memorial sketch of the life of the late Sir George Johnson, from the *Lancet* of June 13, 1896, and they have appended letters relating to his life containing personal reminiscences not heretofore published. The various scientific papers in the volume are of unusual interest.

Twentieth Century Practice, an International Encyclopœdia of Modern Medical Science by leading authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City in twenty volumes. Vol. XI. Diseases of the Nervous System. Cl. 8vo, pp. 962. New York: Wm. Wood & Co. 1897.

The contributors to this volume are L. Bruns, M.D., Hanover; F. X. Dercum, M.D., Philadelphia: Jas. Hendrie Lloyd, Philadelphia; Chas. K. Mills, M.D., Philadelphia; Paul J. Möbius, M.D., Leipsic; Adolf von Strümpell, M.D., Erlangen, Bavaria; F. Windscheid, M.D., Leipsic; Lightner Witmer, Ph.D., Philadelphia.

The topics have been assigned as follows; "Diseases of the Cerebro-spinal and Sympathetic Nerves," Dr. Lloyd; "Trophoneuroses,"(excluding scleroderma, acromegaly and adiposis dolorosa), Dr. Mills; "Trophoneuroses" (scleroderma, acromegaly and adiposis dolorosa), Dr. Dercum; "Diseases of the Spinal Cord," Dr. Bruns and Dr. Windscheid; "Tabes Dorsalis," Dr. Möbius; "The Combined System Diseases of the Spinal Cord," Strümpell; "Pain," Dr. Witmer. Many of the articles in this volume are of quite as much interest to the surgeon as to the physician, for injuries and tumors [illegible] cord are treated of, their clinical symptoms and diagnoses. On the whole the volume is the best that has yet appeared in the series.

Transactions of the Association of American Physicians. Twelfth Session, held at Washington, D. C., May 4, 5 and 6, 1897. Vol. xii, pp. 510. Philadelphia: Printed for the Association, 1897.

The twelfth annual meeting of this Association was held under the presidency of Dr. J. M. DaCosta of Philadelphia. There are many local medical societies with a larger membership, but there are few that have a larger proportional attendance at the meetings or present papers of higher value. Sixty-seven of the American physicians attended the meeting.

What a Young Boy Ought to Know. By Sylvanus Stall, D.D., etc. Philadelphia: The Vir Publishing Company. 1897.

The reverend author says that when a boy he felt the need of just such a book as this, and as a pastor he again saw its need. Looking over the book from the standpoint of a physician, we can see no objection to it, provided that each parent for himself shall judge of the capacity of his son. Not all boys are docile and teachable enough to profit by such a work, and the question of the stage of mental development at which to begin this instruction must be a matter to be appropriately left to personal judgment.

International Clinics. A quarterly of clinical lectures on Medicine, Neurology, Surgery, Gynecology, Obstetrics, Ophthalmology, Laryngology, Pharyngology, Rhinology, Otology and Dermatology, and specially prepared articles on treatment, by professors and lecturers in the leading medical colleges of the United States, Germany, Austria, France, Great Britain and Canada. Edited by Judson Daland, M.D., of Philadelphia; J. Mitchell Bruce, M.D., F.R.C.P., London, and David W. Finlay, M.D., F.R.C.P., Aberdeen. Vol. ii, seventh series, 1897. Philadelphia: J. B. Lippincott Company. 1897.

There are forty contributors to this volume and all of them are in active practice, and have here presented the clinical appearances, symptoms and suggestions for treatment of an immense variety of cases. The personal observation of cases is naturally the best method of acquiring that knowledge required by the practitioner, and next to personal observation is the printed clinical lectures as reported. It is not surprising to find these volumes in the hands of a very large number of practitioners, and that this quarterly meets the popular demand which we learn is steadily increasing. The volume under consideration is fully equal in point of interest to its predecessors, and is worthy of the same success.

NECROLOGY.

Albert F. E. Krog, M.D., New York University, 1881, died very suddenly of cardiac disease in New York city August 10. A summons found him dead, although he spent Sunday, August 8, in the Catskills and returned, without his wife, somewhat ill on the following day.

James E. Kendall, M.D., Parkersburg, W. Va., August 6, aged 57 years. Dr. Kendall was graduated from Cleveland Medical College in 1861, in 1863 entered the Union service as assistant surgeon Eleventh West Virginia Infantry and was in charge of the army hospitals at Keyser and Parkersburg at the battle of Cloud Mountain. From 1867 he was a member of the State Medical Society (W. Va.) and from 1872 a member of the American Medical Association. In 1881 he was a delegate to the International Medical Association, London, and was for two years city health officer of Parkersburg.

Edgar A. Holmes, M.D., North St. Paul, Minn., August 8, aged 45 years.——E. M. McPherson, M.D., Janesville, Wis., August 12, aged 35 years.——John W. Powell, M.D., Peoria, Ill., August 6, member of Indiana and ex-president of Carroll County (Ind.) medical Societies.——Charles N. Tate, M.D., Alexis, Ala., August 4.——Edgerton Griffin, M.D., Brantford, Ontario, August 7, aged 68 years.——M. J. Oertel, M.D., professor laryngology and rhinology, Munich.——Chudzinski, M.D., professor and preparateur at the Anthropologic Laboratory at Paris; victim to his extreme devotion to science.——Marechal, Brest, aged 64 years, distinguished retired naval medical officer; death from puerperal infection through finger abrasion.——E. Legros, M.D., editor of *Presse Méd. Belge*.——W. Marmé, M.D., Göttingen, professor of materia medica.——W. T. Preyer, M.D., Wiesbaden, ex-professor physiology at Jena.——J. E. Lorenzo, M.D., professor of surgery, Salamanca.——C. Grillenzoni, M.D., ex-professor of anatomy, Ferrara.——Debrou, surgeon at Orleans, France, aged 84 years.——C. Stark, M.D., superintendent asylum, Stephansfeld, Alsace.——J. de Antelo, M.D., professor of pathology, Manila.——J. de Letamendi, M.D., professor of pathology, Madrid.——P. C. Plugge, M.D., professor of pharmacology, Amsterdam.——J. Nathan, M.D., Berlin.——H. Wasserfuhr, M.D., aged 74 years; distinguished for his services in hygiene, etc.——J. A. Steuerhausen, M.D., Frankfurt a.-M.——M. Wilkens, M.D., Vienna, professor in Agricultural College.——Professor Vigneron, Marseilles.

SOCIETY NEWS.

Medical Society of the Missouri Valley.—The annual meeting of the Society will be held at Council Bluffs, Iowa, Sept. 16, 1897.

The Tri-State Medical Association of Alabama, Georgia and Tennessee will hold its annual meeting in Nashville, Tenn., Oct. 12 to 14, 1897.

Medical Society of New Jersey.—Dr. D. C. English, president of the State Medical Socity, has appointed Dr. William Pierson of Orange, N. J., third vice-president to fill the vacancy occasioned by the death of Dr. John J. H. Love; also Dr. William J. Chandler of South Orange recording secretary, in place of Dr. Wm. Pierson, resigned. Dr. Pierson belongs to one of the oldest and most prominent families in New Jersey, and is one of the ablest practitioners in the State. He has for thirty-one years been the efficient secretary of the State Society and was in 1894 elected an honorary member when he declined the office to which Dr. English has just appointed him. His father, Dr. William Pierson, Sr., also served the State Society thirty-one years, when he was elected third vice-president in 1866, and, according to custom, became president in 1869. Dr. Chandler has for many years been one of the most prominent physicians in the State. He graduated at the College of Physicians and Surgeons, New York City, in 1868.

MISCELLANY.

To the Members of the Section on Ophthalmology.—A photogragh of Dr. Baker's case of "Melano-sarcoma of the Conjunctiva" was mislaid at the Philadelphia meeting. It can not be replaced and is desired to illustrate the paper. As it may, inadvertently, have been gathered up with the papers of some member, all are asked to look over such papers and if the photograph is found to return it to Dr. A. R. Baker, Cleveland, Ohio, or to the secretary of that meeting, Dr. Horace M. Starkey, 70 State Street, Chicago.

Hospital Abuse in London.—Dr. Isambard Owen at a recent meeting of the Hospital Reform Association said, that allowing for the possibility of many patients being reckoned twice, no fewer than 500,000 persons received during the past year outdoor relief at the hands of the gerat London hospitals. To these also must be added the large number of cases that had been treated at the smaller hospitals, which would bring the total up to figures quite appalling.

The Moscow Congress.—The Russian medical journals are requesting the profession to hold at the disposal of the Congress cases of exceptional interest that may be observed, as Russian methods and therapeutics are to be exhibited as an incidental feature of the Congress. Four thousand members had been inscribed by the middle of July.

New University College Hospital, London.—The renovated hospital will be nearly three times its present size, built in the form of a diagonal cross so as to obtain the maximum of light, air and accommodation. The work will not be completed for three or four years to come and it is not unlikely that the sum of $600,000 put aside for this purpose will ultimately be exceeded.

Thumb Plastics.—The *Wien. klin. Woch.* of July 15 contains an illustrated article by C. Nicoladoni describing several cases in which he had succeeded in saving the thumb, after traumatism or carbolic gangrene, by transplanting flaps from the breast. He proposes in future cases to attempt to substitute the second toe for the thumb, and shows how this could be accomplished, thus securing a jointed thumb with a nail.

Surgeon General Sternberg in Moscow.—Surgeon-General George M. Sternberg, U. S. Army, is now in Europe to attend the meeting of the International Medical Congress in Moscow. He will present two papers to the Congress, one entitled "The Bacillus Icteroides of Sanarelli (Bacillus X., Sternberg)," the other, "The Radical Cure of Inguinal Hernia in the U. S. Army."

British Medical Association.—Dr. Woodruff, the editorial secretary of the *Ophthalmic Record*, has made arrangements with the Wabash and Canadian Pacific Railroads for a sleeping car from Chicago through to Montreal. It is the intention to leave Chicago from Dearborn station at 3:10 p. m. Sunday, August 29, arriving in Montreal the following evening. Further information can be had by applying to Editorial Secretary, *Ophthalmic Record*, 1102 Reliance Building, Chicago.

Pneumoscope.—The *Deutsche m. Woch.* of July 22 describes the pneumoscope of A. M. Bloch as a wide tube with a partition at the end, fitted with adjustable windows, the space measured off into square millimeters. The nose is held closed and the person breathes through the tube into his mouth. The windows are gradually closed by turning a screw without until breathing becomes difficult. The amount of window space left is the standard for the test.

Medical Men Visit the Hunyadi Janos Springs, Aug. 11, 1897.—The American delegates to the Medical Congress to be held in Moscow, visited the Hunyadi Janos Mineral Springs at Buda Pesth August 11. On this occasion Professor Senn, Chicago, Prof. Daniel R. Brower, Chicago, Dr. Lucy Waite, Chicago, F. M. Lloyd, New York, Prof. G. R. Fowler, Brooklyn, Maj. W. H. Forwood, U. S. Army, Washington, W. F. Southard, editor *Pacific Medical Journal*, and United States Consul at Buda Pesth, Frank Dyer Chester, have made a close inspection of the establishment.

Crystallized Skeletons.—The *Progrès Méd.* reports that two lead coffins were recently exhumed at Paris dating from 1630, in one of which the skeleton was found covered with crystals, the skull forming a magnificent geode. Professor Lacroix states that the crystals are formed of a bicalcic hydrate of phosphate, metabrushite, extremely rare. It is sometimes found in the soil of caves and in the guano of the Antilles. It has twice before been found on skeletons. The crystals in the skull evidently show that the cerebral substance was concerned in this auto-mineralization.

The Paris Medical Faculty announced last year that the courses were so crowded that students from abroad would be obliged to pursue their practical studies in some of the other medical colleges of the country. This, in connection with the restriction that the alien Paris graduate was not allowed to practice in France, reduced the number of foreign students from 1,046 in 1895 to 657 last year, and it was found that the other medical colleges in the country did not gain by this system of exclusion, as the foreigners passed them by to enter at Berlin, Vienna, Leipsic, etc., on account of the prestige of the larger universities. The Paris authorities will probably soon suspend their restrictions on the foreigners, retaining only the regulation that graduation at Paris does not confer upon a foreign student the right to practice in France.

Improved Doyen Cutters for Removal of Uterine Tumors, Vaginal Hysterectomy.—Much time is lost by the necessity of constantly removing Doyen's cutting tubes to empty them, in extirpating a tumor of the uterus by tunnelization as practiced by Pran, Doyen, and others. To remedy this, Ingianno makes the tube with openings, and a crescent shaped, spirally curved knife inside turned by a handle without. As this bores into the tumor the tissues cut out by it emerge in a spiral through the openings in the tube, and the boring can be continued indefinitely. Prof. Acconci endorses the improved cutter as a much needed improvement and time-saver.—*Gazetta degli Osp. e delle Clin.* June 13.

Involuntary Hypnotism.—Professor Desplats observes that many inexplicable neurotic and mental conditions may be due to involuntary auto hypnotism and describes several convincing examples in the *Journal des Sc. Méd. de Lille*, July. One young man was hypnotized by the sight of a pair of shining scissors or the revolving wheels of a bicycle, and committed numerous extraordinary actions while in this unsuspected condition. Another was hypnotized whenever he met the eye of a certain comrade, which rendered life so unendurable for each of them that they separated to distant cities. He warns against the dangers of hypnotism practiced in sport, as it leads to such susceptibility that the most serious results may follow later.

France Behind in the Making of Spectacles—When L. Borsch (formerly of Chicago, now Paris) presented his bifocal glasses at the recent Congress of the French Society of Ophthalmology he stated that the distance from each pupil should be measured separately and the bridge adapted to the shape of the nose. M. Parent remarked: "We are far behind in the making of spectacles in France. We ought to insist upon it that our opticians make all their glasses by special measurements, but this is not done." The peculiarity of the bifocal glasses is that a different kind of glass is used for each eye; crown and flint. Owing to their different refraction, one glass will focus at 10 D. and the other at 15 D., for instance, with the same curve.

Favorable Effect of Koch's T.R. on Lupus.—The *Deutsche med. Woch.*, of July 8 and 22, also the *Therap. Woch.*, of July 18, contain reports of numerous cases treated with the new tuberculin. The expense is considerable. Prof. Lassar found it to cost 17 marks a day for his patients. Schultze found that a complicating pleuritis sicca was much improved and a perichondritis of the arytenoid cartilage cured during the treatment. The effect on pulmonary tuberculosis is still dubious, but it seems to affect lupus most favorably. Even in old rebellious cases the ulcerations and infiltrations disappear (Bussenius, 3 cases). Seeligmann reports a chronic case of genital and cutaneous tuberculosis that is far on the road to complete recovery; Wörner two cases of lupus remarkably improved, and two others that were treated after operation, which have been protected from relapse. But his most remarkable success was in a scrofuloderma that had resisted all treatment for eleven years. Two report extremely violent reaction following the use of T.R., bearing the date of June 11, and Bussenius noted the same whenever the maximal dose was administered in all but four of his nineteen cases. In the case of one child serious collapse occurred twenty-two hours after the twenty-third injection of one-third the dose suggested by Koch. Others seemed to bear the injections without disturbance. Bussenius states that in his 334 injections no abscesses occurred, and bacteriologic tests of the tuberculin failed to disclose the presence of pyogenic germs at any time.

Experimental Injections of Salt Solution in Strychnin and Diphtheria Intoxication.—Roger finds that small injections have no effect, but that larger amounts injected subcutaneously (164 to 228 c.c. salt solution per kilogram), enable rabbits to resist strychnin intoxication much better than the control animals. But this effect is changed to its opposite, an increased susceptibility to the poison if the latter is injected directly into the veins. Chassevant and Got also report the favorable effect of intravenous injections of salt solution in attenuating the intoxication from strychnin in rabbits, but not in dogs. They suggest that possibly the bulbus is protected by the hydremia, and elimination of the poison through the kidneys favored. Enriquez and Hallion, on the other hand, report an injurious effect from intravenous injections of salt solution in experimental diptheritic intoxication, whether the toxin is injected directly into the blood or subcutaneously.—*Cbl. f. Phys.*, from *C. R. Soc. de Biol.*

Sciatica Cured by "Hersage."—First proposed by Delagenière to remove the venous varicosities assumed to be the cause of the pain, it was found that no true varicosities existed, but that the operation it itself cured the sciatica. It consists in merely loosening up the fibers of the nerve trunk with a blunt instrument (harrowing). After chloroform, the nerve trunk is exposed and with the tip of a grooved sound, the fibers are separated for a couple of centimeters, broadening and flattening it; drainage and suture. The patient at first experiences some pain in the nerve, and numbness in the limb, but as sensibility returns the neuralgia is found definitely cured. Experimental research shows that "hersage" of the sciatica produces transient insensibility of the nerve, while preserving its motility. It is suggested that the operation might relieve neuralgia in other nerve trunks. The two cases reported cured in the *Semaine Méd.*, of July 14 were old obstinate sciatica, resisting all other treatment; one a woman of 37, the other a man 45 years old.

Commitment of Connecticut Insane Paupers.—A Connecticut statute provides that when any pauper in any town shall be insane, a selectman of such town may apply to the court of probate of the district wherein such pauper resides for his commitment to the State hospital for the insane; and that, if so committed, $2.50 a week of the expenses of his support shall be paid by the town legally chargeable with his support. Under this provision, the supreme court of errors of Connecticut holds, in the case of the Connecticut Hospital for the Insane v. Town of Bridgewater, reported in 36 *Atlantic Reporter* 1017, that any pauper who is found in any town in a state of insanity is a proper subject of such an application by a selectman of that town. It is of no consequence, the court says, whether he has been there an hour or a year. If he be, in fact, in the town, in a state of insanity, he resides there for the time being, within the meaning of the statute. The object of the proceeding is to put the pauper, as soon as possible, into a hospital where he can secure proper care and treatment.

Sufficient Complaint in Malpractice Case.—The complaint in Crowty v. Stewart alleged that the plaintiff was kicked on the right leg by a vicious horse, and the same thereby broken and greatly injured. That, at that time, he called the defendant, a surgeon, and informed him of the manner of receiving such injury and employed him, as such surgeon, to examine such broken leg and ascertain the extent of the injury thereby caused, and to set the same, if broken, and to treat and heal the same, for whatever the injury was to it. That for that purpose the defendant undertook, as a surgeon, to examine the injured leg to ascertain whether the same was broken and also undertook to treat and heal it for whatever the injury to it was. That pursuant to said undertaking the defendant examined the leg in a negligent and unskilful manner, and failed to ascertain that the same was broken, or the extent of the injury to it, and treated and tried to heal the leg as though it was not broken, greatly to the plaintiff's injury, making him sick, causing him much pain and annoyance, and putting him to great expense, etc. The sufficiency of this complaint was demurred to, but the supreme court of Wisconsin holds that it contained in substance the averment which it has declared to be necessary in a malpractice case, and was entirely sufficient.

Etiology of Cancer of the Uterus.—Baecker contributes a study of 705 cases of cancer of the uterus to the *Arch. f. Gyn.*, liii, 1, observed at Buda Pesth. He denies a parasitic etiology and ascribes the origin to puerperal endometritis, as few nulliparæ are affected by it (61 in 705), while the nulliparæ furnish a fourth of the non-cancerous gynecologic affections. He excludes also gonorrheic origin, as gonorrhea is rare among women with cancer, and prostitutes, who are so frequently affected with gonorrhea, rarely have cancer. He explains the fact often noted that cancer of the uterus is so much more frequent among the poor, as due to lack of medical treatment of the endometritis. His experience has been that the cancer is located higher as the patient is more advanced in years, which corresponds to our knowledge of the localization of endometritis at different ages. His conclusion is therefore that no case of chronic endometritis should be neglected, and an examination should be made in every case of whites or hemorrhage, especially at the critical age.—*Sem. Méd.* July 21.

Something Like Civil Service for Indiana Institutions.—By an Indiana statute the office of trustee and the board of control of the Central Hospital for the Insane, for the Northern Hospital for the Insane, for the Southern Hospital for the Insane, for the Eastern Hospital for the Insane, for the Indiana Institution for the Education of the Blind, and for the Institution for the Education of the Deaf and Dumb, was abolished, and the control, government, management and general supervision of such institutions was vested in a board of three trustees for each of them, to be appointed by the governor, not more than two of whom shall belong to the same political party. In the employment of superintendents, and confirmation of assistants and other employes, it is further provided, said boards shall take into consideration only the qualifications and fitness of the persons selected to fill such places, and no person shall be selected or employed to fill any of such positions on account of his political belief or affiliations, and no superintendent, assistant or employe shall be dismissed from service on account of his political belief, faith or affiliations.

Who may Attend Physical Examination of Female Plaintiff.—Section 873 of the New York Code of Civil Procedure provides that, where the plaintiff in a personal injury case is a female, she shall be entitled to have such physical examination as the court may in its discretion order before physicians or surgeons of her own sex. Besides the female plaintiff, the general term of the city court of New York holds, Lawrence v. Samuels, there may be present the female physician appointed by the court, and a female physician to represent the interest of each of the parties in litigation, and such other females as the plaintiff may desire. But the court denies that, in such an examination, the plaintiff's counsel has the right to bring whom he pleases, of the male sex, to witness his client unclothe and expose herself. The law never intended, it declares, that the attorney or any male should appear or take part in any such physical examination. He may be present, however, at the oral examination of the physician thereafter. The physician appointed is an officer of the court, and subject to directions of the same, and to its orders, and should be sworn.

"Fake" Surgery at Paris.—The *New York Sun* correspondent at Paris is responsible for the following statement regarding a rampant condition of quackery in that city. He says that irregular practice has come to be more profitable than the legitimate practice of medicine with a large class in Paris. The other day a gentlemen whose rooms are crowded from morning till night with patients, was threatened with prosecution for exercising the profession without a diploma. Being thus brought to bay, he confidentially displayed to the officials the necessary document. He, however, implored the authorities to keep the diploma secret, explaining that if his clients had an inkling that he was a veritable physician his gains would diminish. M. Paul de Cassagnac makes even a more remarkable disclosure and vouches for its authenticity. He asserts that there is a house in Paris in which patients are received for the purposes of undergoing sham operations. They have been induced to believe that they are suffering from some organic complaint which can only be cured with the knife, and they betake themselves to this establishment, which has been particularly recommended to them. On the day appointed for the so called operation they are put under chloroform and a few make-believe cuts and scratches are inflicted. In certain medical cirles there is a regular name for men who practice these tricks on the victims of imaginary ailment.

A Railway Hospital Car.—One of the Belgian railway companies has instituted what is called "the hospital car," which is designed to serve a twofold purpose. The first of this kind of car went into commission in the latter part of April. In the event of a serious railroad accident the car may be run to the spot where the wounded may be picked up and carried to the nearest large city for treatment, instead of being left to pass long hours in some wayside station while awaiting surgical attendance. It also enables the railway companies, at certain seasons or upon special occasions, to transport large numbers of invalids to health resorts or places of pilgrimage. The interior is divided into a main compartment, a corridor on one side and two small rooms at the end. The largest compartment is the hospital proper; it contains twenty-four isolated beds on steel tubes hung on powerful springs. Each patient lies in front of two little windows, which may be closed or opened at will. Each bed is provided with a little movable table and a cord serves to hold all the various small objects which the patient may need. The corridor on the outside of the hospital chamber leads to the linen closet and the doctor's apartment. In the latter is a large cupboard. The upper portion is used for drugs; the lower part is divided into two smaller compartments—one serving as a case for surgical instruments, the other as a receptacle for the doctor's folding bed. The hospital compartment is carpeted with linoleum or other material to deaden the sound of walking. Various trapdoors in the floor, when opened, disclose to view an ice chest, a compartment for the disinfection of soiled linen, and a provision cellar. If necessary, a portion of the hospital chamber may be transformed into an operating room for urgent cases.—*Consular Reports.*

Dr. Nansen on the Prevention of Scurvy.—Dr. Nansen, in his lecture at Albert Hall on "Some Results of the Norwegian Arctic Expedition," among other highly interesting matters, touched upon one of great medical interest. We all know the great difficulty that has been experienced and has always to be encountered on such expeditions, and frequently in those of a military nature, in regard to scurvy, a malady which has hitherto been found to occur in Arctic explorations. Dr. Nansen ventured to declare that it was very easy to avoid that disease by taking the proper precautions, and he proceeded to relate his experience: "Dr. Torup, Professor of Physiology at the University of Christiania, had come to the conclusion, after examining the subject, that scurvy must arise from poisoning, caused in particular by badly preserved meat and fish. He thought that in the decomposition which takes place in the meat from bad preserving, in salt meat, for instance, there was poisonous matter allied to the so-called ptomains, which when constantly partaken of, engendered the malady we call scurvy. Particular attention was paid to this at the time of their equipment and from their experience and the investigations he had the opportunity of making during the journey, he could entirely subscribe to Torup's opinion in this matter. It was to be hoped that in the near future there would be scientific elucidation of this important point; and it was equally to be hoped that certain means for avoiding this hithertò so fateful sickness might be shown." Whether this supplies a key to the explanation of all the outbreaks of scurvy that have occurred it would be premature to declare; but it marks a new departure and is well worthy of further investigation. Meanwhile we think it may possibly account for some of the outbreaks about which a difference of opinion existed as to whether they were to be entirely explained by the absence of fresh vegetables. At a dinner given in his honor by the Savage Club in London, Dr. Nansen spoke of the great difficulties encountered by his expedition in maintaining personal cleanliness. "We did our best to keep ourselves clean," he said, "and tried all sorts of different ways. We tried the Esquimaux way, but that was no good. What we had to do was to use the knife and scrape ourselves. The Esquimaux method is that of preserving all the urine secreted by the members of the establishment and using it for all purposes of domestic and personal cleanliness.

Extravasation of Urine.—Mr. Richard Barwell related before the Clinical Society of London a remarkable case of extravasation of urine in a man aged 36 years, who previously to Nov. 24, 1896, was perfectly healthy. On that night, after coitus, in which nothing unusual occurred, he went to sleep, and on waking the next morning he found the scrotum much swollen. During the next few days the swelling increased. On the 29th, Mr. Barwell saw the patient in consultation. He had a subnormal temperature and a rather feeble, quick pulse, 108; the tongue was slightly furred and the constitutional symptoms were slight, and he said he felt quite well up to "four hours ago," and even now only "a little down." The scrotum was greatly distended, boggy to the touch, red, and studded with blotches here and there and dark brown discoloration; the penis was but slightly swollen and reddened and free from sloughy spots; the perineum was much distended to within a very short distance of the anus, and exhibited two sphacelated spots. He asserted that he never had any difficulty in passing urine, which flowed in a full size stream. Mr. Barwell made deep incisions into the perineum and scrotum, exposing the superficial muscles of the urethra and the testicles. The sodden tissues were full of urine with the usual ammoniacal, sloughy odor. One bleeding vessel, being too rotten to bear either torsion or ligature, was secured by leaving on it a pair of forceps; the very soft state of all tissues rendered interference with the urethra unadvisable. Five days after the incisions were made the patient lost about four ounces of blood by the rupture of a vessel in or close to the right testicle. This depressed his health considerably, but freer stimulation overcame the condition in about eight hours. The rare and interesting features of this case lie in the local condition. Rupture of the urethra as the immediate result of coitus has once or twice been reported, but invariably in the penile portion of the tube, never, so far as Mr. Barwell was aware, in the membranous part. A No. 12 catheter passed into the bladder without encountering the slightest obstacle, and the treatment for stricture of the urethra was therefore unnecessary. The man lost by sphacelus about four-fifths of the scrotum, but the parts healed and the whole was quite sound exactly six weeks after, the testicles being enclosed in a new bag which, though it looked tight, interfered neither with comfort nor function.—London *Lancet.*

Societies.

We note the following meetings:

Illinois—Adams County Medical Society, Quincy, August 9. The Carroll County Medical Society has been organized by the physicians of Savanna and Thompson.

Indiana—Vigo Medical Society, Terre Haute, August 5.

Iowa—Austin Flint Medical Association, Clear Lake July 31. Polk County Medical Society, Des Moines, August 3.

Michigan—Barry and Eaton Medical Association, Charlotte, July 29.

Minnesota—Southern Minnesota Medical Association, Winona, August 9.

Missouri—Seventh annual meeting of the Central District Medical Society, Sedalia, August 5.

New York—Medical Society of Steuben County, Hornellsville, August 8.

Ohio—Logan County Medical Society, Bellefontaine, August 6. Morrow County Medical Society, Cardington, August 2. Union Medical Association, Lisbon, August 12.

Pennsylvania—Seventeenth annual meeting of the Lehigh Valley Medical Association, Water Gap, July 28. Luzerne County Medical Society, Wilkesbarre, August 8.

Wisconsin—Central Wisconsin Medical Society will meet in Baraboo, September 28.

Hospitals.

The New Surgical Service of the Hôpital Broca-Pascal, Paris, is a one-story building, lighted from above, ensuring abundance of light, electric ventilators with special air shafts and chimney, steam-heated, tiled floors, iron furniture, Herbet beds, laboratory, photographic and electrotherapeutic rooms, besides the usual rooms for dressings, etc. One operating room is reserved for laparotomies, the other for general operations. The two wards contain one twelve and the other eight beds, with six single bedrooms for isolation, all communicating, to reduce the number of attendants necessary. In the center of each room is a large, specially-devised case with glass walls, so that its contents can be seen from without. There are an unusual number of bathrooms, washstands, etc., and the walls are to be attractively frescoed, with pictures in the corridors. A charity fund was founded in 1894, amounting now to 50,000 francs, of which a fifth has been distributed to needy patients in the service, paying arrears of rent, supporting their families, supplying clothing or railroad fare for them to return to their country home, etc. The fund is administered by a committee of lady patronesses. The service owes its improved quarters to the indefatigable efforts of Pozzi, "the man who has done the most for gynecology in France." He considered he had accomplished a great deal when, in 1885, he secured the introduction of a single water faucet into the miserable barracks that sheltered the surgical service at that time. The pavilion also contains a small suite for a syphilitic maternity with an eight-bed ward, two isolating rooms and a work room.

Cincinnati.

The Presbyterian Hospital for Women is making a much needed addition to the institution. Mr. Alexander MacDonald, the Standard Oil magnate, has donated $25,000 to make the improvement.

The Board of Trustees of the Cincinnati Hospital has under consideration the advisability of reducing the number of physicians on the visiting staff.

THE PUBLIC SERVICE.

Army Changes. *Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from August 7 to 13, 1897.*

Capt. William H. Arthur, Asst. Surgeon (Ft. Myer, Va.), is granted leave of absence for one month, to take effect about Sept. 1, 1897.

PAMPHLETS RECEIVED.

Armuaire de l'Ecole de Méd. et de Chir. de Montreal, 1897-98.

Antivivisection papers. Boston: N. E. Antivivisection Society.

Bellevue Hospital Medical College, New York City. Announcement fo 1897-98.

Case of Hermaphrodism; Description of Specimens taken from a Hermaphrodite. By Carl Beck, M.D., illustrated. Paper reprints from Medical Record.

Civic Duties and Responsibilities of the Physician to his Community, State and Nation, The. By John Punton, M.D. Paper, 10 pages. Reprinted from Alienist and Neurologist.

Fort Wayne College of Medicine. Announcement for 1897-98.

John A. Creighton Medical College, Omaha. Announcement for 1897-98.

Keokuk Medical College, Iowa. Announcement for 1897-98.

Medical College of Alabama; Mobile. Announcement for 1897-98.

Medical Treatment of Peritonitis. By Charles M. Ellis M.D. Paper; 6 pages. Reprinted from the Maryland Medical Journal.

Missouri Medical College, St. Louis. Announcement fo 1897-98.

National University Medical Department, Washingtoi D. C. Announcement for 1897-98.

Pulte Medical College, Cincinnati. Announcement for 1897-98.

Relation of the Science of Medicine to Public School Education. By John Punton, M.D. Paper; 8 pages. Kansas City: Gate City Printing Co.

Roentgen Rays in Surgery. By Carl Beck, M D. Illustrated. Paper; 22 pages. Reprinted from International Medical Magazine.

Treatment of Complicated Ulcers of the Cornea. By Clarence A. Veasey, A.M., M.D. Paper; 12 pages. Reprinted from the Therapeutic Gazette.

University of Denver Medical Department. Bulletin for 1897-98.

University of Louisville Medical Department. Announcement for 1897-98.

When Shall we Operate for Cholelithiasis? By Carl Beck, M.D. Paper; 22 pages. Reprinted from New York Medical Journal.

Trade Pamphlets.

Descriptive Price List of Paul Paquin Laboratories, St. Louis.

Employment of Endoxine in Intestinal Afflictions, The. By T. Rosenheim, M.D. Paper; 8 pages. London.

Hyperemia, Opium, Scrofula. Battle and Co., St. Louis.

The Newer Preparation of Bismuth. By Reynold W. Wilcox, M.D. Extract from reprint from Medical News.

CHANGE OF ADDRESS.

Armstrong, W. S., from 12 Vine St. to St. Charles and Montrose Boul., Chicago, Ill.

Billmeyer, G. M., from Waukegan, Ill. to Stawberry Point, Iowa.; Boyer, E N., from 423 Vermont St. to Missouri House, Quincy, Ill.; Breuer, C. H., from Omaha, Neb. to Seguin, Texas.

Coffman, G. L., from 1521 S. Compton Av. to 1326 Boyle Av., St. Louis, Mo.

Dunn, J. H., from 111 Royalston Av. to 337 Oak Grove St., Minneapolis, Minn.

Farnum, C. E., from 661 Market St. to Parrott Building, San Francisco, Cal.; Frederick, R. C., from 344 Wood St. to 1900 Dearborn St., Chicago.

Gage, M. R., from Los Angeles, Cal. to Sparta, Wis.; Grove, W. W., from Ligonier to New Florence, Pa.

Lengfeld, A. L., from 202 Stockholm St. to 1120 Post St., San Francisco, Cal.

Moe, A. J., from 775 W. Polk St to 514 Ogden Av., Chicago Ill.; Moore, R. H., from Derry, Pa. to P. R. R. Building, Trenton, N. J; Motter, Murray Gait, from 1017 14th St., N. W. to 30th and U Sts., N. W., Washington, D. C.

Nicholson, J. L., 401 Benson St. to 400 Penn St., Camden, N. J.

Rutherford, C., from 102 to 646 Fullerton Av, Chicago, Ill.

Simonton, A. C., from San Jose, Cal. to Seattle, Wash.

Wells, W. H., from 1125 Sheffield Av. to 929 Southport Av., Chicago, Ill.

LETTERS RECEIVED.

Arnold, C. D., El Reno, O. T.; Ashby, A. A., Red Oak, Iowa; Ashmead, A. S., New York, N. Y.

Battle Creek Sanitarium, Battle Creek, Mich.; Bausch & Lomb Optical Co., Rochester, N. Y.; Betz, Frank S. & Co., Chicago, Ill.; Bernd, Henry & Co., (2) St. Louis, Mo.; Boyd, R., Dennis, Texas; Blair, Wm. Ann Arbor, Mich.; Binswanger, Otto S., Portland, Ore.; Brayton, Sarah H, Evanston, Ill.; Brown, W. H, Syracuse, N. Y.; Bruyere, John, Trenton, N. J.; Burbank, L. W. Cabot, Vt.

Colyer & Eads, Arthur, Ill.; Campbell R. A., Minneapolis, Minn.; Chesterman & Streeter, Philadelphia, Pa.; Clum, F. D., Cheviot, N. Y.; Consumers Company, The, Chicago, Ill.; Craig, J. T., Kansas City, Mo.; Cutter, John A., (2) New York, N. Y.

Dayton, L. H., Marlboro, Mass.; De Groat, M. E., Weidman, Mich.; Divine, Charles A., Ann Arbor, Mich.

Edmunds, O. R., Tina, Mo.; Eichberg, Joseph, Cincinnati, Ohio; Ellenberger, J. W., Harrisburg, Pa.; English, D. C., New Brunswick, N. J.

Fuller, Charles H., Advertising Agency, Chicago, Ill.

Gibson, James, Janesville, Wis; Gibbon, John H, Philadelphia, Pa.; Gilbert, M. M., Mesa, Ariz.; Glen Springs, The, Watkins, N. Y.; Greenley, T. W., Baltimore, Md.; Griffith, J. P. Crozer, Point Pleasant, N. J.

Hale, Albert B., Chicago, Ill; Hall, C. Lester, Kansas City, Mo.; Harrison, E. E, West Concord, Minn.; Hoagland, George A., St. Louis, Mo.; Hoffman, M. W, Dubuque, Iowa; Hubbell, A. A., Buffalo, N. Y.

Ingram, Louis, Beaver Falls, Pa.

Jones, Allen A., Buffalo, N. Y.

Kebler, L. A., Pittsburg, Pa.; Kennedy, J. W., Jacksonville, Ill.; Koechl, Victor & Co., New York, N. Y.; Kyle, D., Braden, Philadelphia.

Lehn & Fink, New York, N. Y.; Leonard, Charles Lester, Philadelphia, Pa.; Levy, Robert, Denver, Colo.; Luckey, J. E., Vinton, Iowa.

Mattes, Richard J., Dayton, Ohio; May, J. W., Kansas City, Mo; Mercer, A. C., Syracuse, N Y.; Montgomery, L., Micanopy, Fla; Montgomery, J. C., Charlotte, N. C.; Mudd, H. H., St. Louis, Mo.; Murphy, F. E., Kansas City, Mo.; McLean, R. A., San Francisco, Cal.

Nelson, Chesman & Co. St. Louis, Mo.; Nicholson, J. H., Holt, Mich.

Osborn, B. D., Waldo, Ohio.

Pancoast, C. William, Philadelphia, Pa.; Parke, Davis & Co., Detroit, [illegible] Colo.; Pusey, Wm. Allen, Chicago, Ill.

[illegible]; Reed, R. Harvey, Columbus, Ohio; Reed, L. W., Morristown, Pa.; Ridlon, John, Chicago, Ill.; Rockwood, E. W., Iowa City, Iowa; Rust, C. A., Saginaw, Mich.; Rutter, H. C., Gallipolis, Ohio.

Sayre, R. H., New York, N. Y.; School of Medicine, Georgetown University, Washington, D. C.; Semerak, Alois, Chicago, Ill.; Shoemaker, J. V., (2) Philadelphia, Pa; Shurtleff, George F., Boston, Mass.; Smith, C. L., Aurora, Ill.; Snively, I. Newton, Philadelphia, Pa; Spiller, Wm. G., Philadelphia, Pa.; Spivak C. D., Denver, Colo.; Steele, D. A. K., Chicago, Ill.; Stockdale, T. F., Rural Valley, Pa.; Stover, Charles, Amsterdam, N. Y.

Thayer, C. P., Boston, Mass.

Walton, George E., Daytona, Fla.; Washburn, W. H., Milwaukee, Wis.; Wilde, Julia Cabot, New York, N. Y.; Wilson, J. T., New York, N. Y.; Wolff, Bernard, Atlanta, Ga.; Woodruff, T. A., Chicago, Ill.; Wyman, Walter, Washington, D. C.

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ORIGINAL ARTICLES.

MILITARY SURGERY IN GREECE.

BY N. SENN, M.D., Ph.D., LL.D.
SURGEON-GENERAL OF ILLINOIS N. G.
CHICAGO.

The war between Greece and Turkey is ended. It was a short and in many respects a remarkable combat. After six or seven conflicts little Greece was conquered by an overpowering foe. In a little more than a month the little kingdom found itself trampled under the feet of a fanatic and greedy conqueror. Fate was against Greece from the beginning of the conflict. The scanty resources of the country made it impossible to maintain an army upon a modern war footing and its citizens, the descendants of the proud and warlike Hellenes, are no longer the equals of their forefathers whose daring exploits and victories have been immortalized in prose and poetry. Centuries of subjugation to foreign power and policies have resulted in a loss of confidence and a diminution in the intrinsic resisting power of the nation that once, under the leadership of great statesmen and warriors, constituted the central power in Southern Europe. When Greece found herself confronted by a war with its envious and bloodthirsty neighbor, she discovered too late the lack of a well disciplined and well equipped army and navy. The first call to arms brought an army into the field of less than 60,000 men. Second-hand guns (Gras) bought from the French government were the arms used. Ammunition was scarce and frequently beyond reach when most needed. According to the testimony of all who were in the field, the Greek soldiers behaved heroically. The quick and complete defeat is evidently attributable more to defective leadership than a want of valor on the part of the troops. The campaign was badly planned by those who were in power and the first defeat resulted in a loss of confidence which was never restored. Turkey rapidly mobilized a well organized and splendidly equipped army of at least 100,000 men along the Grecian border, which at once assumed decidedly aggressive operations. The first battle was fought April 14, the last at Domoko, May 17. The great powers watched the unequal struggle with intense interest, and when it became evident that a complete annihilation of the Greek army was only a matter of a few days, they stepped forward and rendered valuable service by dictating the terms of peace. The Sultan has now to deal with the great powers in adjusting his claims against a conquered and humiliated country. The arms are stacked and the two armies are facing each other almost within speaking distance until the treaty is signed, when they will be withdrawn, and peace, at least for the time being, will be restored. Upon their return the Turks will sing the praises of victory, while the Greeks will bring sorrow and disappointment to their unhappy homes.

During my visit in Patras and Athens I have made faithful attempts to obtain reliable information concerning the treatment and transportation of the wounded on the Greek side. I visited all of the military hospitals and interviewed many military and medical officers and nurses, but the reports received and the statements made were often so conflicting that I find it exceedingly difficult to write upon an authoritative basis. I shall harmonize the facts elicited as much as possible in preparing this report.

Transportation of wounded.—From what I could learn from different sources, the Greek army had few ambulances. The simplest kind of litters were used in conveying the wounded from the fighting line to the dressing station, Two-wheeled carts and donkeys were employed largely in transporting the wounded and sick to the field hospitals. As soon as possible the sick and wounded were conveyed to the nearest landing station and from thence by boat to the hospitals at Athens and Patras. It appears that the wounded bore the rough methods of transportation with great patience and fortitude.

Hospitals.—Germany and Russia sent field-hospitals, which proved of the greatest value during the short campaign. The large military hospitals in Patras and Athens were soon filled and additional room had to be secured for the rapidly increasing number of sick and wounded. In Athens the two military schools and Polytechnicum were transferred into temporary hospitals with accommodations for at least 700 patients. All of the hospitals were found in excellent order, comfortable beds and well-ventilated wards and rooms. The patients receive substantial nutritious food and a liberal allowance of native wine. In one of the hospitals I found twelve wounded Turkish prisoners who received, if anything, better attention than their former enemies. The hospital provided each one of the prisoners with eight cigarettes a day. The prisoners are model patients, but notwithstanding that they are treated with the utmost kindness they are anxious to return to their native land.

Medical officers.—Greece has more doctors to its population than any other country in the world. On an average, two thousand medical students attend the University at Athens annually. Five years is the time required to prepare the student for graduation. Doctors in Greece lead a life of leisure owing to the salubrity of the climate and the overcrowding of the profession. When the war broke out Greece could furnish doctors in abundance, hence the numerous applications of volunteer doctors from the different countries far and near were as a rule declined with thanks. Among the few foreign doctors who did service for the Red Cross Association must be mentioned Abbot, Moffat and Osborne of England. Dr. Abbot performed a number of operations and is highly esteemed by his Greek colleagues. Dr. Skoufas is the Surgeon-General of the Greek army, with the rank of Colonel. He has served in this capacity for two years and during the campaign just ended was busy in his office daily, from 8 A.M. until 2 to 3 o'clock in the morning. He shows the effect of overwork at the present time. He is a most genial gentleman and did every thing in his power to further my object during my sojourn in Athens. He detailed Lieutenant Schultze, a member of his staff, to conduct Col. Forwood of the U. S. Army, Dr. Fowler of Brooklyn and the writer through all of the military hospitals in the city. Prof. Galvani of the University did service in Thessaly. He is the most persistent and ablest surgeon in Greece. He has charge of the Evangelismos Hospital, where he operates daily at 10 A.M. A number of our party, among them Dr. Lucy Waite of Chicago, and Dr. Southard of San Francisco, witnessed two of his operations, one ovariotomy and an amputation of the leg for advanced tuberculosis of the knee-joint. His conveniences for carrying out antiseptic details are limited and yet his results are said to be remarkable. He is a conscientious and pains-taking operator. Among the other prominent physicians of Athens must be mentioned Dr. Savas, the physician of the Crown Princess, and Dr. Kalopothakés, the first female physician in Greece, both of whom have done excellent service in the medical department of the army. The medical officers in the army are distinguished from the line officers by the color of the velvet on the collar of the uniform, which is a dark purple. The surgeons wear side arms and spurs in the hospitals and streets:

Graduates who desire to enter the army must study an additional year and are then commissioned after passing a satisfactory competitive examination.

Hospital corps.—The Greek army has three thousand soldiers who are instructed to serve as litter-bearers and render the first aid to the wounded, but of these only 300 are non-combatants, the remainder being detailed for special duty as emergencies arise. Before I received this information I was astonished to find the entrance of every military hospital guarded by a soldier wearing the brassard and handling at the same time a Gras gun with bayonet fixed.

Red Cross.—The Red Cross Association of different countries did much to relieve the immediate wants of the sick and wounded. England and Denmark sent quite a number of well-trained nurses who did most efficient work in the field and city hospitals. The nursing in the Polytechnicum is performed exclusively by native female nurses. On my arrival in Athens I met two English nurses who had just returned from the seat of war and who were to return home next day. From them I obtained much valuable information regarding the worth of the Red Cross Association. They were Miss C. E. F. Bull and Miss Isabel Carter of Brighton. I requested them to give me some of their experiences in writing which was very promptly done by Miss Bull. It will be of interest to read in her own words a description of the retreat from Larissa.

"Being in Athens when rumors of war between Turkey and Greece were spread, I offered my services to the Greek Red Cross Society as a volunteer nurse for the front.

"On April 13 the first party of six English Red Cross nurses arrived with Mrs. Chant, and the following morning I received a command from H. R. H. the Crown Princess to go to the palace. There I found the English sisters, and was asked by H. R. H. *to accompany* herself and three of the sisters to Larissa, it having been arranged that two should remain at the Greek Red Cross hospital at Volo and that one should accompany Mrs. Chant to Crete.

"We arrived at Larissa on Easter Sunday and were taken around to see all the hospitals. At first we found it very difficult to get a footing in any of them, for the Greek doctors did not like the idea of female help. However, we installed ourselves in the theater of the military hospital, which was overcrowded with untrained orderlies, doctors *off duty*, wounded men *waiting* to be attended to; in fact, a crowd of useless individuals falling in each other's way and hindering the work of two or three really good military doctors who were trying to work. At last the value of the English sisters was discovered and by degrees the room was cleared, and we found ourselves hard at work in the operating theater with two clever *young surgeons* who, we were thankful to find, kept a most strict régime as far as antiseptic treatment was concerned.

"The wounded were brought straight down from the field on mules or in rough wagons. Very little attention could be paid to them in the wards, but when we got a few spare moments we did our best to find out those who were the most severely wounded and had them brought to the theater as soon as possible. Comfort for the poor fellows was out of the question, and it was with the greatest difficulty that a drink of milk could be got for a dying man who was craving for it. Our work was the same from morning till night, and lasted from Easter Sunday until the following Friday night. On the Thursday we had put up a model hospital of twenty beds which had been provided by H. R. H. the Crown Princess. *Everything was in readiness for patients who were too badly* wounded to be moved on to Volo, and we were to have received them on Saturday morning, but alas! the Turks had only to march in and find everything in readiness for *them!*

"On Friday night we retired at 11 o'clock, tired as usual after our day's work. The only thing we remarked was that the firing being very much nearer, the Turks were not far off; however, that did not make much impression on us, for we had been sleeping amid the boom of the cannon for the last six days.

"At midnight our hostess burst into our room crying out, 'Fly for your lives, the Turks are coming into Larissa!' We did not believe it, and when dressed I went over to the Crown Prince's headquarters to learn the truth. I was told that there *was no occasion to fear, and on my return the sisters returned* to their beds. We were not left quiet for long, for soon both host and hostess informed us that they were going, and carried out their intention by leaving the house and locking the doors after them; so that in one sense of the word we were prisoners. At about 2 A.M. a wagon under military escort was brought round, and in spite of any wish of our own to remain we were hoisted up on top of our kit bags and taken down to the railway station, which was surrounded by a panic-stricken crowd waiting for the first train to start, and expecting the Turks to swoop down upon them at the first dawn of day.

"All the wounded from the military hospitals were placed in the train, and to our lot fell standing room in a horse box.

"We left Volo on Saturday evening with the wounded on board the *Thessaly*, and arrived in Athens at 1 A.M. on Monday.

"On Tuesday I left for Arta Caravassera with a Greek lady and three English sisters. On the Epirus side we all settled down to steady hard work under a most clever and able surgeon, Mr. Zainie of the Greek Red Cross.

"CATH. E. F. BULL.

"July 26, 1897."

Only a few of the foreign nurses remain at the present time. I found a Danish nurse at the Polytechnicum and Miss Morris of Manchester, England, in one of the military hospitals. The German Red Cross Association was represented by von Reichenbach of Munich, who brought with him a large supply of medicines and dressing materials. Most all of the dressing material in the different hospitals is of German manufacture. Many of the rich Greeks living in foreign countries sent money, nurses and hospital supplies, which did much to alleviate the sufferings of the victims of the late war. A wealthy lady who lives in Marseilles endowed and maintained a large ward in one of the temporary military hospitals in Athens. The impression prevails on this side that the Turks did not respect the Red Cross, that the wounded prisoners were often tortured and mutilated, especially in the interior of Thessaly, where their conduct could not be watched by representatives of foreign countries. On the other hand, it is asserted that the Greek insurgents abused the privileges of the Red Cross, which angered the Turks, who in turn resorted to revenge by ignoring the Red Cross protection.

Turkish projectiles.—The Turko-Grecian war was characterized by an immense waste of ammunition. The wounds on the Greek side show evidences that the firing was done at great distances. It is related that as a rule the shooting commenced as soon as the enemy came into view. Capt. Dorst of the U. S. Army tells of a little incident which shows how reckless the troops were in the use of ammunition. The Turkish commander sent out about twelve cavalrymen as scouts to determine the position and strength of the enemy. As soon as the men came into view one of the Greek soldiers more than a mile distant opened fire, and in less than a minute firing was heard all along the line at a safe distance from the Turks. The scouts had no difficulty in reporting to their commander the exact location and probable strength of the enemy without coming within reach of the Greek guns. According to all accounts the marksmanship on both sides was exceedingly poor. The Greeks used the Gras gun with a forty-five caliber bullet of lead as the projectile. The Turks used the Martini single breech-loading rifle with a bullet of the same caliber and material. A single Turkish brigade was armed with the Mauser gun of small caliber and jacketed bullets. The Greek military surgeons say that many of the wounds which they saw were small and presented all the appearances of having been inflicted with a projectile of small caliber. All of the bullets which I saw in the military hospitals of Athens were large bullets of lead, evidently the ammunition for the Martini rifle. Miss Morris, the English nurse, informed me that she saw two bullets of small caliber metal-jacketed removed in the field hospitals. In both instances the bullet was removed from a flesh wound of the leg. In neither case was the bullet depressed. It is evident that the injuries were received at a great distance from the enemy or that the force of the bullets was diminished by striking a medium between the contending forces. I saw a number of injuries inflicted by the contents of exploding shells. In one instance the missile was a small round bullet of lead of about thirty-two caliber.

The Greek soldier.—The Greek people are almost proverbial for their honesty, modesty and simplicity of habits. The Greek laborer is generally industrious, strongly attached to his family and anxious to provide for his children a good education equal, if not superior, to the peasantry of any of the other countries in Europe. Theft and premeditated murder are almost unknown. Murder is not infrequent but when committed it is the result of a quarrel, a sudden excitement of passion. Drunkenness does not exist in Greece. Old and young, rich and poor drink a moderate amount of native wine, but the favorite national drinks are coffee and water. The cafetiers and water-venders do a thriving business in restaurants and public places. Cigarette smoking is common, but the use of tobacco in any other form is exceptional. The temperate eating and drinking in Greece has created a typical race

The ordinary Greek is below our average size without an ounce of superfluous fat, muscular and well calculated to do excellent service in a short active campaign. There can be no question that the excellent results which have followed the often imperfect treatment of the wounded during the late war are largely due to the unvitiated, vigorous constitutions of the patients. The uniform and equipment of the Greek soldier are of the simplest and cheapest kind. All efforts at display are lacking.

Woman soldiers.—Three Greek women have become famous during the war just ended. Conspicuous among them is Katarina, who joined the insurgents with her brother, did brave work, was wounded and was brought to one of the field-hospitals for treatment. The illustration shows her upon the cot in the hospital surrounded by nurses. Another woman did similar service with her brother. A third woman carried water to the wounded in the firing line, received several wounds, one of which made amputation of the arm necessary. She died eventually from the effects of the injuries.

THE GREEK SOLDIER.

First dressing.—The many wonderful recoveries from serious gunshot injuries which came under my own observation seem to prove that great pains were taken to prevent infection on the field and later in the hospitals. A representative of the staff of the Surgeon-General informed me that the wounds received early attention. The instructions were to shave the injured part, rub thoroughly with a solution of corrosive sublimate, dust the wound with iodoform and dress with antiseptic gauze. Wire splints were used mostly for immobilizing fractured extremities. In the hospitals plaster-of-paris was used to some extent for the same purpose. Diagnosis tags were not used, consequently many p [illegible] removed unnecessarily, and I have no doubt in some instances to the detriment of the patient. All the primary dressings were applied by the military surgeons; the hospital corps were not expected to take an important part in this work, serving simply as assistants to the surgeons. Elastic constriction and antiseptic tamponade for the purpose of arresting hemorrhage on the field appear to have had only a limited application. One of the nurses whom I met expressed her belief that many lives could have been saved if more attention had been paid to this part of first aid to the wounded.

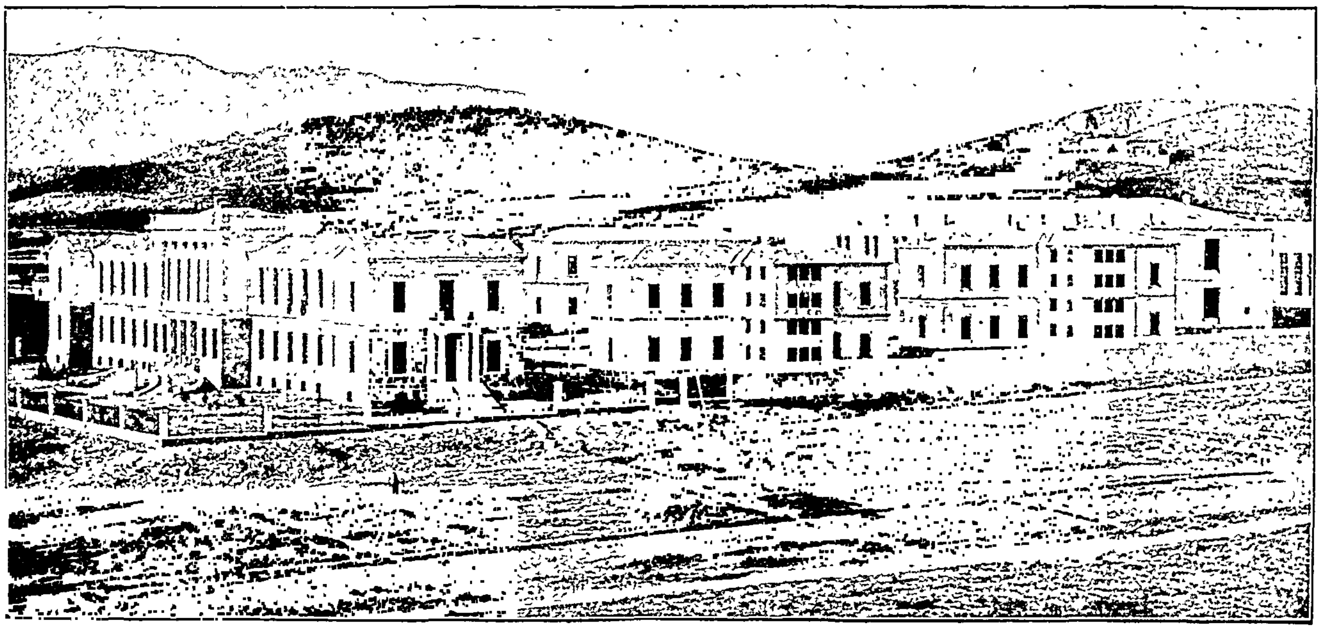
Operations.—Chloroform was used exclusively as an anesthetic without a single death that could have been attributed to this source. A number of amputations were made in the field-hospitals, but few if any primary resections. Secondary hemorrhage appears to have the been very infrequent, undoubtedly owing to the aseptic conditions of most wounds. More or less rigid antiseptic precautions were always carried out, which explains the rapid handling of most of the operative wounds. The instrument supply was simple and obtained almost exclusively of French manufacturers.

KATARINA, THE GREEK AMAZON.

Bullet wounds and results of treatment.—I found it impossible to ascertain even approximate data concerning the number of killed and wounded on either side. The statements made by different persons are so at variance that it is impossible at the present time to estimate the loss of the Greek army. A lieutenant of the Greek army had ready figures claiming that the Greeks killed and wounded 50,000 Turks, while the Greek loss was 15,000. From the observations made in the different hospitals it is more than probable that the number of wounded on the Greek side did not exceed 3,000. Many of these wounds were slight and either did not disable the soldiers or they recovered from the injuries in a few days and returned to their regiments for duty. In no instance was a primary laparotomy performed for penetrating wounds of the abdomen. Dr. Socrate Sp. Tsakona, Prof. Galvani's assistant, informed me that he saw in the Evangelismos Hospital two patients recover from penetrating wounds of the abdomen. In both instances the bullet passed through the abdominal cavity at or above the level of the umbilicus in an antero-posterior direction, passing through the body. In one of the military hospitals I saw a patient fully convalescent from a gunshot injury which implicated the cavity of the chest and liver. Bile escaped through the anterior opening for a number of days; no operation; rapid recovery under expectant treatment. Cases of erysipelas were few and mild. In gunshot fractures of the extremeties progressive phlegmonous inflammation occasionally set in, necessitating extensive drainage or amputation. The Surgeon-General's office had no record of any cases of pyemia. Death caused by infection resulted from progressive sepsis. Field and hospital practice did not show a single case of hospital gangrene. Many of the large lead bullets obtained by extraction or amputation were greatly depressed. I will now give a brief account of some of the cases of gunshot injuries which I had an opportunity to examine in the different military hospitals for the purpose of showing what modern surgery has done in the way of saving life and lessening suffering of those engaged in warfare, thus greatly mitigating the remote horrors of the battlefield. Antiseptic surgery can not claim all the good results which followed the treatment of the wounded during the last war, as after the battle of Bordino in 1812, long before antiseptic surgery was known and practiced, comparatively few cases became infected. The good results in part at least are due to the favorable climatic influences and the excellent constitutional condition of the injured.

Marseilles Hospital.—This one of the temporary military hospitals has received its name in honor of a wealthy lady of Marseilles who endowed it so liberally for the present purpose. It is the Polytechnic school, and as soon as all the patients are disposed of will again become an educational institution. The nursing in this hospital has been done principally by a number of Danish sisters from Copenhagen, whose services have proved most acceptable to the authorities and patients. Of 100 patients admitted into this hospital suffering from gunshot wounds, only one died. At present about fifteen wounded soldiers remain, all of them on the way to recovery. The medical cases are made up of malaria and two typhoid fever patients.

Tratiotikon nosocomion.—This is the regular military hospital, erected and used for the exclusive use of sick and wounded soldiers. It is sixty years old and has a capacity of 500 beds. It is built on the barrack system and is well lighted and ventilated. It is asserted that in this hospital three patients recovered without laparotomy who were admitted with perforating gunshot wound of the adbomen. The fatal cases of this kind of injury probably never reached their ultimate destination. There can be but little doubt that a number of cases of perforating gunshot wound of the abdomen recovered without operative intervention, which only goes to prove what the writer demonstrated years ago experimentally that not all perforating gunshot wounds of the abdominal cavity are complicated by visceral injuries of sufficient severity to require abdominal section, or to become the immediate cause of death. The nursing in this hospital is done by soldiers and a few English nurses. The operating room is small, but is supplied with all the essential equipments and materials for aseptic work. All of the operations are performed by the regular military surgeons.



MILITARY HOSPITAL AT ATHENS.

Case 1.—Gunshot wound of the head. The bullet entered above the orbit and passed out of the skull in the parietal region on the same side. No operative treatment. Healing of the wounds of entrance and exit by primary intention. No focal symptoms at any time. Patient fully convalescent.

Case 2.—Gunshot wound of forearm. No fracture of the bones. A German surgeon attempted to find and extract the bullet with negative result. A long scar marks the line of incision. Slight suppuration. Wound now nearly healed. Patient walking about with the forearm supported in a sling.

Case 3.—Bullet wound at the base of right thigh; wound of entrance near the border of the sartorius muscle, wound of exit near gluteal crease. Healing by primary intention.

Case 4.—Wound of right knee joint, received in Epirus. The bullet fractured the internal condyle of the femur, opened the knee joint and was removed by an incision over the outer aspect of the joint. Aseptic healing of the wound with fair degree of motion of the joint. Considerable thickening of the capsule of the joint remains.

Case 5.—Gunshot fracture of leg, with extensive comminution of fibula. Wound received during the first week of the war. Healing by secondary intention and slow formation of callus.

Case 6.—Bullet wound of base of neck. The bullet passed transversely through the soft tissues of the neck, behind the vertebral column and probably caused a fracture of one or more of the spinous processes. The special symptoms due to concussion which followed the injury have now disappeared and were probably caused by concussion of the cord. Healing of the wound without suppuration.

Case 7.—Bullet wounds of chest. Three wounds of entrance over the anterior and upper aspect of the chest. One of the bullets passed through the chest on the left side of the sternum, point of exit over the scapula on the same side. The other two wounds were inflicted by the contents of a bursting shell. The size of the scars indicate that the missiles were less than 38 caliber in size. No attempt was made to locate and remove these bullets. Free hemoptysis immediately after the injury. The patient recovered without any grave complications setting in.

Case 8.—Comminuted gunshot fracture of tibia. Many fragments of bone were removed soon after the injury was received, leaving a large bone defect. Wound healed; no union and but slight callus production. An operation for pseudo-arthrosis will become necessary in the near future.

Case 9.—Gunshot wound of chest with fracture of spinous processes of one or more dorsal vertebræ. Track made by bullet transverse, about the junction of the middle with the upper third of the dorsal portion of the spine. Pleural cavity not opened. Wound of entrance on one side of the spine, incision made for the extraction of the bullet on the other side on the same level. Spinal symptoms were well marked immediately after the injury was received and are disappearing rapidly. Wound healed without suppuration.

Case 10.—Gunshot wound of knee joint with extensive comminution of internal tuberosity of tibia. Patient a captain in the Greek army. First dressing applied fifteen hours after the injury was received, redressed on the sixth day. Bullet passed through the joint and escaped between the head of the fibula and the external condyle of the femur. Injury inflicted during the beginning of the war. Slight suppuration. Wound now healed; capsule of joint and para-articular tissues remain somewhat swollen and indurated. Considerable impairment of motion. No operative treatment.

Case 11.—Gunshot injury of leg. Patient a lieutenant in the Greek army. Bullet passed from before backward through the leg a few inches below the knee joint, between the tibia and fibula, without fracturing either of the bones. Primary healing of the wound without much functional impairment.

Case 12.—Gunshot wound of the shoulder joint. Wound of entrance two inches below the acromion process. The bullet passed through the head of the humerus and the shoulder joint and was removed in the field hospital at a point two inches below the middle of the clavicle. Conservative treatment. Healing of wound without suppuration. No anchylosis and no swelling of joint. Humerus at the seat of injury considerably enlarged by callus formation. Patient is able to raise arm at a right angle to the body.

Hospital Evangelismos.—This is the best hospital in Athens and furnishes accommodation for 150 patients. The surgical wards are in charge of Professor Galvani, who performs on an average 350 capital operations annually. During the war and at the present time this institution has been used largely in receiving and caring for sick and wounded soldiers. The care of the sick is in the hands of native female nurses. These nurses are devoted workers but lack a thorough training. My attention was called to a number of very interesting gunshot injuries involving different parts of the body.

Case 13.—Gunshot wound of knee joint. The bullet perforated the external condyle of the femur and passed out over the minor aspect of the joint. Course of active treatment. Moderate swelling of joint; no suppuration. The wound healed by primary intention. Recovery with fair action of joint.

Case 14.—Injury of ankle joint produced by the bursting of a shell. Slight infection, healing of the wound by granulation. Joint remains considerably swollen and somewhat tender to pressure. Motion of joint limited.

Case 15.—Bullet wound of soft tissues of the leg. Healing by primary intention.

Case 16.—Similar wound. Healing without suppuration. In both instances the bullet passed through the limb without producing any injury to the bones.

Case 17.—Cretan, gunshot wound of shoulder joint. Bullet passed through head of humerus and joint, point of exit below coracoid process. Fistulous opening remains, through which a limited amount of pus passes daily. Anchylosis not complete. Considerable atrophy of deltoid muscle which may be due to nerve injury.

Case 18.—Gunshot wound of chest. Bullet not extracted; injury followed by empyema. Free drainage without rib resection. Injured side of chest contracted; respiratory movements greatly diminished. Patient is pale and emaciated and shows the effects of prolonged suppuration.

Case 19.—Gunshot fracture of thigh. Injury received four months ago. Wound healed; bone united by massive callus; limb considerably shortened and femur curved.

Case 20.—Gunshot wound of chest and abdomen. Bullet entered dorsal side of chest on level with eighth rib four inches from median line, took a downward and forward course and escaped below costal arch an inch below cartilage of seventh rib. No operation. Bile escaped through anterior perforation for a number of days. Wound healed by primary intention. No serious inflammatory complications. Patient is now fully convalescent.

Case 21.—Gunshot wound of ankle joint. Moderate suppurative synovitis followed the injury. Wound of entrance granulating. Joint considerably swollen; heel retracted; motion greatly impaired.

Case 22.—Gunshot wound of patella opening knee joint. Secondary suturing of patellar fragments with satisfactory result. Motion of knee joint greatly impaired, which in part is due to the swelling and induration of the soft structures which still remain. Suturing material, silkworm gut; operator, Professor Galvani.

Dase 23.—Gunshot wound of heel. Extraction of bullet in the field hospital. Suppurative; suppurating fistula leading down to denuded os calcis remains.

Case 24.—Perforating gunshot wound of the abdomen. Recovery without operation.

Case 25.—Gunshot wound of abdomen. Recovery without operation. Cases previously mentioned. Both of these cases entered the hospital ten days after the injury was received.

Case 26.—Gunshot fracture of both bones of the forearm. Bullet and loose fragments of bone removed in the field hospital. No union and no callus formation. Wound healed.

Case 27.—Gunshot fracture of the humerus. Bullet passed through the arm near the middle. Nerves escaped injury. Healing by primary intention. No splints. Fixation by bandaging arm to the side of the chest with forearm fixed and supported by the same bandage. Union by bony callus with good functional result.

Military academy transformed into temporary hospital.—This institution could readily accommodate 300 to 400 patients. It is well adapted for hospital use. Twelve English nurses were employed during the war in caring for the sick and wounded, assisted by soldiers. At present only one nurse remains and the number of patients has been reduced to less than two hundred.

Case 28.—Gunshot wound of thigh. Infection. Secondary amputation. Osteomyelitis of the bone made it necessary to perform a second operation, which consisted in enucleating the bone. Wound still suppurating and healing slowly by granulation.

Case 29.—Gunshot wound of clavicle and scapula. Clavicle united by a massive callus. Bullet passed from before backward, above the large vessels and nerves. Motion of arm greatly impaired.

Hypaxiomatikon Hospital.—This is another temporary military hospital. It is an old military school which was converted into a hospital soon after the breaking out of the war. More than five hundred patients have been treated here. It gives accommodation for 110 patients and is fairly well equipped for the present purpose. It is now used for convalescents almost exclusively. Of the present 110 patients 50 are recovering from injuries received during the war.

Camp and hospital diseases.—The prevailing disease among the soldiers in the field and in the hospitals is malaria. The average soldier is perfectly familiar with the use of quinin, which is the only drug used in the treatment of this affection. Typhoid fever and pneumonia have claimed a number of victims. As a rule typhoid fever pursues a comparatively mild course and is not treated by any of the aggressive methods. Complications are watched for and promptly treated when they appear.

Athens, July 28, 1897.

Rectoscopy.—Finding that metal tubes 15 to 40 cm. in length could be safely introduced into the rectum, S. v. Federoff has invented a rectoscope on the principles of the esophagoscope, but separate from the light, 2 to 2.5 cm. in diameter, with a rubber obturator, the patient in the lithotomy or knee-elbow position. Inserted gently, it can be worked up into the flexura sigmoidea as far as the mesosigmoideum will allow, which varies in different persons. Photographs of the rectum can be taken through this rectoscope, and carcinoma can be differentiated with it alone, while it is also valuable for other obvious purposes.—*Cbl. f. Chir.*, July 31, from *Chirurguija*, 5.

THE "SCHOTT TREATMENT" OF CARDIAC DISEASE.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

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The "Schott treatment" for chronic heart disease, although well established in Germany and England, is so little known in America that it warrants a word of explanation before going on to the description of the cases treated by this method at the Johns Hopkins Hospital.

Nauheim first came to the notice of Europeans in 1834. It was not until 1860 that Dr. Beneke of Marburg considered scientifically the value of the medicated bath treatment. From 1859 to 1870 his articles on the waters of Nauheim made their appearance in the *Berliner klinische Wochenschrift;* from 1870 to 1890 August and Theodore Schott and J. Groedel were frequent contributors on this subject to this journal. August Schott died, but his brother continued the work and published one of the first articles to appear in English print in 1892. Although this article appeared in the *Lancet* it received but little attention, and it was not until 1894 that, upon the publication of an article by W. Bezley Thorne, in the *Lancet*, the treatment came to be discussed in medical circles. Shortly after the appearance of this article, the same author published a systematic explanation of the treatment and how it could be artificially employed. Since the appearance of this book the literature in England and Germany has been crowded with articles on the subject, as may be seen by the extensive bibliography.

Nauheim is situated in the Grand Duchy of Hesse, three-quarters of an hour's ride by train from Frankfurt and two hours' from Homburg, at the eastern slope of the Johannesburg, the last spur of the Taunus mountains. The springs are divided into two classes: those suitable for drinking and those for bathing. The principal ingredients of the waters are sodium chlorid and calcium chlorid, various salts of iron, and an abundance of carbonic acid. Their natural temperature ranges between 82 and 95 degrees F. Spring No. 12 rises some fifty to fifty-six feet above the surface, forming a most beautiful fountain, the waters with their rich supply of carbonic acid gas falling into a seething mass in the basin below.

These waters are led to various houses in which are the bath rooms. Although the waters vary naturally in strength, they are, nevertheless, altered artificially to suit the requirements of the bather. About the central spring are situated these numerous bath houses with their varying strengths indicated by the numbers 1, 2, 3, 4, 5 and 6. A patient is ordered by his physician to take such a one of these as may be deemed advisable. Learning, therefore, the constituents of these waters and the conditions to which each is applicable, it becomes a mere matter of careful analysis and proper instruction to administer these baths artificially. Fresenius the State chemist at Wiesbaden has given a careful analysis, by following which the artificial baths may be prepared. The baths at the Johns Hopkins Hospital have been conducted upon the basis of these analyses.

It is of interest to inquire first in what way these baths act. That they have been efficacious in the relief of chronic heart disease was made evident before the subject was taken up by the brothers Schott. That there is a diminution in the area of cardiac dulness, that there is a change in the position of the apex beat, was also made evident. There was, therefore, under this treatment some distinct change in the degree of congestion of the internal organs and a gradual reduction of a dilated heart. That there was relief from the dyspnea and distress so commonly associated with chronic heart disease, being established on the one hand; that there was a relief of the congestion of the internal organs, evidenced by the reduction of the area of cardiac dulness and an increase in the amount of urine secreted and a diminution of pleural effusions established on the other hand, the question as to how these changes were brought about came to be actively discussed. Throughout the range of literature on this subject, no satisfactory explanation has as yet been given. While Dr. Schott's view, that the salts held in solution pass by imbibition through the outermost layers of the epidermis and so act upon the terminal nerves of the skin, exerting a reflex action on the internal organs, sounds perhaps satisfactory, yet one looks for an explanation which is less of the nature of an hypothesis. In support of his view he mentions that excessive bathing induces an excitable state of the nervous system, sleeplessness and loss of appetite, but this can hardly be considered as proof that the action of the Nauheim waters on the terminal nerves, is accountable for all the changes which result in the internal organs. Nevertheless the conclusion that all these extensive changes are in reality the result of a reflex action produced by influences upon the terminal nerves it must be admitted, is plausible. Thorne's statement, that there is a dilatation of the muscular arteries, and afterward of those of the skin, thus relieving the congestion of the internal organs, is but a part of the explanation and although he adds another link to the chain he by no means completes the explanation. How is this dilatation brought about? True, Dr. Schott states that the calcium chlorid is the active stimulant to the terminal nerves through imbibition. Dr. Lauder Brunton, in his massage experiments, demonstrates that more blood flows through the massaged part, and that blood pressure first rises and then falls, but that on the conclusion of massage more blood collects in the massaged parts; experiments which were confirmed by Dr. Oliver.

Ludwig has shown that the capacity of the muscles for blood, is equal to the combined capacities of the internal organs and the skin. In these two experiments, we think we find the most satisfactory explanation of the action of both the baths and the exercises; for, if Dr. Lauder Brunton's experiments in massage be correct, and the conclusion of Ludwig be correct, the increased amount of blood in the muscles must indicate a relief of congestion in the internal organs. That there is more blood in the part and necessarily a dilatation of the muscle arteries is proven by increased displacement of the limb. We are yet at a loss to find the link between the action of the salts upon the skin and the increase in the amount of blood in the muscles. If, however, we accept Dr. Schott's explanation of the cutaneous excitation by the gaseous and mineral constituents, followed by a more prolonged stimulation of the sensory nerves produced by a the imbibition of the salts into the superficial layers of the corium, we perhaps, have this missing link in the chain of explanation. To sum up the various theories which have been advanced, the calcium chlorid of the salt-waters is imbibed into the superficial layer of the corium producing a superficial cutaneous excitation first and then a stimulation of the deeper sensory nerves, these in turn leading to a dilatation of the peripheral vessels with a consequent increase of blood in the muscles and the skin, *whose combined capacity far exceeds that of the internal organs*, the result being a relief of the congestion of the latter.

Having thus first reviewed the theories in explanation of the way in which these saline waters and the exercises act, the practical questions as to the treatment present themselves. I shall confine myself solely to the administration of the exercises and artificial baths. The course of baths consists of six different strengths; the first and second consisting of different proportions of calcium chlorid and sodium chlorid; the third, fourth, fifth and sixth contain carbonic acid as well as these salts. By the expression "course" of six baths is not to be understood that every patient is submitted to the whole six strengths. It simply means that according as the patient improves the bath is increased in strength; for example bath No. 1, may be administered for a period of several days, the patient failing to respond to it; No. 2, is given and if there be still no response No. 3, and so on even to the full strength, that is bath No. 6. Frequently it is not necessary to go higher than the fourth bath either because the patient shows distinct improvement with the strength already employed or because there is all absence of improvement and his condition contraindicates further submitting him to the treatment.

Bath No. 1, consists of sodium chlorid 4 pounds; calcium chlorid 6 ounces.

Bath No. 2, sodium chlorid 5 pounds; calcium chlorid 8 ounces.

The following baths have together with these salts carbonic acid which is produced by the action of hydrochloric acid and sodium bicarbonate.

Bath No. 3, consists of sodium chlorid 6 pounds; calcium chlorid 10 ounces; bicarbonate soda 6 ounces; hydrochloric acid 7 ounces.

Bath No. 4, sodium chlorid 7 pounds; calcium chlorid 10 ounces; sodium bicarbonate 8 ounces; hydrochloric acid 12 ounces.

Bath No. 5, sodium chlorid 9 pounds; calcium chlorid 11 ounces; sodium bicarbonate 1 pound; hydrochloric acid 1 pound.

Bath No. 6, sodium chlorid 2 pounds; calcium chlorid 12 ounces; sodium bicarbonate 1 pound; hydrochlorid acid 2 pounds.

These various amounts of salt we have put up in packages and labeled bath No. 1, 2, 3, etc., and any strength of bath can be made up by ordering these packages. The calcium chlorid is best prepared in solution. The above proportions correspond to 40 gallons of water, which is just about enough to entirely immerse the body. The bath is given in the morning unless otherwise deemed advisable.

The following are the rules which have been laid down for the administration of the bath. Most of these rules have been made after perusal of the literature and from instructions obtained from Dr. Schott personally.

The bath should be given on an empty stomach; allow the patient to make as little exertion as possible; assist him in every way. A sheet may be drawn over the tub but not around the patient. Be sure that the entire body is immersed. Keep the finger on the pulse during the entire time the patient is in the bath.

Danger signals.—Cyanosis; dyspnea; apnea; inappreciable pulse. On the appearance of any of these, take the patient out of the bath immediately, put him to bed and keep him as quiet as possible. Friction while in the bath is not necessary, but if the fingers and toes become bluish the extremities may be rubbed slightly toward the trunk. Friction should be cautiously employed; when the patient is out of the tub rub him to a glow; give him a glass of milk or cup of bouillon and allow him to rest for an hour.

Diet.—Small quantity q. 4h. meat, boiled chicken, mutton chops; eggs, two a day; oysters raw or panned; vegetables of all kinds; peas, beans, lettuce; liquids; beef tea, bouillon, cocoa, lemonade, milk. *Note.*—Never give more than 4 ounces of fluid at a time: Should be sipped. *Wine.*—Port, Rhine, sherry; brandy; dram to half ounce.

Note.—Something light (cocoa and toast) should be taken one hour before the bath; something light and hot (bouillon, milk punch and toasted crackers) should be taken directly after the bath. If the heart's action is poor, sherry, brandy or port wine may be given after the bath. Last meal to be taken three hours before retiring.

The exercises which are called by Dr. Schott "Widerstandgymnastik" or resistance gymnastics are slow movements executed by the patients and resisted by the physician or operator. The exertion is the very least that can be employed and should cause no fatigue on the part of the patient. Light, loose clothing should be worn by the patient and he should be instructed to breathe quietly. It is hardly necessary to give full explanation of the exercises here as it demands considerable attention and is more in the order of a drill than of an explanation. It is important however to state that these movements should not be administered without thorough training from one competent to give it. The movements are nineteen in number and involve all the larger muscles of the body. This portion of the treatment we have entrusted to our nurses, who have received thorough instruction and whom we find are better adapted to the administration of, the light resistance than are men.

Since November we have had under treatment ten cases. Of these ten we have had four deaths, two have shown no improvement, one has shown improvement only during the treatment and three have shown continued improvement.

No one would claim to cure cases of chronic heart disease; all that one can hope for is to place the heart in a functional condition which in relation to the rest of the organism is the best possible compatible with the lesion which exists. In the three cases which have shown continued improvement the results have been very satisfactory, one might say even striking. Of the four deaths No. 1 was a case of aortic insufficiency; No. 2 of dilatation and arterio-sclerosis; No. 3 of chronic nephritis; No. 4 of mitral stenosis. Although the chronic nephritis case was manifestly inappropriate to the treatment, it was selected for the purpose of noting the action upon the kidneys.

In this case, a young girl whose condition at no time was hopeful, the edema of the genitalia and lower extremitities on admission being so extensive that it was impossible to approximate the legs. The features were almost unrecognizable. Beyond a very slight response amounting to about 500 c.c., there was no increase in the urine excreted. As an extreme case, therefore, of chronic nephritis this was in no way aided by the treatment. Another case, on the contrary, of chronic interstitial nephritis and tachycardia, the action upon the excretion of urine was most striking. The patient was removed to the isolation ward owing to the unmanageable condition in which she was, following uremia.

The following is a synopsis of the urine record. Record begun December 9.

1. Between December 9 and January 20, *forty-three days.* Urine fell below 900 c.c., in twenty-four hours, *twenty-one times.*

Treatment.—Nitroglycerin, continued throughout period of forty-three days; patassium iodid, tr. digitalis, sol. diuretin, sweat baths, cream tartar water, citrate of lithia, apollinaris.

Condition of patient.—Delirious, requiring forcible restraint.

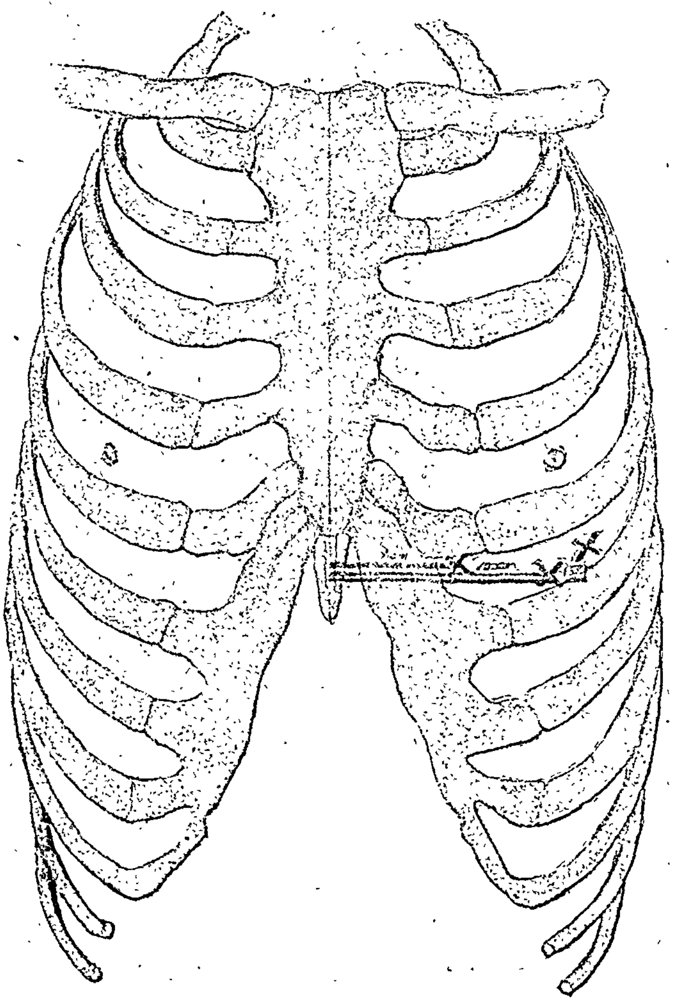


Chart No. 1.—Hunt. Feb. 12. Before bath No. 1, strength No. 1. Point max. imp., 5th space, 13½ cm. from median line; after bath, point max. imp., 5th space, 11 cm. from median line. Feb. 13, no bath given. Point max. imp., 5th space, 10 cm. from median line. Feb. 14, bath No. 2, strength No. 1. Point max. imp. after bath 5th space, 8 cm. from median line. Feb. 15, no bath given. Point max. imp. not located. No signs (physical or post-mortem) of effusion.

2. Between January 20 and March 2, *forty-two* days. Urine fell below 900 c.c., in twenty-four hours, *four times.*

☐ *Treatment.*—Nitroglycerin, apollinaris, Schott baths, hot baths, continued throughout period of forty-two days; tr. strophanthus, tr. digitalis, strychnia, potassium iodid.

Condition of patient.—Rational; does not sleep well.

3. Between March 2 and 11, *eight days.* Baths were discontinued. Urine fell below 900 c.c., in twenty-four hours, *six times.*

Treatment.—Tr. digitalis, citrate potash, nitroglycerin, apollinaris, sweat bath, pilocarpin.

Condition of patient.—Dyspnea; 280 c.c. urine on March 6; 210 c.c. urine March 9; small irregular pulse.

4. Between March 11 and April 7, *twenty-eight days.* Resisted movements and baths. Urine fell below 900 c.c., in twenty-four hours, *five times,* upon each occasion with an interval of at least three days.

Treatment.—Nitroglycerin, apollinaris, strychnin, Inf. digit.. Schott bath No. 3, resisted movements Nos. 1, 2, 4, 5, 6, 9 and 10.

Condition of patient.—Out on grounds; sleeps well; no dyspnea. Discharged April 7.

This case we considered as receiving benefit only during treatment. The improvement was not lasting.

The second fatal case (the first being the chronic nephritis in the girl first mentioned) was that of a colored man with marked signs of aortic insufficiency, accompanied by the Flint murmur at the apex. This was an extreme case whose condition had become so serious that he was removed to the isolation ward. So far from the median line was the apex beat that it seemed a suitable case upon which to note the effect of the baths. The point of maximum impulse was seen in the fifth space, 13½ cm. from the median line. After the first bath the apex beat was seen in the fifth space 11 cm. from the median line. The day following, the maximum impulse was seen in the fifth space 10 cm. from the median line and on the following day a second bath was given and the apex beat was found in the fifth space 8 cm. from the median line. The patient improved very markedly, became clearer in his head, and was qui[illegible] manageab[illegible] On the 16th, four days after the [illegible] p[illegible] suddenly. An effusion at [illegible]sts [illegible] there were no signs of [illegible]

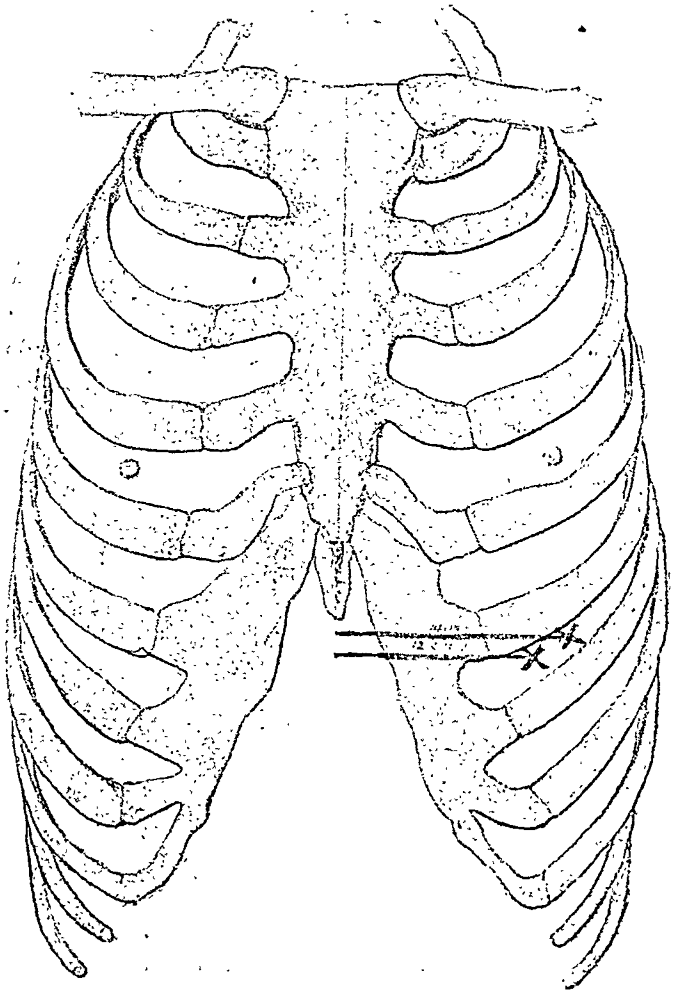


Chart No. 2.—Larber. Before bath No. 1, strength No. 1, point max. imp. 14 cm. from median line. After bath, point max. imp., 12 cm. from median line. Length of time in bath, five minutes.

Charts Nos. 1 and 2 illustrate the *immediate* influence of the baths upon the point max. imp.

The third fatal case was a private one who showed signs of cardiac dilatation and a moderate degree of thickening of the vessels. This patient was given movements from February 21 to April 4. He was extensively edematous, especially the legs. It was never possible to make very careful examinations of the cardiac outline. The pulse, however, which had been very weak and of small volume, improved very distinctly in the course of the treatment. The edema almost wholly disappeared and the patient from being confined to a chair was able to be up and occasionally to drive. March 29 and 30, he took a drive and slept well. On March 31 he had a very restless night but on April 1 was again able to drive. For this patient this was a very great improvement considering he had spent months in his room. On April 3 he had a very restless night and from this date he steadily declined, dying suddenly on April 7.

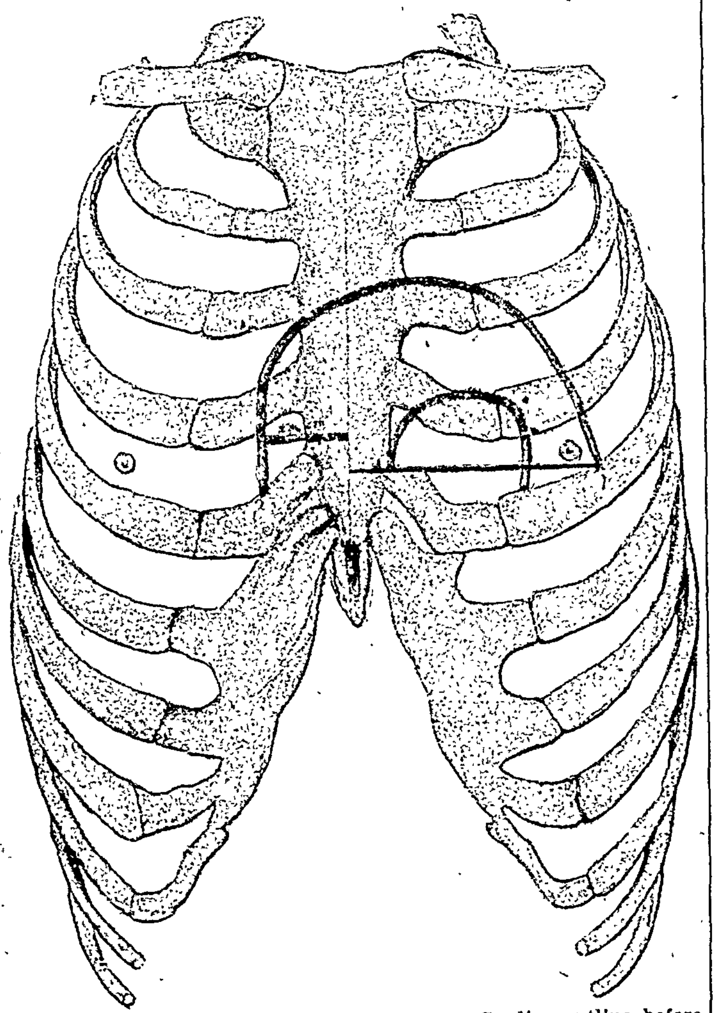


CHART No. 3.—Coulbourn. Oct. 13, 1896. Cardiac outline before bath No. 1, strength No. 1. Right border 2¾ cm. from median line. In bath eight minutes.

The fourth fatal case was one of mitral stenosis. The change in the apex beat was very striking. This man came into the hospital suffering from great dyspnea and distress and cyanosis; under the treatment he was able to be up and about the ward, and on the day before Christmas was so much improved as to go to his home. He was, however, an intemperate fellow and got into a spree on Christmas Eve, during which he fell dead. (Chart No. 2.)

In these four fatal cases are shown the marked influence upon, 1, the position of the apex beat; 2, the increase in the amount of urine in spite of the nephritis in one case; 3, the very marked improvement in the pulse in the case of the cardiac dilatation which was associated also with arterio-sclerosis; 4, the inefficiency of the treatment on a case of extreme nephritis.

The two cases which showed no improvement, one was that of cardiac dilatation, and glycosuria; the other cardiac dilatation with chronic nephritis. Although the area of cardiac dulness was diminished and the pulse tracing, which were taken by Dr. McCrae, assumed a more definite character, the edema never diminished and the patient was discharged practically unimproved (charts 3, 4, 5). We therefore see that in these seven cases so far reported, those in which the kidneys were extensively involved, no improvement resulted. In those cases in which there was nephritis but of a less severe grade the improvement could scarcely be regarded as such, so transient was it.

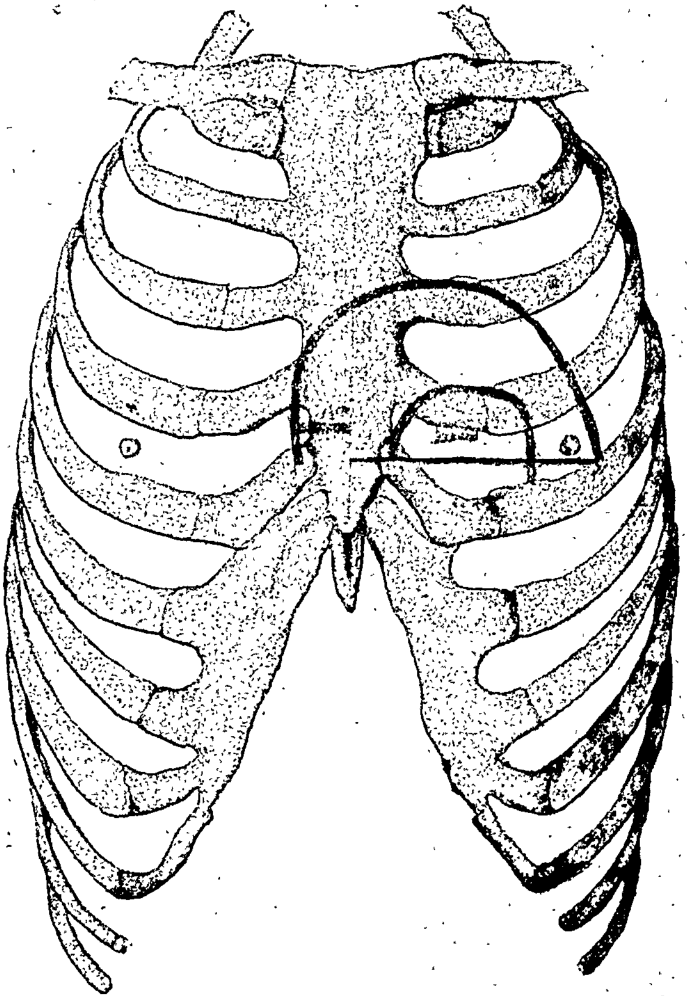
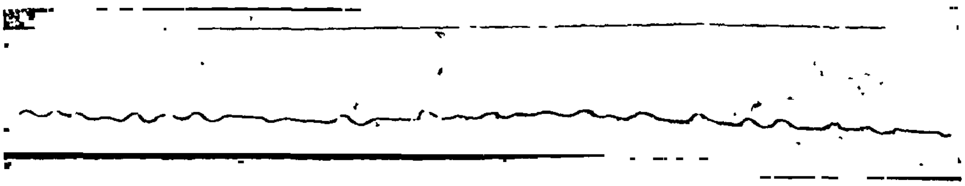


CHART No. 4.—Coulbourn. Oct. 18, 1896. Cardiac outline after bath No. 6, strength No. 1. Right border 1½ cm. from median line. In bath eight minutes.

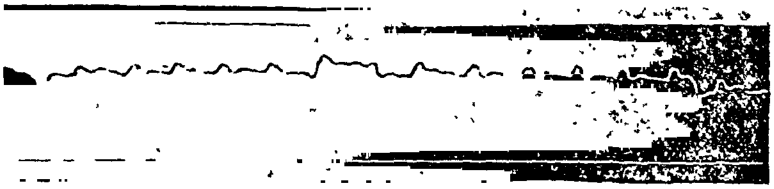
NOTE.—In Charts 3 and 4 the outline on the right side of the chest extends too far laterally. It did not extend beyond the nipple. There was no change in his line after treatment.

Charts Nos. 3 and 4 illustrate change of 1¾ cm. in cardiac area after six baths of strength No. 1.

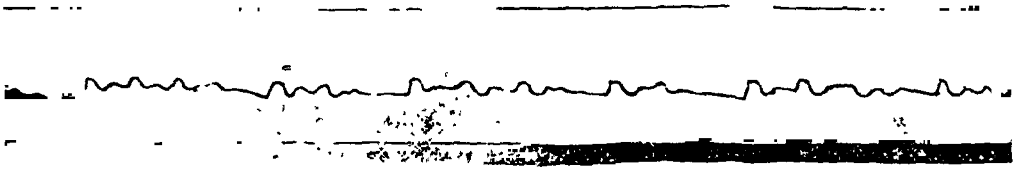
Of the three cases of continued improvement, the most striking is that of a colored man. It is a fact to be noted that whereas the white patients will resist for a long time vascular changes, yet in the colored race the outlook is relatively much graver. This was an old case who had visited the hospital a number of times and upon his last admission it was noted that there was a distinct thickening of the vessels. He improved very markedly under the treatment and although the baths were stopped at a date long before he was discharged from the hospital, he nevertheless,



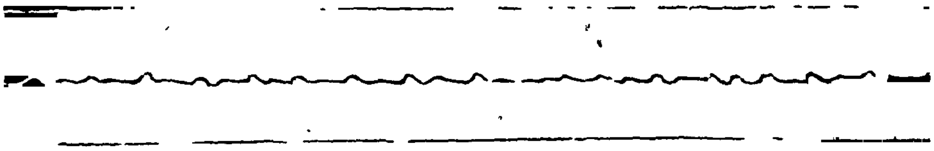
1. October 13, before treatment, 4¾ hours before first bath.



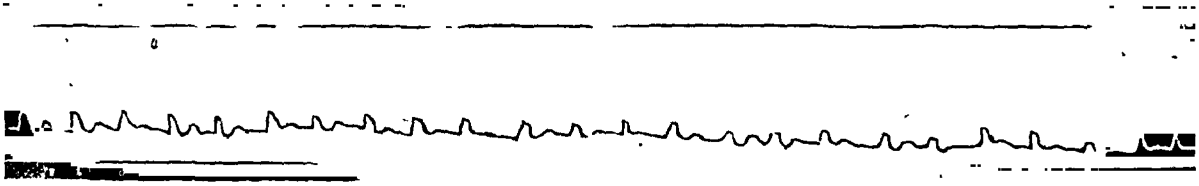
2. October 13. Bath No. 1, strength No. 1, at 4:30 P.M.



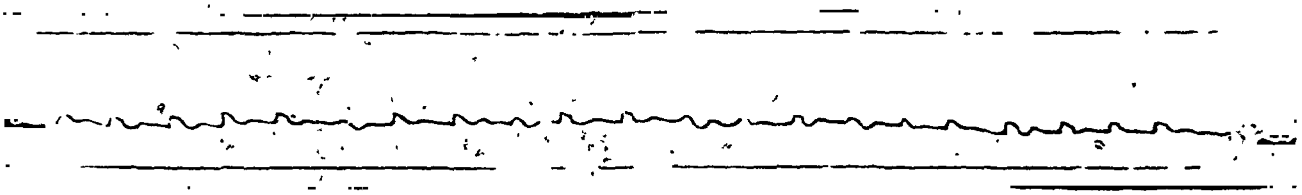
3. October 13, 10 P.M., 5½ hours after first bath.



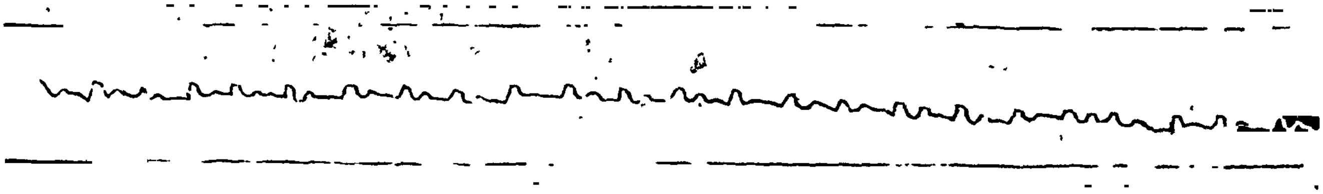
4. October 15, after third bath, strength No. 1.



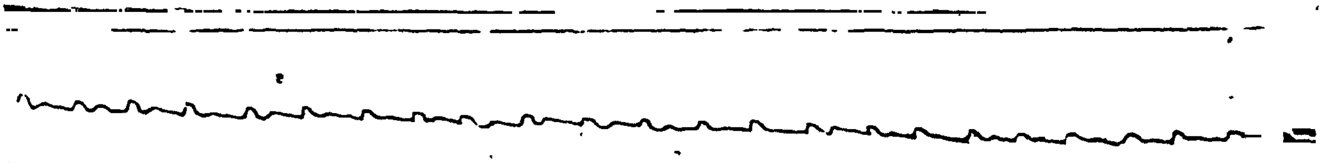
5. October 18, after sixth bath, strength No. 1.



6 October 22, after eighth bath strength No. 2.



7. October 26, no bath given on 24th or 26th.



8. October 30. No baths given since 27th.

CHART No. 5.—Coulbourn. Series of tracings to illustrate the regulating effect of the baths upon [illegible] dysp[illegible], was so severe that baths had to be discontinued.

Schott Method of Baths and Resisted Movements.

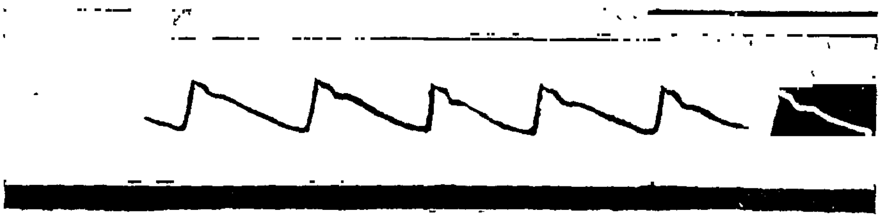
Diagnosis .... Name Wesley Williams- Hospital No 18074 Ward M.

Date	Bath and Temp. of Same or Movements	TIME		Respiration, Pulse and Heart (Pulse Tracing, Cardiac Outline) SEE HISTORY (Should be recorded once a week)																	Color of Skin (White, Livid, Cyanosed, Red)			Amt Urine in 24 hrs	REMARKS
				In bed		Just before		1st half		2nd half		Immed after		10 m after		Pulse Pressure		Point Maximum Impulse							
		Begin	End	R.	P	R	P.	R	P	R	P	R.	P.	R	P	Before	After	Before	During	After	Before	During	After		
Febry 17 97	1 No I 95°	5 25 PM	5 31	24	66	24	68	30	66	32	66	28	72	28	68	360	255	14¼	15 cm	15 cm	natural	throughout		800	
Febry 21 97	2 No II 95°	1 15 PM	1 21	24	56	24	56	28	64	28	64	28	64	20	56	200	190	14	15		"		"	[illegible]	
" 24 97	3 No II 95°	11 25 am	11 33	28	54	28	54	28	66	28	64	28	64	24	62	170	150	14	14 cm	14 cm	"		"	[illegible]	
" 27	4 No I 95°	11 05 am	11 11	20	56	20	56	32	78	24	72	24	72	28	64	tracing	tracing	15¾	15 5		"		"	[illegible]	Patient up in wheel chair
March 1st	5 No II 95°	11 25 am	11 33	24	60	24	64	24	64	20	56	20	66	20	56	tracing	tracing	16	15.5	15 5	"		"	1 1100 1 1300	
March 3rd	6 No II 95°	11 45	11 54	28	64	28	64	24	72	24	64	24	64	24	64	280	210	15	15¼	15¼	"		"	3 1220 4 1100	
March 5th	7 No II 95°	5 08 PM	5 16	20	64	20	64	24	72	24	72	24	72	24	56	330		15¾	15.5	15.	"			5 [illegible] 6 [illegible]	
" 7th	8 No II 95°	11 17 am	11 25	20	64	20	64	24	84	24	80	24	80	24	72	280	240	15¾	15 5	14¾	"		"	7 750 8 1050	
" 9th	9 No II 95°	5 20 PM	5 28	24	80	24	88	24	64	24	72	24	72	24	64	260	240	15	14 5	14.5			"	9 820 10 1190	
" 11th	10 No II 95°	10 48 am	10 56	24	80	24	80	24	80	24	80	24	80	24	64	230	220	15.5	15	15	"		"	11 1000	
" 13th	11 No III 90°	11 37 am	11 47	24	72	20	68	20	80	20	80	20	80	20	88	220	210	15	15	15	"			12 1550 13 700	
15th	12 No I 90°	11 03 am	11 13	20	64	20	68	20	72	[illegible]	76	24	76	24	64	230	210	15¼	15¼	15.5	"			14 1250 15 1175	Pulse irregular
17th	13 No III 90°	10 30 am	10 40	20	80	20	72	28	92	28	92	24	80			230	210	14.5	15¼	15¼				16 [illegible] 17 [illegible]	Pulse irregular
19th	14 No III 90°	11 05	11 15	24	72	24	88	[illegible]	80	24	92	24	80	24	80	220	200	15 5	15 5	15¼				18 1380 19 1360	Headache during bath
21st	15 No III 90°	11 38		24	68	24	68	24	80	20	68	20	68	24	72	Tracing		14¼	15	15	"			20 1100 21 1150	
" 23	16 No III 90°	11 10	11 20	24	80	24	80	24	80	24	80	24	80	24	80			14¾	15	15				22 980 23 940	
25	17 No III 90°	5 08	5 18	24	70	20	80	20	50	20	80	20	80	24	80			14	15.5	15 5				24 [illegible] 25 1300	

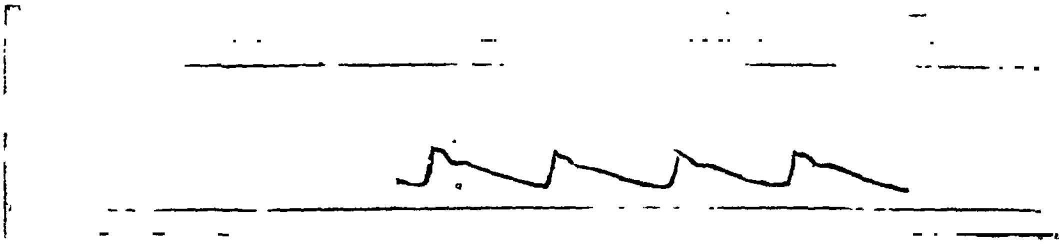
CHART No. 6—Showing method of recording observations. For pulse tracing of this case see Chart No. 7.

while under observation was most comfortable, having no return of his dyspnea or edema. In this case the point of maximum impulse instead of being moved in was moved out. (Chart No. 6.)

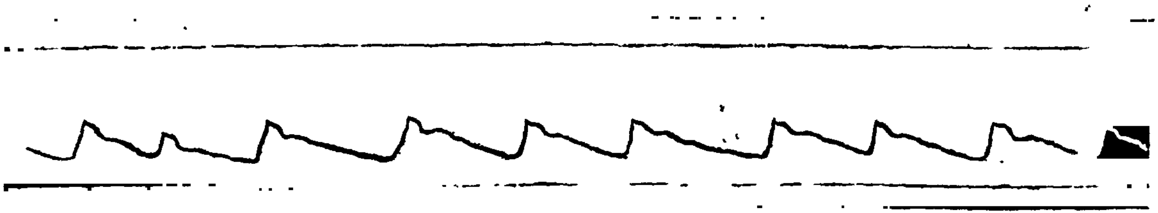
An interesting comparison may be made between this case and that of Hauser (Chart No. 8), to be mentioned immediately, with especial reference to the action of digitalis upon the pulse, and that of the baths. Chart No. 8 shows the influence of large doses of tr. digitalis given for a limited time at short intervals.



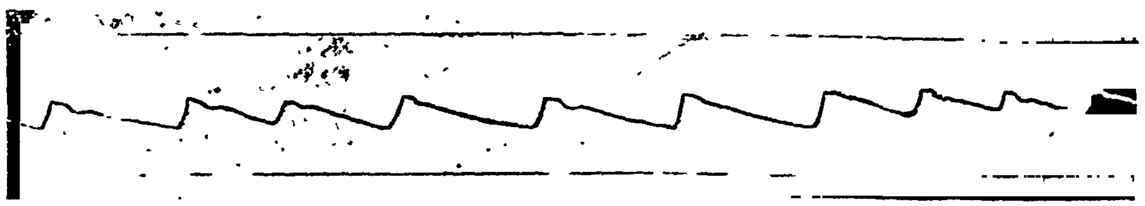
1. Williams (colored). Before bath No. 1, strength No. 1, Feb. 27, 1897.



2. After bath.



3. March 1. Before bath No. 5, strength No. 2.

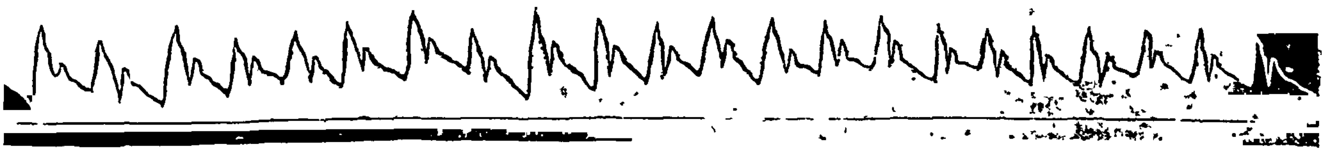


4. Immediately after bath.

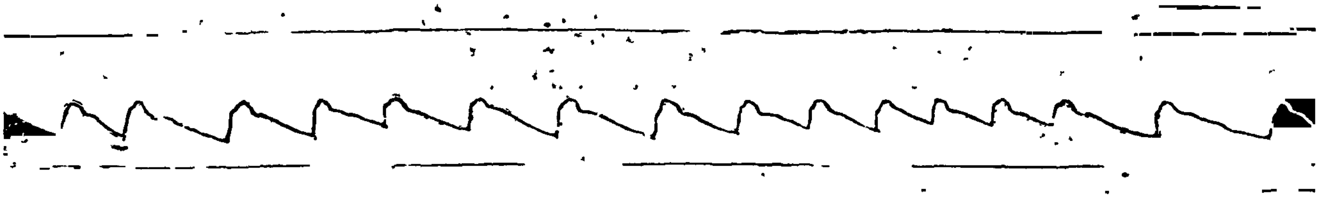
CHART No. 7—NOTE. By some mistake strengths Nos. 1, 2 and 3 were given in succession. Patient had received three baths before above tracings were taken; the character of the pulse was much improved in spite of this active treatment. Compare these tracings under bath treatment alone with Chart No. 8, tracings taken under tr. digitalis treatment alone.

Chart No. 7 (tracings taken by Dr. Reuling) shows the less striking but more lasting change under the bath treatment.

The second case was that of mitral insufficiency, who was given both the baths and movements. There was no change in the point of maximum impulse or area of cardiac dulness. The patient was discharged in good condition.



1. Before course of digitalis. Tr. digit. min. xv, q. 4 hours ad. ʒ ij.



2. After course of digitalis.

CHART No. 8.—Hauser. Period of one day and eight hours. Compare with Chart No. 7, where the period was three days under bath treatment alone. Slowing of pulse less marked with bath alone than with digitalis, but effects more lasting in former.

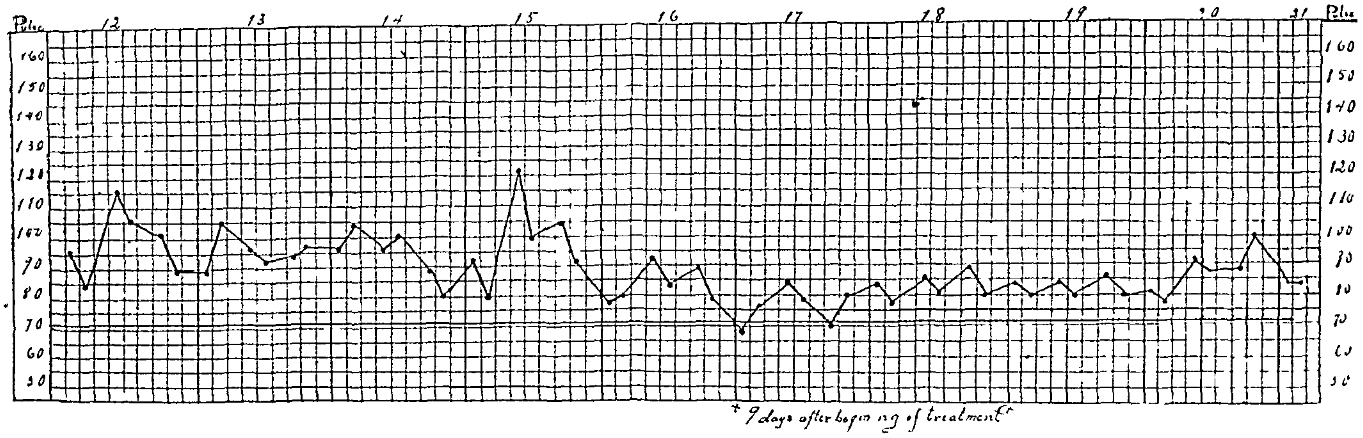


CHART No. 9.—Mrs L. (tachycardia.) Resisted movements, group 1, Nos. 1, 2, 4, 5, were administered daily, patient in recumbent posture. Chart showing steadying of pulse.

Name.	Diagnosis.	Treatment.	Condition During Treatment	Result.
1. A. H (Colored)	Aortic Insufficiency. Mitral Insufficiency (Relative).	Baths only.	Improved.	Death.
2. Mr. C.	Cardiac Dilatation—Arterio sclerosis.	Baths and Exercises	Marked Improvement.	"
3. I. A.	Chronic Nephritis.	Baths only.	No Improvement.	"
4. G. L.	Mitral Stenosis.	Baths and Exercises.	Marked Improvement.	"
5. G. S . . .	Dilatation and Glycosuria.	" " "	No Improvement.	No Improvement.
6. B. C.	" " Chronic Nephritis.	" " "	" "	" "
7. Miss B. . . .	Tachycardia and " "	" " "	Marked Improvement only during treatment.	
8. W. W. (Colored)	Dilatation and Arterio sclerosis.	Baths only.	Marked Improvement.	Well.
9. J H	Mitral Insufficiency.	Baths and Exercises.	" "	"
10. Mrs. L . . .	Tachycardia.	Exercises only.	" "	"

The third case was one of tachycardia. The influence upon the pulse is seen in Chart No. 9. Of these three cases of continued improvement it will be noted that very little change took place in the point of maximum impulse, whereas in those cases which showed rapid improvement at first and which afterward terminated fatally, the change in apex was very striking. As far as our ten cases go the results are in favor of the following three points:

1. Extensive nephritis is a serious obstacle to good results from the baths and exercises, though if not too grave may be controlled by the treatment.

2. Extensive change in the position of the apex beat and cardiac outline do not necessarily indicate permanent good results.

3. Arterio-sclerosis may not wholly contraindicate the treatment.

In regard to the drugs employed, it may be mentioned that in the cases of nephritis, diluents were freely given. Infusion of digitalis was employed in dram doses every four hours and occasionally the tincture of digitalis was used. Potassium iodid was administered, although sodium iodid is considered preferable. Strychnia, morphia, tr. strophan., nitroglycerin, were also used in some of the cases.

The diet laid down in our rules, while not strictly adhered to, was in the main followed out. While we have found no consistent change in the point of maximum impulse or in the cardiac outline we have found in every case a slowing and strengthening of the pulse and a diminished tension. We regret that owing to the inability to procure a suitable arteriometer that the caliber of the radial was not properly recorded. It is our hope to pursue systematically the effect of the baths and exercises upon the kidneys. There seems to be here an important field for the treatment.

Naturally as yet our experience is very limited and this report is made simply to indicate the mode in which the measures are being tested at the Johns Hopkins Hospital.

DISCUSSION.

Dr. Wm. Osler of Baltimore—The introduction of the Schott method into this country is due, I think, to Dr. Babcock of Chicago, who demonstrated that it may be efficiently carried out in hospital practice and in private work. I have had cases treated at Nauheim with rather extraordinary results, and I have long known of the great enthusiasm displayed by Theodore Schott in his advocacy of this treatment. I think it will be, in a certain group of cases, a very positive advantage. The method of carrying it out is a little irksome and troublesome, but in any well-managed hospital, and indeed in private practice, it is perfectly feasible.

Dr. J. F. Jenkins of Michigan—I would ask Dr. Osler in what class of cases this treatment is indicated.

Dr. Osler—It is more particularly indicated in limiting the effect of cardiac dilatation without advanced nephritis and without much sclerosis of the arteries. Valvular disease itself is not a contra indication, and I think the most suitable group of cases are those of dilatation of the heart without much degeneration of the muscular substance, more particularly cases occurring in comparatively youthful subjects, or in men between 40 and 45 years of age who have persistently eaten much and taken too much beer.

Dr. Charles Stockton of Buffalo—I would call attention to the fact that by the Schott brothers great stress is placed on the manner of conducting these movements so that the patient may not be overtaxed and more harm than good be done. A second point to which I would call attention is the carbonic acid in the artificial bath. I feel satisfied that the mixture recommended by Thorn is not of much use, for the gas escapes as rapidly as it is produced, and has little effect on the skin. To overcome this difficulty, I have resorted to the use of an ordinary soda-water tank, and by conducting the escaping fluid under the water in the tub have been able to produce marked stimulation of the skin, and I feel convinced that this is a valuable addition to the saline constituents.

A third point relates to the mode of action of the bath upon the skin. I listened with much interest to what the reader said, and his explanation of this apparent stimulation of the capillary circulation, but I feel that there is still something [illegible]. The mere dilatation of the capillaries by heat, or by [illegible], or by any other means, does not necessarily increase heart [illegible]tion. Now, it seems to me there must be someting else in the action of this bath which adds certain force to the circulation. My friend Dr. Woods Hutchinson has an idea that there is communicated to the arteries a real propulsive force through the rhythmic contraction of the arterioles as a result of this stimulation.

Dr. Foster of Pennsylvania—I should like to know whether the author tried the ordinary bath in the treatment of any of these cases. He has related ten cases treated by the Schott method, and I should like to know whether he would have us infer that he regards that method with favor. Certainly the report of the cases would seem to be against it.

Dr. Herrick of Cleveland, Ohio—It seems to me that this subject has been treated within somewhat narrow lines; that an organ is being considered independently of the organism, and stress is placed on the importance of special treatment by special means, without consideration of the many circumstances leading up to the condition. We understand that the heart is subject to diseases in itself, and it is subject to disturbances of function by reflex relation to other organs. I am not quite satisfied with the etiology as stated. The treatment, it seems to me, has no reference to the etiology of the disease. Therefore I regard it with suspicion. The idea of the application of baths for an organic or functional disease involving the heart is somewhat beyond my comprehension. There is an antecedent condition which we should look after that involves the nutrition of that organ. That the reflex influence on the heart of the propulsive force of the arteries, etc., should produce any practical results I am not able to see. I am not familiar with this Schott treatment, so called. I wish to see the *rationale* between the therapeutics used and the disease. It seems to me that any treatment adopted should have a relationship to the etiology of the organic condition. I go back in my investigation of this subject to the question of nutrition—the nutrition of the heart. The heart may be disturbed by a variety of influences, mental or nervous or nutritional. I would say go back and look into the digestive organs. All nutrition depends upon certain factors, and all diseases involve disturbances of nutrition. We know that the heart is in more intimate sympathy with the digestive organs than with any others. Therefore, the first attention, and constant attention, should be given the digestive organs. In this it seems to me that we have a practical, a rational line of treatment, somewhat more definite than that of baths.

Dr. Smith of New York—The paper is pointed and practical. It is practical, inasmuch as the reader took into consideration the very facts referred to by the last speaker, those bearing on the relations of the general system to the disease of the heart. In the consideration of almost any disease we can not leave out the intimate relation existing between the different portions of the organism, and the sooner we fix in our minds the fact that it is the individual and not the disease that we have to treat, the better will be our results. There is a condition of sclerosis in which the general arterial system is involved in the first instance and a secondary effect is shown in the condition of the heart. I am very glad the first speaker (Dr. Osler) alluded to the effect of beer, or any kind of alcohol, but especially beer, in producing certain organic changes in the heart, what the Germans call the beer-heart. That is, it seems to have a transforming influence upon the capillary circulation, and that reacts upon the heart. Now, at the New York School of Clinical Medicine, I have used for the last six months the Ling system of physical exercise in the treatment of heart disease, and there is no question in my mind that that system when thoroughly carried out in appropriate cases has a marked influence in reducing the area of cardiac dulness. In the discussion which took place at the British Medical Association, by Thorn and Granger Stewart, due stress was laid upon the why and wherefore of the Schott exercises and due regard was given to the fact that it produced dilatation of the arteries throughout the muscular system, and consequently the propulsive power of the heart while not increased as to quantity was improved as to quality. That is, while the propulsive power of the heart was not increased in pulsation because it was slow, the heart muscle was toned up and intensified.

Dr. Jones of Buffalo—Schott has observed that the cardiac area has diminished and the pulse increased in volume from exercise alone and in a number of cases under baths. As I understand it, suitable cases after being treated there, are sent to the mountains, where the Örtel treatment may be carried out and after time come back to Nauheim and are treated again. The compensation does not last longer, perhaps, than it would under due rest in bed and digitalis.

Dr. W. B. Camac—In reading up the reports on this treatment it is very difficult to approach it without a biased mind. We decided to try the treatment and see absolutely what it would do, and the report of the ten cases have been presented from an unbiased standpoint. I think we have not been misled one way or another at Johns Hopkins, and in reply to the remark about being for or against the treatment, I may say that I believe we are neither one way or the other. We are still observing. I did not mean to slight the importance of the exercises, but they have been considered so frequently and in such detail that it did not seem necessary to weary you with the drill. This we have entrusted to the nurses. The importance of the very lightest resistance is made a great deal of, and one who is familiar with the treatment soon realizes how important it is to avoid all undue resistance which might lead to fatiguing of the patient. We have, therefore, trained nurses who administer the treatment under the supervision of a physician. The exercises are given as much attention to as the baths. We have found that carbonic acid gas can be satisfactorily formed according to the suggestion of Thorn, but not waiting five minutes, for in five minutes it has largely lost its power. Put the patient in almost immediately after the two ingredients are mixed, and the effect is accomplished in four or five minutes. If it is necessary to continue it, put in only one half of the mixture at first and the other half at the end of five minutes. The temperature of the bath is 82, 85 to 100 degrees F. The comparative effect of the ordinary hot bath and the Schott bath we have shown in the table. The baths were given in those instances alternately, the hot and the Schott. In most cases the amount of urine is greater after the Schott bath than after the hot bath. We must be governed by what we find. There is absolutely nothing to be learned from mere theorizing, and I trust the facts presented in the paper and the diagrams will be the guide, not theory. They show that the salt bath has a greater influence on the kidney than the simple hot bath.

As to the etiology and the diet, we have laid down carefully studied rules which I think it is unnecessary to weary you with. The character of the diet, how much to give each day and the amount of wine or stimulants is carefully noted.

The Örtel treatment is carried out at Nauheim by sending the patients to walk up the Johannnesberg. As to the etiology, it is impossible to go into that, because the amount of changes which may follow any influence upon the heart is legion. To attempt to associate the lesion with the treatment is impossible. We can only say that the heart is dilated, its propulsive power is diminished. There is, therefore, a back pressure; there is cyanosis, a congestion. If in any way we can dilate the peripheral vessels and allow more room for that blood which is pressed back into the system, we are perhaps going to relieve the heart of its overwork and improve its nutrition, so that the dilatation may end in hypertrophy and compensation.

CLINICAL AND PATHOLOGIC FEATURES OF TWO CASES OF TYPHOID MENINGITIS.

Read in abstract before the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

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It will scarcely be necessary to point out, to an audience composed of clinicians and pathologists of large experience, the comparative rarity with which typhoid meningitis is encountered. In fact, the presence of an actual meningitis was so rarely demonstrated in typhoid fever that much doubt existed, only a few years ago, as to the occurrence of this lesion purely typhoidal in its origin. Since 1890, however, several cases of typhoid meningitis have been studied by careful bacteriologic and pathologic methods, so that there can no longer be a reasonable doubt concerning the identity of this complication of typhoid fever.

In a comparatively small number of autopsies on typhoid fever cases, it has fallen to my lot to meet with three instances in which a cerebral meningitis could be demonstrated, and in two of these cases a thorough bacteriologic analysis revealed only the bacillus of typhoid fever as the infecting micro-organism. These two cases were, therefore, looked upon as examples of true typhoid meningitis, and it is to a report on them that your attention is invited. The third case, in which a mixed streptococcus and typhoid bacillus infection was found, has just been reported.[1]

The source of the clinical data for these cases was the records of the Cleveland City Hospital.

Case 1.—Typhoid fever of four weeks duration. Marked delirium in last week preceding death. Autopsy shows usual typhoid lesions of fourth week with acute hemorrhagic internal cerebral pachymeningitis and exudative leptomeningitis. Typhoid bacilli isolated from spleen, mesenteric glands and from meninges.

J. K., Irish, laborer, 25 years old, single, admitted to the service of Dr. A. F. Spurney at the Cleveland City Hospital, Jan. 18, 1896. His father and mother are both alive, and brothers and sisters alive and well. Aside from an attack of measles in childhood, patient does not recall any previous acute illness. He had a suppurating bubo in right groin nine years ago; no further venereal history. A month ago he went to work on an Ohio River boat, making a two weeks' trip which involved a great deal of hardship, and induced several attacks of diarrhea. Two weeks ago he went to Pittsburgh, stayed a week, then returned to Cleveland. Six days ago he again had diarrhea, with a feeling of languor and aching in the legs. Diarrhea persisted till his admission to hospital. The temperature on entrance (afternoon) was 103 degrees F., and the chart shows a fairly typical typhoid curve during the life of the patient, though the fever was unusually high (between 104 and 105 degrees F.) until death. The pulse averaged about 120 beats per minute. The urine was acid, contained a small though constant amount of albumin, and gave the diazo reaction. There were no other records to be obtained except that the patient was continually delirious during the last week of his life, and that he several times passed his urine involuntarily during this period. No suspicion of meningitis was entertained. Death occurred Feb. 3, 1896, seventeen days after entering the hospital.

Autopsy.—Fourteen hours after death. The body, which had been kept in a cool place, that of a man five feet, six and one-half inches in length, and weighing about 125 pounds, showed no significant cutaneous markings. The pleural sacs contained no free fluid. Both lungs were moderately adherent posteriorly. The pericardium contained 90 c.c. of clear fluid, but no other evidences of inflammation. The heart was of normal size and in the normal location. There was no excess of fluid in the abdomen, and the abdominal organs were normally located.

Both lungs were of ordinary volume, with edematous upper lobes, and hypostatic congestion of the lower lobes. The pulmonary pleura, corresponding to the areas of adhesion, was thicker and more opaque than the remainder of this membrane. The bronchial glands were softened and swollen, while the bronchi showed no gross lesion.

The heart was flabby, the surface smooth, the myocardium pale and more than ordinarily friable. The endocardium was intact.

The spleen weighed 220 grams, was swollen, with tense smooth capsule. The pulp was soft and dark red. The kidneys were of normal size. The capsule stripped easily. The cortex was pale, and, relatively, somewhat increased in thickness. The surface of the liver was smooth, the organ pale, the boundaries of the lobules not well defined, and the substance friable. The gall bladder showed no inflammatory lesions, and the ducts were intact. The pancreas contained small deeply injected areas in its substance.

Intestines.—The ileum of the small intestine was almost exclusively the seat of characteristic lesions of its lymph follicles. The solitary glands were generally swollen, and many of them in various stages of ulceration or of healing. The swollen follicles were especially numerous near the cecum. In the upper portion of the ileum the ulcers of Peyer's patches were generally rough, their floors being covered with necrotic debris or with granulation tissue; while in the cecal portion the ulcers were sharply punched out, with clean floors and overhanging edges. Several exceptionally large ulcers appeared in the ileum, close to its cecal junction. No ulcers were found in the appendix. Numerous swollen follicles and a few typical typhoid ulcers averaging half a centimeter in diameter were found in the colon about the cecal region. The mesenteric and retroperitoneal lymph glands were uniformly swollen and softened.

Brain.—The skull cap and the external surface of the dura presented no unusual features. As the dura was carefully stripped back it was found to adhere to the pia unnaturally over the right side of the cerebrum, by means of soft, gelatinous, yellowish flakes, and delicate fibers. This adhesion began about the region of the right Rolandic fissure and increased as the removal of the dura advanced. The gelatinous flakes give place to clots of blood which increased in amount until, over the anterior portion of the occipital lobe, a thick, quite dense mass of clotted blood was found producing a depression, roughly circular in outline, about 4 cm. in diameter, and 1 cm. below the surrounding level at its deepest point. This depression persisted throughout the subsequent handling and hardening of the encephalon. The mass of blood, or hematoma, measured about 120 c.c. in volume. The left side of the large brain was quite free from adhesions or hemorrhage, and no other evidences of this kind were found, except about the base of the brain where a few delicate fibers, not ordinarily encountered, were found between the hard and soft meninges. There was a general edema of the pia mater, and over the right cerebrum this subpial fluid was distinctly cloudy. Under the mass of blood the contiguous pia inclosed soft yellowish flakes, and here the cerebral surface was distinctly reddened. The dural sinuses at the base of the skull contained soft, red, non-adherent blood clots. No excess of fluid, and no inflammatory changes were apparent in the ventricular cavities. Aside from the area depressed by the hematoma, the brain substance presented no gross lesions. The spinal cord was not examined.

Histologic examination.—Portions of the various tissues, aside from the brain, were fixed in Carnoy's chloroform acetic alcohol mixture, dehydrated, cleared in cedar-wood oil, and imbedded in paraffin. The sections were affixed to the slide by the water-albumin method, and stained with various dyes. The cerebellum, medulla and pons were removed by cutting across the crura, and the cerebral hemispheres were separated by a longitudinal median incision. These portions of the encephalon were then hardened in bulk, in a mixture of five parts of 40 per cent. formaldehyde and one hundred parts of water. For histologic study, pieces were subsequently cut from the right cerebral hemisphere, dehydrated, and then handled like the other tissue. In this way the preliminary hardening in bulk fixed the soft meninges in their natural relations. As a general stain, the writer's formalin-safranin was used. Special stains were also made with formalin-methylen blue, carbolic fuchsin, and gentian violet after Gram's process.

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[1] The Cleveland Medical Gazette, May, 1897.

Lungs.—The pleura was thick and fibrous and there was an increase of inter-lobular connective tissue beneath the thickened pleura, with dilatation of the air vesicles. Deeper down in the lung the alveoli showed only a pronounced congestion of the vessels in their walls. No marked histologic alteration could be detected in the heart, bronchial glands, or spleen.

Liver.—As a whole, the liver substance did not stain as well as usual. There was a slight inflammatory reaction in the connective tissue framework about the groups of lobules. An occasional hepatic cell contained fat droplets, but there was no wide-spread fatty change. Liver sections, colored with safranin, showed an abundance of small brownish pigment granules situated in the protoplasm of the liver cells. When subjected to Perl's hemosiderin test this pigment gave the characteristic Berlin-blue reaction and a wide spread hemosiderin pigmentary deposit appeared in the hepatic parenchyma. Numerous small foci of necrosis (the so-called "typhoid lymphomata") were scattered throughout the liver sections. These foci were especially well seen in sections double-stained with formalin-safranin and formalin-methylen blue.

The kidneys show a moderate degree of parenchymatous degeneration.

Brain.—A wedge shaped piece was cut from the hardened right cerebral hemisphere including a portion of the supra-marginal and anterior parietal gyri with intervening sulcus along with the covering of pia mater. This portion of the cerebrum was anterior to the region depressed by the subdural blood clot. A series of sections from this tissue showed the presence of an undoubted fibrino cellular exudate upon and within the pia. Several quite large masses of coarse fibrin threads lay either upon or beneath the soft meninges. Along with these masses of fibrin were a considerable number of newly formed cells. These cells were mostly gathered into groups of considerable size, and were either large cubical epithelial-like bodies with single vesicular nuclei, or small round cells with single dense nuclei. Small round cells with fragmenting nuclei were only occasionally found in this exudate. These groups of cells were usually situated between the pia and the cortex, especially about a sulcus into which they could be traced along with the extension of the pia. The proliferated cells were also disposed upon the dural side of the soft meninges, though not so abundant as beneath. The abundance of proliferated endothelial cells, with round cells of connective tissue origin, and the scarcity of leucocytes with polymorphous nuclei, gives the meningeal exudate a catarrhal instead of a purulent character, thus corresponding with the gross lesions. No evident alterations were demonstrable in the cerebral cortex, and the blood vessels showed no evidences of endo- or peri-vascular inflammation.

Bacteriology.—During the progress of the autopsy culture media were inoculated, with rigid precaution, from the spleen, mesenteric glands, bronchial glands, and from beneath the pia mater of the right cerebrum in the region of the subdural hemorrhage. From these sources, including the brain, absolutely unmixed cultures of a motile bacillus were obtained. This bacillus gave all the reactions of the perfect typhoid type when subjected to the differential tests now employed for the identification of the bacillus of typhoid fever. The only tests now recognized as of value, that were omitted, were those proposed by Elsner and by Widal, and this omission was occasioned by the fact that the cultures from this case died before the details of these methods had been made available.

A further confirmation of the results of the culture experiments in the case of the brain was obtained in the study of the sections stained with formalin-safranin, methylen blue, carbolic fuchsin and after Gram's method for bacilli with the morphologic and tinctorial properties of *Bacillus typhosus* were found in the fibrinous and cellular exudate and in the lymph spaces of the inflamed soft meninges. No other organisms could be found here aside from the bacilli, which were usually gathered in small groups.

Case 2.—*Typhoid fever with profound coma and delirium. Death in fourth week. Usual typhoid lesions in intestines, spleen and mesenteric glands, with broncho-pneumonia. Extensive purulent cerebral leptomeningitis, ependymitis and dilatation of lateral ventricles. Typhoid bacilli in vast numbers, the only organisms found in meninges.*

The patient, M. S., native born, 46 years old, laborer, married, was brought to the Cleveland City Hospital Jan. 28, 1896, in an unconscious condition and assigned to the service of Dr. A. F. Spurney. The only record of previous history that could be secured was that the patient became ill two weeks before entering the hospital. Temperature on admission (afternoon) was 103.2 degrees F. The patient was alternately delirious and comatose and did not regain consciousness during stay in hospital. Other nervous symptoms were not recorded. The temperature ranged from 102.2 to 103.8 degrees for the first seven days, with evening exacerbation. On the eighth day the fever rose sharply to 104.6 degrees and remained above 104 degrees for the next two days and then fell by daily stages till, on the thirteenth day after admission, it reached 100 degrees and death occurred. The urine was acid, of an average specific gravity of 1018, contained a small amount of albumin, and gave the diazo reaction.

Autopsy.—The autopsy was performed February 10, eighteen hours after death, and the corpse had been kept in a cool place. The body was wasted, 197 cm. long and approximately fifty-five kilos in weight. The skin was generally pallid except for a moderate postmortem lividity of the dependent parts. The mucous membranes were very pale. The abdomen was moderately and symmetrically distended. No free fluid existed in the peritoneal cavity, which was negative in other respects. The left lung was moderately adherent, especially about the posterior aspect of the upper lobe, and 120 c.c. of clear serous fluid was present in this pleural sac. A like amount of similar fluid existed in the right pleural cavity, though the lung on this side was not adherent. Both lungs were of good volume. The pericardial sac contained 30 c.c of clear yellow fluid. The heart weighed 260 grams and, aside from an increased pallor and friability of its myocardium, presented no changes. The aorta showed a few desseminated plaques of recent sclerosis about its origin. The right lung, weighing 650 grams, was generally congested and edematous. Small, dense, friable, non crepitant, deeply injected areas were scattered through the lower lobe. The left lung weighed 550 grams and, aside from a moderate thickening and opacity of the visceral pleura, corresponding to the region of adhesion, was only congested and edematous. The bronchi were filled with frothy, muco-purulent, thick fluid, and their mucous lining roughened and deeply injected. The bronchial glands were black, swollen and soft. The larynx showed no ulceration.

The liver (1820 grams) had a smooth surface and was generally of a lighter hue than normal. The substance tore when the capsule was stripped and was less firm than usual. On section the surface was quite pale and close inspection showed the pallor to be especially marked at the periphery of the lobules, while the central portions were more deeply colored. The portal and hepatic veins were not unusually injected. The gall bladder contained a small amount of yellow bile. No distinct evidences of inflammation could be detected in its lining and its ducts were intact.

The spleen was swollen to almost twice the ordinary size and weighed 300 grams. The pulp was dark red and very soft.

The kidneys together weighed 250 grams. The cortex was pale, its vascular markings unduly prominent, and it relatively somewhat increased. The urinary bladder was about half full of urine. The pancreas contained distinct ecchymotic areas, which were not, however, distinctly softer than the general substance. The stomach was free from gross lesions.

Intestines.—The typhoidal intestinal changes were quite closely confined to the last meter of the ileum. Here swollen solitary glands, punctate ulcers of the solitary follicles and large oval ulcers of Peyer's patches were abundant. A few of the ulcers had clean bases but in most of them the floor was rough and contained either sloughing or granulation tissues. An especially large, round, ragged ulcer was located in the ileum near the cecal valve. No ulceration was evident in the appendix and this held true for the colon, although a few solitary follicles in the cecum were swollen. The mesenteric and retroperitoneal glands were much swollen, very soft and dark hued.

The brain weighed 1420 grams including exudate. The skull-cap and exterior of the dura were not visibly altered. The dura stripped readily over the dorsum of the cerebrum. At the base of the brain a few recent subdural adhesions existed. There was no marked excess of subdural fluid. On its removal the brain looked dull and lusterless, with certain areas more

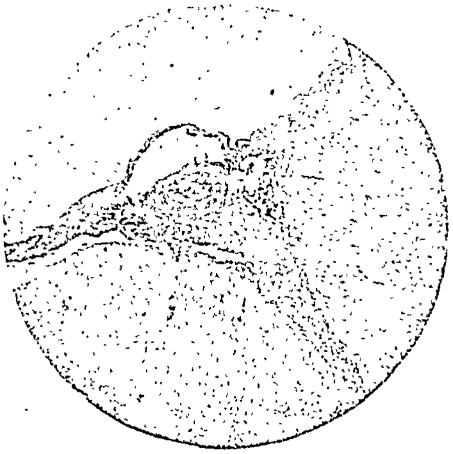


FIG. 1.—Typhoid leptomeningitis. Case 2. Portions of two cerebral gyri with intervening sulcus, and meningeal covering. The meningeal membrane is filled with inflammatory exudate. A small branch of the middle cerebral artery is seen in cross section, with its endarterritis.

Photographed with Leitz obj. 2, oc. 1.

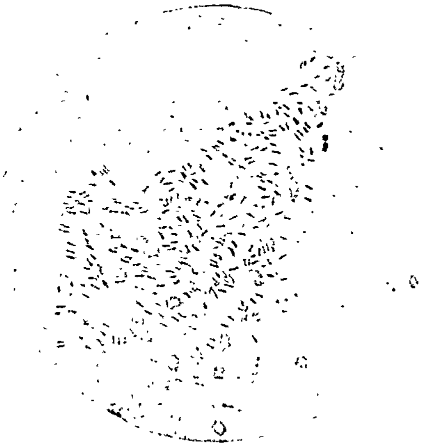


FIG. 2.—A portion of the arachnoid membrane from the same section as Fig. 1, showing the numerous typhoid bacilli.

Drawn from a photograph with Leitz obj. one twelfth, oc. 4.

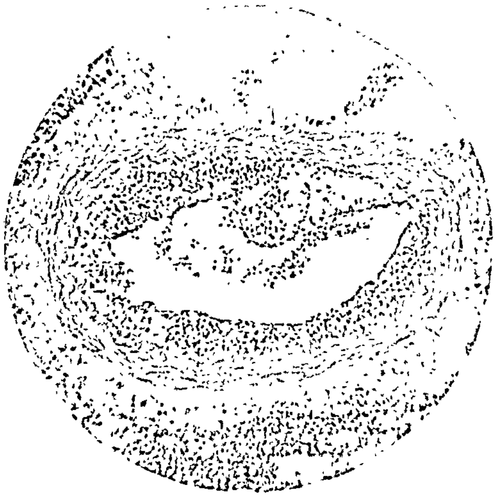


FIG. 3.—From same series of sections as Fig. 1. One of the branches of the middle cerebral artery showing the acute endoarteritis. Note the inner bounding membrane (endothelium), and the numerous small cells between it and the intima. Some of the small cells are also seen within the endothelial lining.

Photographed with Leitz obj. 7, oc. 4.

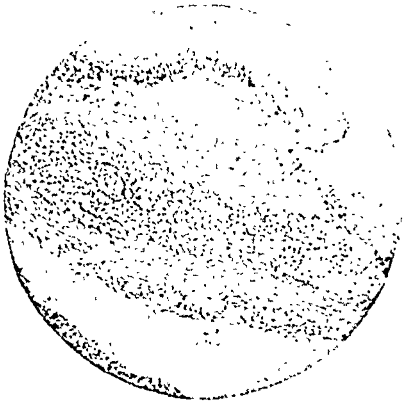


FIG. 4.—From another series of sections of the cerebrum in case 2. A branch of the middle cerebral artery showing the complete obliteration of the lumen by the endarteritis.

Same power as Fig. 3.

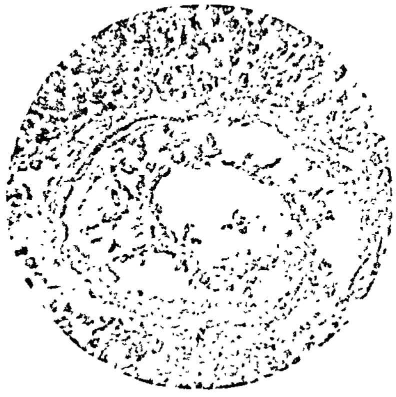


Fig. 5.—Same section as Fig. 1. A minute arteriole of the middle cerebral artery showing the endarteritis. The endothelium is raised well into the lumen of the vessel. There is a moderate sub endothelial cellular proliferation, and a few cells lie within the lumen.

Leitz obj. one-twelfth, oc. 4.

opaque than others. The venous channels were turgid with dark red blood. Along the lateral aspects of both cerebral hemispheres broad lines of yellowish material accompanied the vessels of the pia mater. This appearance was especially prominent along the Sylvian and Rolandic fissures. At the base of the encephalon a milk-white, comparatively thin, turbid fluid filled the larger spaces left as the leptomeninx stretched across one of the larger clefts, particularly in the fissure dividing the two cerebellar lobes. On removing the cerebellum, pons and medulla, by cutting through the crura, no excess of fluid escaped, and, except for a slight injection of its lining, the fourth ventricle showed no change. The cerebral hemispheres were separated by a longitudinal median section and as the third ventricle was incised, a thin, white, turbid fluid escaped. This fluid continued to flow from both lateral ventricles, as they were exposed by the incision, until a quantity measuring 40 c.c. in volume had been obtained. The velum interpositum and choroid plexuses were deeply reddened and the ependyma was also reddened, with numerous hemorrhagic ecchymoses. The cerebral cortex was rather soft, but it was impossible to decide upon the existence of an actual inflammation of its substance. The meningeal exudate was present about the cervical spinal cord, though no further examination of this organ was made.

Bacteriology.—The turbid fluid from the meninges and from the ventricles was examined in fresh preparations and found to contain a few red blood cells, abundant pus cells, a few desquamated epithelial cells, protoplasmic and myelin debris, along with hosts of plump bacilli, some of which were actively motile, while the majority were engaged in an exaggerated Brownian motion. Stained smears from this fluid showed the same cellular elements, along with the bacilli. No other micro organism was found in these preparations.

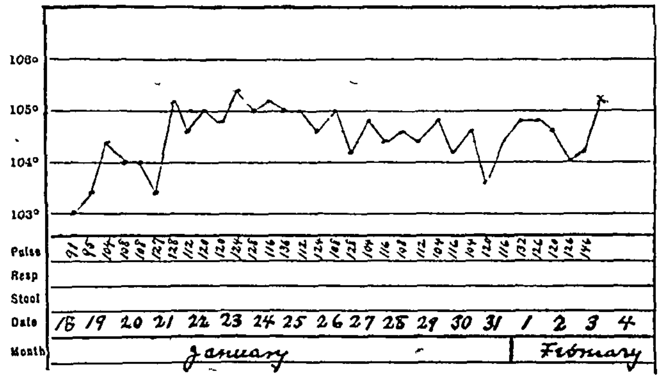
Agar dilution cultures, by the method of Banti Grosglick, were prepared from various sources with great care. From the spleen, mesenteric glands, bronchial glands, and from beneath the pia mater, perfectly pure cultures of a bacillus were secured. This bacillus was exhaustively examined by the differential tests proposed for identifying *Bacillus typhosus* and found to react typically in all instances. The culture from the leptomeninx is still in my possession and has been used as a stock culture for making the Widal serum test for typhoid fever, since it gives a rapid and complete agglutination reaction with typhoid blood. It has also been grown beside the colon bacillus, on Elsner's medium, on several occasions, and here found to comport itself typically. From one of the consolidated areas in the right lung the typhoid bacillus and *Staphylococcus aureus* were isolated. No growth developed from the heart's blood. The colon bacillus was obtained from the urine in the bladder.

Sections from the brain, stained with formalin safranin, methylen blue and carbolic fuchsin, exhibit countless myriads of bacilli in the soft meninges and in the meningeal exudate, similar in morphology to those obtained in the cultures. In sections stained by gentian violet, after Gram's process, the bacilli discharged all traces of color. The bacilli were crowded in dense lines in the lymph spaces of the meningeal connective tissue, or scattered thickly among the cells comprising the exudate.

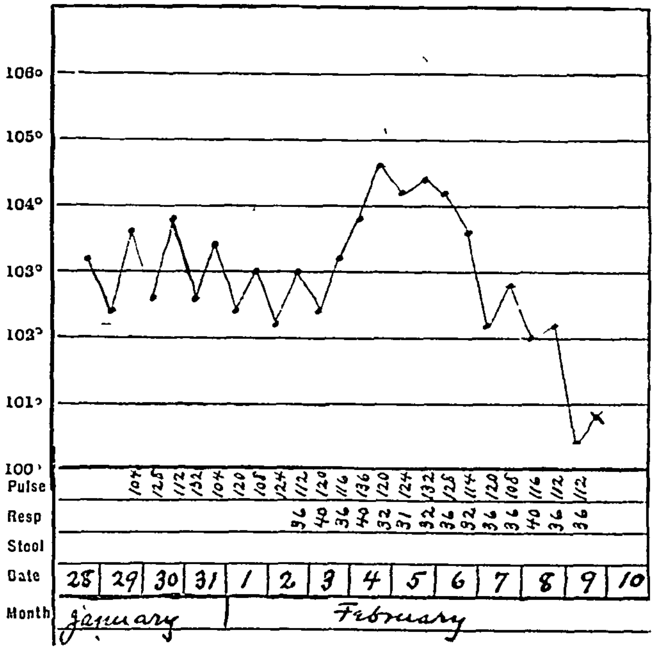
In the exudate filling the pulmonary air cells, hosts of bacilli, corresponding precisely with those in the meninges, were scattered about, with here and there an occasional large group of micrococci.

Histologic Examination.—The main interest from the histologic standpoint naturally centers in the study of the brain lesions in this case. Sections from three portions of the encephalon, including the leptomeninx, have been examined, viz.: From the cerebrum anterior to the Rolandic fissure (including a portion of the ascending and inferior frontal gyri with the inferior precentral sulcus); from the posterior occipital lobe of the cerebrum; and from the postero-inferior lobe of the cerebellum. The microscopic appearances in the meninges of the anterior cerebral and cerebellar regions were indentical. A layer composed of abundant and closely packed leucocytes with fragmenting nuclei, and of epithelial cells with single nuclei held together, in places, by a delicate fibrinous reticulum, was everywhere present between and upon the layers of the soft meninges. The exudate was especially abundant beneath the pia, and followed the sulcate extension of this membrane to its innermost depth. In the occipital lobe the exudate was very much less abundant, and in its character resembled very closely that found in Case 1. Here the proliferated and desquamated endothelial cells predominated while the pus cells were diminished. Here also the arterial changes now to be described, were absent. The existence of a parenchymatous cerebritis has not been definitely decided by the microscopic examination, since there is reason to suppose that the technique employed in preparing the brain substance for section was not best suited for preserving fine structural alterations.

This brings us to a consideration of another important feature in connection with this case, a feature of such interest that it merits a further and fuller description than can be given here, and I hope to be able to soon give a more detailed account of it. I refer to an exquisite and widespread *acute endarteritis* affecting the smaller arteries of the pia in both the anterior cerebral and the cerebellar regions; in other words, an endarteritis involving at least the branches of the middle cerebral and anterior cerebellar arteries. The process affects both the medium sized and smaller arterial branches, and varies from a partial to a complete obliteration. Serial sections from one of the larger vessels showed the advance from a partial to a complete obliterating endarteritis. In the more minute twigs the change most frequently results in complete obliteration, and the newly-formed tissue fills the lumen of the vessel. The study thus far made of this condition seems to point to the conclusion that the endothelium of the intima is raised from its bed and forced into the lumen of the vessel by a subendothelial exudate; at least a distinct membrane with fusiform nuclei can be found in the vessels in which the obliteration is not complete, bounding the new cells internally; and where the occlusion is complete a central core of cells with laterally compressed nuclei seems to be the same membrane forced into a compact mass. Two distinct kinds of small cells, both poor in protoplasm, are to be found in the endoarterial exudate, one with nuclei composed of compact deeply staining chromatin and engaged in one or another of the stages of indirect fragmentation; while the others, comparatively less numerous, are slightly larger and possess single nuclei with the chromatin more diffused. These small cells do not differ in structure from the *pus cells of the general extravascular meningeal exudate*, and are united by delicate protoplasmic fibers which seem to bind the cells together by a delicate reticulum, though they are often



Case 1. Typhoid meningitis.



Case 2. Typhoid meningitis.

separated some distance from each other. These cells are generally located between the membrane looked upon as the displaced endothelium, and the intima, though they also occur within the bounding membrane. This colony of new cells does not extend beyond the elastic layer of the intima, which, together with the muscularis, seems to be absolutely intact. A peculiar feature of this intravascular alteration was the absence of the bacilli which were so abundant elsewhere in the meninges. The most careful search has failed to show bacilli within the larger arterial branches. An occasional bacillus, lying in a small arterial branch which was imbedded in a mass of pus, was regarded as accidencally transplanted during the technical manipulation. The bacilli are abundant about the arteries, even to the extent of invading the perivascular lymph space, but they seem to be effectually barred by the muscular media. Very few red blood corpuscles are present in the affected arteries, while the corresponding venous channels are choked with blood elements.

The softness of the cerebral cortex noted in the fresh gross specimen was doubtless closely connected with this arterial disease.

The liver showed a wide-spread fatty infiltration and a large amount of intracellular pigmentary deposit which gave the hemosiderin reaction. No focal necrosis was to be found in the liver. Hemosiderin was also present in the spleen and bronchial glands, but entirely absent from the kidneys.

The consolidated areas from the right lung exhibit a pronounced exudate composed of leucocytes and epithelial cells lying in the pulmonary alveoli.

In viewing these two cases from the clinical standpoint the insignificance of the symptoms pointing to the meningeal disease is the most striking feature, and corresponds to the majority of the cases of typhoid meningitis recorded. To bring out this point and to illustrate certain features in the pathology of this complication of typhoid fever, the following summary of the literature is presented.

The Index Catalog of the Surgeon-General's Library contains but five references to meningitis occurring in the course of typhoid fever, in the period from 1855 to 1887, and as no trustworthy bacteriologic examinations were made in these cases they can not be looked upon as typhoid meningitis in the strict sense.

In the course of a study of meningitis, Neumann and Schaeffer[1] (1887) found an extensive purulent leptomeningitis in a woman brought to the hospital unconscious and who died in a few hours without furnishing any history. No lesions of typhoid fever were found, but pure cultures of a bacillus were obtained from the meninges and these, the authors were led to believe, were of *Bacillus typhosus*, from the general characters and from the positive results of the potato and fermentation differential tests. A very similar case was reported soon after by Adenot,[2] in which a woman presented profound symptoms of cerebral infection and died in eight days. Absolutely no typhoidal lesions were present in the intestines, spleen and mesenteric glands, but from the sero-purulent exudate in the soft meninges a bacillus resembling the typhoid organism was obtained. The only differential test here applied was the growth on potato, and we now know that this is not sufficient to identify the bacillus of typhoid fever. The case recorded by Balp[3] also belongs in the same category with those of the authors just noted. He found a diffuse purulent meningitis in a patient dying five days after a fracture of the skull, and in the exudate a bacillus resembling the Eberth organism was found, together with a species of diplococcus. The phenol and indol tests are all that Balp mentions having used for differentiation.

A case of meningitis occurring in the course of typhoid fever was described by Kamen,[4] in 1890, in a soldier who entered the hospital after having been ill for five days. A severe headache set in three days later, followed by delirium and unconsciousness, and death occurred eight days after admission to the hospital. Aside from acute splenic tumor and a single typhoid ulcer near the cecal junction of the ileum, the postmortem examination showed an extensive purulent leptomeningitis. The cultures obtained from the spleen, mesenteric glands and meninges were identical, though only the potato test is mentioned as having been employed for identification. The following year Fernet[5] reported the case of a woman who developed headache, delirium, strabismus, exophthalmus, retention of urine and irregularity of the pupils in the course of a typhoid fever. At autopsy the characteristic changes of typhoid were found in the abdominal cavity, and a diffuse serous meningitis was also present. It is claimed that typhoid bacilli were isolated from the meningeal fluid, though no mention is made of special tests. Silva[6] likewise observed at autopsy in a female epileptic, 10 years of age, a serohemorrhagic leptomeningitis with a lobar pneumonia and the ordinary evidences of typhoid fever. Typhoid bacilli were isolated from the meninges and carefully identified. Still another case was reported by Honl,[7] who found a diffuse purulent leptomeningitis in a 21 year old woman who died in the course of typhoid fever. An exhaustive differential examination showed the only bacterial species obtained from the meningeal exudate to be *Bacillus typhosus*.

Cases essentially similar to those just noted have been reported since 1892 by Vincent,[8] Hintze,[9] Mensi and Carbone,[10] Stühlen,[11] Tictine,[12] Kühnau[13] and a second one by Kamen.[14]

Tictine reported two cases which came under his observation and he also produced a purulent meningitis in animals by means of subdural inoculations with typhoid cultures. The second one of his cases differs from all the others in that the patient was perfectly conscious during the last week of his life.

Profound unconsciousness, delirium, coma and often retention of urine are the symptoms most often described in these cases. Other symptoms which might suggest an actual meningitis are usually insignificant and can scarcely be looked upon as of diagnostic import To this rule, however, the case mentioned by Mensi and Carbone is a notable exception. Their patient was a girl 6 years of age who had been ill nine days before entering the hospital. The patient ran the course of a moderate attack of typhoid fever reaching the stage of apyrexia four weeks after coming to the hospital. Four days later a violent chill occurred with intense headache and a temperature of 39.2 degrees C. Delirium, opisthotonus, contractions, amblyopia and dilated non-resposive pupils were successively noted, together with a herpes labialis, paresis of right face and retraction of abdominal wall. Great prostration followed and death occurred four days after the onset of this relapse. The autopsy showed a fibrino-purulent cerebro-spinal meningitis with dilatation of the lateral ventricles, and a bronchitis of the medium and smaller bronchioles. Numerous typical typhoid ulcers in the stage of healing were found in the ileum and colon; the mesenteric glands were swollen and soft and there was softening of the spleen. A thorough bacteriologic examination of the meningeal exudate resulted in finding typhoid bacilli as the sole bacterial inhabitant.

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INTERRUPTIONS IN METABOLISM.

Presented in the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

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In the term metabolism we mean to express the group of phenomena whereby organic beings transform foodstuffs into complex tissue elements, and convert complex substances into simple ones, in the production of energy; in other words the entire process of tissue building, which includes the proper throwing off of unused débris and the elimination of excretory matter, the complete scheme of nutrition, tissue making, production of energy and the elimination of waste matter.

After an individual has secured his growth, if no mistake has been made, we have an animal mechanism which, under proper conditions, should be good for seventy or eighty years of continued work. Any break in the continuity of this mechanism can safely be interpreted as due to an interruption in metabolism. This interruption may be and generally is at first a light one and if taken promptly may be easily corrected. If this be neglected and permitted to continue we will sooner or later probably have a condition irremediable. All of the hopeless organic diseases, such as Bright's disease, diabetes, heart disease, including the various forms of carcinoma have such a beginning.

These breaks in the continuity of the nutritive process—metabolism—no matter how light or severe, result in the development or retention of poisons, begetting the conditions which can best be expressed by the term "gout."

The popular impression regarding gout as being related only to the joints is now known to be wrong.

The manifestations of gout are as manifold as the individuals. In one we may have it assume the form of a so-called dyspepsia, a catarrh of the stomach, a neuralgia, or that even which stimulates neuritis, rheumatic disturbances of the joints, a nerve poisoning with marked symptoms of nervous prostration, asthma, hay fever, etc., all along the line to the extreme limit of apparent organic disease.

Years ago Sydenham said, "gout is the lord of disease and the disease of lords," but it is more, it is the universal disease, including pauper and patrician. We know that 90 per cent. of the so-called rheumatism is gout, surely all of it, save the pronounced acute inflammatory variety suggestive of an infection, and by the way the infection was invited or made possible by the metabolic interruption, by the gouty condition. A very large number of the disturbances of the mucous membrane, such as bronchitis and cystitis at all ages, but particularly in advancing age, as well as skin affection like acne rosacea, the red nose, usually attributed to the excessive use of alcohol, when as a matter of fact the victims of it are often abstemious, and in many cases even ascetics, poorly fed and never cheered by the wine when it is red or any color.

Heredity is an important factor in all those cases. From generation to generation the family habit of "going off at a tangent, as it were," has been developed in the organs connected with metabolism. What are the prime causative factors in those metabolic disturbances? The answer is, errors of diet and checking of elimination.

The dietetic errors may be either too little or too much food, or food of an improper character. Faulty elimination may be due to improper clothing, chilling of the surfaces, neglect of the excretory organs, uncleanliness of the skin, carelessness as regards the proper emptying of the rectum and colon (a cultivation of the constipation habit), a neglect of renal flushing in not drinking a sufficiency of pure water, and bodily inertia. It is our duty to guard our patients against these mistakes in metabolism, by impressing them with the importance of proper hygiene, proper eating and drinking, and above all, with the value of work. True it is that a man can not live healthy nor long unless he earns his living "by the sweat of his face." We must all be "sons of toil," as well as "Sons of Temperance," if we would live a long life and a happy one. Indeed well may we say, "blessed be drudgery."

When these breaks in the continuity of the nutritive functions—the processes of metabolism, do occur they should be promptly corrected, for they invite infections, in that the system is put off its guard (so to speak), and tend toward dangerous organic diseases. Prompt attention to and correction of diet is essential; but in the matter of diet, as well as in every thing else, each individual is a law unto himself.

"What is one man's meat is another man's poison," in more ways than one. Let us in these cases of gout, as in all other diseased conditions treat the individual rather than the disease.

There are numerous cases in which a red meat, a roast beef diet, will produce such a metabolic interruption as to amount to a terrific gouty explosion if long continued. Other cases do better on a meat diet. On general principles sugar and starches should be eliminated from the diet list, but occasionally anemic victims of gout call for cereal food of the coarsest character.

Milk is almost the ideal food for these cases, indeed for all cases with crippled powers of digestion, assimilation and elimination. We should give immediate aid to elimination, through judicious stimulation and regulation of all the excretory organs, while the establishment of proper equilibrium of physical exercise and rest is demanded.

Physiology tells us that tissue building, repair and health depend on the proper glandular activity, and that the poison-resisting property of the human body exists in the blood. It is now well established that the element of the blood which possesses this property is the leucocyte, and that if the leucocytes are of sufficient number and possess their normal vitality and strength, the pathologic or toxic condition will be overcome and health restored.

Nuclein, when formed in the blood, is the result of the action of the leucocyte upon the proteids. When introduced into the organism it acts in two ways.

1. It immediately excites the action of each leucocyte, causing it to proliferate or break into nuclei, producing leucocytosis, and the fundamental axiom of physiology is, the more active the leucocytosis the greater the vital resistance. 2. It furnishes material to the leucocyte which, under a depressed vital condition, it is unable of itself to construct from the proteids, while it so strengthens and increases the number of leucocytes that it overpowers the toxic germs with which it may come in contact. Thus it may be seen that protonuclein, which is a combination of all the nucleins of the body, is the true tissue builder and antitoxic principle of the organism.

Protonuclein is derived from the lymphoid structures of healthy animals without the use of any chemical. By a delicate mechanical process the nuclein is separated without changing the condition in which it exists in the organism.

Reliable information has been given that protonuclein is prepared from the following glands: 100 pineal glands and pituiary bodies of the brain, 100 salivary glands, 100 thyroid glands, 100 pancreatic glands, 100 inner linings of the stomach, 100 Brunner's glands and Lieberkühn's follicles, 100 thymus glands.

These are derived from the pig, with the exception of the brain, which is obtained from the ox. The methods and means to secure glands from healthy animals are carefully supervised by expert observers. All of the inert tissues are separated from the glands, after which they are passed through a disintegrating machine, and quickly dried by forcing warm air through them by a specially prepared machine, so rapidly that no change can possibly take place, for the vapor of benzoin is passed upward through the desiccator, enveloping the cellular elements and preserving them intact. They are then exhausted with ether, to remove any fatty matter, and again thoroughly dried by the same process, and the portion of the gland that is richest in nuclein, which consists of a little over one-third of it, is then separated from the whole mass by special machinery. It should be borne in mind, that the portion of the gland containing the nuclein is very readily converted into a powder, and consequently easily separated from the inert matter by sifting.

Surely animal therapy is physiologic medication, and whether we administer such agents as protonuclein, which is the active principle in regulating metabolism, or antitoxins, which oppose infectious diseases, we are working along the same lines. The former is the most physiologic and the elementary risk is the least involved. When we can administer remedies which have a physiologic basis, and are followed by the most satisfactory clinical results, we are pursuing the scientific course.

The very satisfactory results following the administration of protonuclein in so many seemingly varying diseases are explained when we realize that these diseases, whether stomachic, neuralgic, rheumatic, stoppage of growth, obesity, organic or infectious, are all due to conditions produced by the same cause, "interruptions in metabolism." In brief, protonuclein is the ideal remedy for the reëstablishment of the proper equilibrium of the metabolic functions; and three years constant use of the remedy, followed by almost uniform success justifies a continuance of the agent which is the key-stone in the arch of animal therapy.

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BLOOD-LETTING AS A THERAPEUTIC REMEDY, BASED ON A REPORT OF TWENTY-SIX CASES.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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I desire to present a report of successful issues from the use of venesection as a remedy in the treatment of various cases met with in a continuous practice of over fifty years; not for the purpose of adding anything new to our knowledge of this subject, but to call attention again to this most valuable remedy which modern therapeutists seem inclined to relegate to a past age.

In the year 1844, with my preceptor, I was called to see a woman who had been in a stupor or coma simulating death for six hours, and all efforts of her physicians had failed to revive her. Noticing that the basilic and cephalic veins at the bend of each arm had many scars over them, I suggested that she be bled, as she had evidently been bled many times before for the same purpose. My preceptor Dr. Eyster, immediately opened the basilic vein and set me to rubbing the hand and arm to start the blood to the opening in the vein. After eight or ten minutes a full stream of blood leaped forth and when about two ounces had been withdrawn the woman awoke with a cry which frightened her attendants. The bleeding was stopped, and in ten minutes more the woman was cheerfully talking with the doctors, and told us she had been bled a great many times before by physicians in Baltimore, where she formerly lived, for the same trouble, and that bleeding seemed to be the only effectual remedy for restoring her to consciousness.

In 1845 I heard Prof. Meigs describe in the Jefferson Medical College a case quite similar which had just occurred in his practice, in which, after using all other remedies without avail, bleeding was resorted to with almost immediate relief.

In May, 1846, I located in Ripley, Va., and the day I arrived in the town I was called to my first patient, a man 40 years of age, in delirium tremens, with the most violent convulsions I ever witnessed. By the help of three strong men I was able to control him until I had opened the basilic vein and drawn three pints of blood. The convulsions soon ceased and, after tying the arm, I left my patient in the care of an attendant and went to my hotel. Two hours later I was called by the attendant saying my patient was dead. Hastening to his room I found he had loosened the bandage from his arm and had bled in his sleep until he fainted. I soon tied up the arm and revived him, and took from the bed one-half of a tin washbasin of blood clot. I remained with him until he was again comfortable, and the next morning he resumed his accustomed duties as clerk of the court, saying he had not felt better in years.

Two weeks later I was called to see an attorney, 23 years of age, who had fallen in the street from sunstroke. I found him unconscious and breathing very hard, face flushed and temple veins very prominent.

I immediately took from two to three pints of blood from the cephalic vein, when consciousness returned; I then applied cold water to the head and enjoined rest until evening. He, however, disobeyed my instructions and walked two squares to his office, but without harm, as he was able to attend to his usual business the next day in the court room. I would not dare bleed to this extent now, as I would probably be prosecuted for malpractice.

In June, 1846, I was called to see a lady 32 years of age who had a severe attack of bilious fever. She had had similar attacks the three preceding years and each time was three months in recovering, besides being badly salivated. I promised to have her about within ten days and without salivating her. I found her with high fever and delirious. After bleeding her to the extent of two pints the delirium ceased. I then gave her an emetic of ipecac, and followed this by twenty grains of calomel and ten grains of quinin washed down with a pint of very cold well water. The lady's husband protested and said the calomel would surely salivate his wife and she would die. I assured him that she would not be salivated. I left my patient comfortable that evening, and when I called at eight o'clock the next morning she was sitting up in bed eating toast and tea. There had been profuse sweating during the night and the physic had operated effectually; the pulse was normal and there was no fever. I gave no more medicine but ordered rest and diet. On the following morning the patient was able to sit with the family at the breakfast table, to the great relief of her husband. She was literally well and was not salivated. I am sure the thorough bleeding relieved the congested liver and contributed greatly to the recovery.

I treated a number of similar cases during the next three months with like results. There were eight deaths in the same township that year from this disease, but none of them were bled or treated by me.

In November, 1846, I was called to Ravenswood in consultation with three other physicians to see a boy 13 years of age, with pseudomembranous croup of three days' duration. The boy was cyanosed and rapidly passing into a condition of asphyxia. After learning of the preceding treatment and seeing no good results, I advised bleeding freely as a last resort. My advice was not taken, the other members of the council maintaining that it would do no good and would probably hasten death. After leaving the council and before I had reached the hotel, the boy's father came after me and urged me to return and bleed the boy, as the other doctors had gone home and left his boy to die. I reluctantly returned with the father, had the boy stripped and put in a warm bath, and bled him from the arm in the bath until near fainting; I then took him from the bath and wrapped him in a warm blanket and laid him in bed, where he breathed freely and easily. He went to sleep and slept two hours without coughing or hoarse breathing. When he awoke it was with a hoarse cough and flushed cheeks. I ordered a new bath and opened the same vein again and bled him to fainting. We removed him from the bath and put him in bed as before, and from that hour there was no more hoarse breathing or metallic cough. The boy soon convalesced to perfect health and lived to be a prominent banker and useful citizen. No other medicine was given in this case except mild expectorants. For ten days he spoke only in whispers and coughed up quantities of false membrane and tube-casts.

In the year 1857 my oldest son, 3 years of age, and a nephew of about the same age, took pseudomembranous croup at the same time, and for three days and nights I gave them constant attention and used every means at my command to relieve them, but all medical treatment utterly failed and my nephew died on the third night. My son was so nearly dead that he could not be laid down, and was badly cyanosed and gasping for breath. I determined in spite of my family and friends to bleed him. I bled him in an erect position in the arms of his uncle, taking about two ounces of blood, when he fainted. I then laid him in a horizontal position and revived him, and when he recovered he breathed easily and the cough was gone. The inflammation and fever subsided and the formation of the membrane ceased. This resulted undoubtedly because of the revulsive effect of the blood-letting. The child had a good convalescence, but for eight or ten days could not speak above a whisper and coughed up great quantities of membrane. He is alive and well today, and so far as anyone knows he never experienced any bad effects from the treatment.

In 1850 I was called to see a gentleman 65 years of age who had been sick with the measles for a week, and the measles would not come out. He had taken quantities of teas and toddies, been steamed and otherwise tortured, and was then delirious, with high fever and great blood pressure. There was evident congestion of the brain and lungs. After bleeding him two and one-half pints he fainted, and when he revived he was conscious and asked for a drink. After drinking a pint and one-half of very cold water the fever subsided and he went to sleep. He had not slept more than twenty minutes when the measles came to the surface and in two hours they came out so abundantly that he could not see; he was kept under mild cathartics and diaphoretics and made a good recovery without further treatment.

In 1851 I was called to see a lady 26 years of age who was having a severe attack of puerperal fever with peritonitis of about six hours' duration. I bled her until the tongue blanched, taking about two pounds of blood; gave twenty grains of calomel with opium and ipecac, and ordered turpentin and camphor liniment over bowels. The next morning the patient had slight fever, no pain, but some tenderness over the bowels. This patient recovered entirely in eight or ten days. I had treated two other women having the same difficulty just previous to this case but without bleeding, and lost both cases. I have never lost a patient with this fever that I have bled freely within six hours of the inception of the disease.

In 1852 I was called hastily to see a gentleman who had had a stroke of apoplexy. He was unconscious and struggling in spasms. I bled him a pint and one-half, when he revived and soon recovered without any other treatment. I have bled many for the same trouble soon after the attack, and with uniform good results.

In the fall of 1853 I was called to see a lady 20 years of age in her first labor. I found her in violent and continuous spasms of eclampsia. I gave her chloroform with but slight relief, and tried to deliver the child but found insufficient dilation. I bled her nearly two pints when convulsions ceased, but the patient could not be aroused. No labor pains were apparent, but the cervix relaxed well after the bleeding. I turned and delivered the child still-born and it could not be revived. The patient had no more spasms or fever, but lay for thirty-six hours in a profound stupor. She then aroused in her right mind, but had no recollection or knowledge of what had taken place after the first spasm. She experienced no secondary bad effects and her next confinement was normal.

In 1864 I was called to see Mrs. S——, aged 22, in her first labor. I found her in a violent attack of eclampsia. I immediately bled her to the amount of two pints when the spasm ceased. In a few hours I delivered her of a healthy child. The mother had no more spasms and a good recovery.

In 1847 I was called to see a young lady who was suffering with a severe attack of angina pectoris and found her in great distress and almost asphyxiated, being unable to lie down. I bled her freely in a sitting position until spasms relaxed. I gave her no further medication but enjoined rest. In a few days she regained her usual health.

In 1849 I was called to see a young man 15 years old who was having a violent attack of cerebrospinal meningitis. He was wildly delirious, spine stiff and curved backward. I bled him to the verge of syncope, applied hot packs all along the spine and neck and over the heart, and gave a large mercurial purgative combined with opium. The rigidity of the spine gave way in twelve hours after the bleeding. The delirium was also relieved at the same time, and the young man had a good but slow convalescence.

In 1848 I was called to see a young woman 22 years of age who had double pleura pneumonia in its worst form. I bled her to the verge of fainting, relieving the congested lungs and pain, then gave her the usual treatment for pneumonia and she was up in eight days' time. I am confident I have cut short many such cases by bleeding freely in the first stages of the disease.

In 1854 I was called to a patient 30 years of age who was having a violent attack of inflammatory rheumatism. He could not move his limbs or body in bed, and the joints were badly swollen and inflamed. I bled him until his tongue turned pale, and then gave him twenty grains of calomel, two grains of opium and two grains of ipecac. He perspired freely during the night, and by morning was greatly relieved of pain. He gradually improved for ten days and could then walk the streets by the aid of a cane.

During the years 1846 to 1856, I was frequently called to treat a gentleman about 26 years of age who had frequent attacks of epileptic convulsions. After failing to relieve the convulsions by treatment, I found I could succeed by opening a vein and starting the blood to flowing freely. I did not usually take more than six to eight ounces and often not more than four ounces. The flow of the blood seemed to equalize the circulation, thereby relieving hyperemic conditions in the brain.

In 1852, while crossing a river on horseback, I was stricken with sunstroke. I was blinded instantly with an intense pain in my head. My horse carried me home and stopped at my door. My wife met me and led me into my office where I lay down on the floor and had cold applications made to my head. but getting no relief I had my left arm tied up and by feeling I opened the basilic vein and bled myself until the pain in my head ceased. In a half hour I was able to sit up, and the same evening walked out in town with no pain in my head nor other bad feelings. I am confident I lost from three to four pints of blood and had no unfavorable secondary effects.

In 1856 I was called to see a gentleman aged 20, who was having a violent attack of brain fever. He was wildly delirious with a high fever. I bled him to nearly fainting, applied ice to the head and the delirium subsided. I gave a mercurial purge with sedatives and he made a good but slow recovery. The same year I was called to see a lady 25 years of age, having a severe attack of acute pleurisy. I bled her nearly a quart and the pain was very soon greatly relieved. The pain was further relieved and cure resulted with only a hop and vinegar poultice to the side.

In 1863 I was called to see Mrs. A——, aged 30, who had acute catarrh of the head and congestion of the lungs. After bleeding her to near fainting, the relief to head and lungs came almost immediately. The cough and blood-mixed sputa were greatly lessened. I afterward used the customary treatment and the patient recovered rapidly and was up and around the house in a week's time.

In 1854 I was called to see a gentleman 54 years of age, weighing about 250 pounds who had had a stroke of paralysis the previous day. Other physicians had been in attendance but had failed to relieve him. I found him completely paralyzed so that he could not make any voluntary movement. He could not swallow anything. Finding that he had not been bled, I advised bleeding, and after drawing over three pints of blood he was bathed with strong stimulants. In an hour he opened his eyes and two hours later drank a little water. Four hours after bleeding he was given a large dose of calomel. Next morning he was able to make slight movements of the voluntary muscles of his limbs. I bled him again, one and one-half pints, and left him to return thirty hours later, when I found him able to swallow fairly well, to move his limbs considerably but unable to speak. In three weeks this man had so far recovered as to be able to walk about his house and yard, and in six weeks he was practically a well man with the exception of his voice which he never recovered. He lived for twelve years and died of dropsy.

In 1858 I was called to see a lady 30 years of age, who had been violently insane for a week. She had to be guarded day and night to prevent her from killing her own friends; she seemed determined to kill her husband. I secured her confidence and persuaded her that she had a bad headache (which was true) and proposed bleeding her for it. She willingly consented. I bled her in a sitting position until she fainted, taking about one quart of blood. She soon revived and was calm and quiet; and after two or three hours' sleep awakened rational. She then consented to take treatment and in two weeks from the time she was bled she was in her right mind, and her health recovered so far that she resumed her usual household duties. She never had another attack of insanity.

In 1876 I was called to treat a woman for insanity. She was 32 years of age and the mother of four children and had always had good health. She was violent and the sight of her husband invariably threw her into a rage. Obtaining her confidence I secured her permission to bleed her. I bled her nearly to fainting and she became calm. I then gave her a brisk mercurial cathartic and kept her under the influence of nerve sedatives. In three weeks' time she was well and has remained so since.

In 1876 I was called to see a woman 20 years of age who had been confined two months previously and had a continuous uterine hemorrhage ever since. The hemorrhage was not excessive but sufficient to keep her in bed most of the time. She was anemic. Specular examination showed the parts in normal positions and the flow to be intra-uterine, with no indications of intra-uterine tumors. I therefore concluded that there was a constitutional tendency to hemorrhage. I concluded to bleed from the arm with the idea of stopping the intra-uterine flow by a revulsive effect. I drew from the arm about a half pint of blood, when symptoms of fainting appeared. I then stopped the flow and put the woman to bed and ordered her to keep quiet and in a horizontal position. The uterine hemorrhage ceased and the next day I ordered a tonic of iron and cinchona. She speedily recovered and had no further uterine hemorrhage.

In 1894 I was called in consultation with two other physicians to see a man 56 years of age, weighing 225 pounds, who had been for two days in a state of complete paralysis, unable to move and in a profound stupor. I advised blood-letting but his physicians had never bled any one and requested me to do it. I opened the basilic vein and took between three and four pints of blood from him. In an hour afterward he opened his eyes and made some movements with his left arm and leg. He was able to swallow some fluid. I advised that he be bled the next day to a like amount; this was done and convalescence was without backset. This man fully recovered his usual health so that he is able to attend to his duties as a farmer.

In 1895 I was called in consultation with three other physicians to see a woman 30 years of age, who had been having violent spasms of eclampsia for six hours. She was nearing her full term in pregnancy. The spasms came on intermittently, occurring with every pain, the patient being in stupor between spasms and unconscious all the time. Digital examination showed no dilation. I advised bleeding, and this was done to the extent of over two pints. The spasms soon almost entirely ceased, and in three or four hours dilation took place, and three hours later she was delivered of a dead child near full term. The woman made a slow recovery but is now well.

I could augment these reports considerably if there were necessity for it. My desire is to call your attention anew to this almost out-of-date method of meeting cases of emergency, and to urge physicians to equip themselves with the proper knowledge and instruments for resorting to this expedient in cases of sudden congestion of the vital organs, believing that such positive good results can be obtained by no other therapeutic agent, particularly in desperate cases. I have had uniformally good results from this treatment in puerperal fevers, eclampsia, paralysis from congestion of the brain, brain fever, meningitis and cerebrospinal meningitis, pneumonitis in its first stages, congestion of the lungs, liver and abdominal viscera, peritonitis, croup, tonsillitis, hemorrhage of the lungs and incipient phthisis. Repeated bleedings will do more to cure consumption in its early stages than any other single agent, especially when used in conjunction with an open air life and in a dry and medium high atmosphere. I do not wish to be understood as advocating blood-letting indiscriminately, but want to call attention to its value in cases where indicated, and where in my hands it has proved to be invaluable. I would have every medical student instructed in the art of venesection in all its forms and its therapeutic value and use. Blood-letting is today almost a lost art, not because of its ineffectiveness, but because in times past it came to be the great remedy of quacks and charlatans, and by abuse lost favor with physicians. The assertion that because "blood gives life, you jeopardize life when you withdraw blood," is not true even in normal conditions; but in these emergencies it is neither true in theory, practice nor fact; and the operation of venesection is perfectly legitimate and imperative when necessary to relieve suffering or to save life.

A PLEA FOR A UNIFORM DIASTASE TEST.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa, June 1-4, 1897.

BY C. C. FITE, M.D.
NEW YORK.

Considering the great importance of diastase as a therapeutic agent, it is certainly to be regretted that, up to this time, no uniform test has been agreed on for determining its starch-converting power. My purpose in presenting this subject before the Section is to ask your attention to this fact, and to suggest that a committee be appointed to present the matter before the United States Pharmacopeia Revision Committee, with the hope that the next edition of this work will contain a test which can be adopted as a standard and prevent the confusion now existing. It is a great misfortune that we have no uniform diastase test, and we should urge upon the committee that all of the tests now used by various chemists and manufacturers of diastasic products be carefully examined into and the best test adopted as a standard.

One of the complications due to there not being a standard test is that various manufacturers of diastasic products are constantly misconstruing, and therefore naturally, in the heat of business competition, misrepresenting the claims made by another, working along different lines, using different tests, reaching different conclusions, and representatives of such houses receiving instructions which they do not always fully comprehend, not always being chemists themselves; the medical practitioner has to listen to various statements as to the converting power of various products, while these contradictions only serve to destroy his faith in chemists, and weaken his confidence perhaps in all parties concerned, and his proper appreciation of diastase as a therapeutic agent is destroyed; and this does a great deal of harm without good results to anyone. A standard test would settle all this, and I am sure that no reputable manufacturing chemist would object to such a test being adopted, but would cheerfully accept one which met the approval of the Revision Committee of the United States Pharmacopeia.

The true scientific spirit is to arrive at the truth, and it is to be regretted that some presumably reputable manufacturing houses constantly mislead the profession by sending out literature claiming that their products contain diastase when they do not, and in other cases intentionally misleading their readers as to the amount of diastasic power. As long as we have no standard test, it is impossible to prevent fraud of this kind, because so long as there is no standard test, different methods of testing will lead to different findings, and no definite and accurate conclusions can be reached.

Any one taking up the study of this matter will find one chemist talking about 257 degrees of diastasic power, another will refer to 3 per cent. value, another will give a ten minute test, another thirty minutes, while others will not mention any time at all. Some years ago I had occasion to approach, or I should say reproach, a manufacturer for claiming diastase in his liquid malt extract, for I told him that I could find none in it. He asked me how long I let the starch remain in the solution? I replied, "Thirty minutes." He asked me to call at his office the following day, which I did, and he showed me a sample of partially digested starch. I asked him how long he allowed the starch to remain at the temperature of 100 degrees with the liquid malt extract, and he replied with a smile, "Eighteen hours."

One of the difficulties in establishing a standard test which would meet all requirements, and not unduly prejudice the prescriber against any given semi-solid or dry malt extract containing diastase, would be that such preparations have a certain food value, and are used also as vehicles for various medicaments. Therefore, it would be unfair, and practically impossible, to isolate the diastase contained in them so as to make a comparison with an isolated diastase, such as the one known as taka-diastase. It would therefore appear to me that the only way to solve the problem would be to have a test which would show how many times its weight a given product containing diastase would convert of starch in a given time. The prescriber could then readily estimate what dose he would administer of one of these preparations, by keeping in mind the amount of converting power represented by such a product, whether it was the malt extract plain or one of those used as a vehicle for any given medicament. This makes it more complicated to establish a satisfactory test for diastase than it would for pepsin.

Some recently exploited dry forms of malt containing diastase appear to have some power in liquefying starch, but only to a certain extent, and not by any means completing the process in the manner we should reasonably expect. All difficulties of this kind, not losing sight of some of the liquid malt extracts which are supposed to have diastatic properties—but have not—could be cleared up, if there was a standard official test, and producers of preparations could not then as readily make false claims and hide themselves behind some supposed test with a long name to it, that nobody else ever heard of or ever knew anything about.

I have had occasion to confer with quite a number of chemists on this subject, and the difference of opinion found is simply astonishing, while it is not to be wondered at that medical practitioners have grown to be somewhat tired of the whole subject.

One of the difficulties to be met with in arriving at a proper solution of this question, is that some chemists use a test the purpose of which is to determine how much maltose is formed in a given time, whereas others merely watch for the period when free starch disappears. From a therapeutic standpoint, our desire should be to so supplement the ptyalin with diastase that we could confidently expect the proper conversion of starchy food into assimilable products, such as maltose and the various dextrines, so that the duodenal secretions would, without undue effort, finish the process. I would therefore say that a thirty minutes test, and the disappearance of the free starch within the thirty minutes, in a neutral medium at 100 degrees F., should form the basis of a reasonable test from the practitioner's standpoint; and surely diastase is produced for the physician's prescriptions and not for the chemist's amusement.

It is well established that the ptyalin of the saliva ordinarily acts for at least thirty minutes after the close of an ordinary meal, as the stomach contents does not generally reach the degree of acidity necessary to impair or destroy diastasic action before that time. It is therefore evident that, as diastase is administered therapeutically during or immediately after a meal, a thirty minute test would be of more value to the medical practitioner than any other, and would enable him to judge more correctly as to what dose of diastase he should administer to a given patient, and as to whether he should administer an alkali before the meal is taken.

A standard test should not only specify the exact degree of conversion of the starch, the temperature, the number of minutes, but should also designate what variety of starch is to be used, as it is well known that no two varieties of starch are acted upon by diastase in the same way. Bermuda arrow-root starch is uniform and readily obtainable, and would be the most desirable, as various brands of corn starch and potato starch differ very greatly in reaction and physical structure.

It was formerly believed that albuminous foods must be completely converted into true peptones before they could be absorbed, whereas it is now generally conceded that the liquefaction and the production of albumoses is really the essential step in peptic digestion, and I feel sure that we can assert with confidence that if we liquefy cooked starch and produce a reasonable amount of maltose, the rest of the starch being converted into the various dextrins as above stated, we have secured all the therapeutic results desired from the administration of diastase. This is why I would insist on the test showing the point at which free starch disappeared, and not the complete conversion of the starch into maltose.

As I have been engaged a considerable portion of my time during the last six years in studying and handling various diastasic preparations, I feel that I am in a position to present this subject from a practical standpoint, for I have found that my labors have been doubled by the confusion now existing in regard to the various methods of testing such products.

The pharmaceutic chemist should bear in mind always that the ultimate purpose of his work is to produce satisfactory preparations containing definite properties, and to get rid of all unnecessary technicalities and chemic circumlocutions, so as to make the qualities and purport of any preparation he may exploit perfectly clear to the medical practitioner, without any undue labor and investigation being expected on the part of the latter. It is just this careful work, on the part of the pharmaceutic chemists, that has produced such great strides in the development of and the purification and concentration of medicaments formerly handled in a crude and uncertain way. The wide-awake and conscientious practitioner fully appreciates this fact, and is always ready to give due credit for any accomplishment in this direction that enables him to the more readily relieve his patients of their ailments without offending their esthetic sense, and the gradual elimination of the cruder forms of drugs has at this time reached a remarkable degree of refinement. It is surely a long step from an enormous dose of powdered Peruvian bark to a gelatin capsule of quinin, and even within a few years great progress has been made from the original nauseous and bulky pepsins, of only strength enough to digest a few grains of albumin, to the high power pepsins now produced without any special effort.

Another problem which should receive very careful attention is whether or not pancreatic extracts should be standardized by the same tests as vegetable diastase. I am convinced that, while we may get good results in certain cases from the use of pancreatic extracts, we can not depend on a definite diastasic action which is or should be similar to that of ptyalin, for we must remember that nature places the amylopsin of the pancreatic juice and the other various duodenal enzymes below the stomach, and they are intended more for completing and finishing the changes already begun by ptyalin before the peptic digestion supervenes. In other words, they are not intended by nature for beginning the conversion in the stomach, but act, we might say, on the food mass later, when it has an acid reaction, during the time it is being changed from an acid to an alkaline reaction, instead of on the alkaline or neutral mass when it is being changed into an acid condition, as is the function of the ptyalin, and therefore we should consider vegetable diastase supplementary to ptyalin, acting on the starch preliminarily and not secondarily.[1]

Should we not go still further and ask that a definition be made as to what constitutes a malt extract, so as to be able to make the proper distinction between the semi-solid malt extracts and their attenuations, which contain diastase, and the liquid malt extracts, so-called, which do not?[2]

102 West 93d Street.

DISCUSSION.

Dr. E. T. **Stewart** of Detroit—As this paper brings up a question of much importance, and brings before us the results of an extended investigation, I move that a committee be appointed, consisting of the Chairman of our Section and two other members, to suggest a practical test for diastase and to recommend the same to the Committee on Revision of the United States Pharmacopeia, and that the result of their deliberations be transmitted to the American Pharmaceutical Association for its concurrence. I have myself given considerable attention to the subject, and as a result of about three thousand tests made under my direction by Prof. C. C. Sherrard, a competent chemist, I may report that we found a great variety of methods in use and corresponding differences in the results. Active diastase has great starch-transforming power; for instance, a few grains are sufficient to convert all the starch taken in an ordinary meal by an adult in the period of less than a minute of time. Many of the preparations said to contain diastase have no starch-digesting power whatever. Everything depends, therefore, on the quality of the diastase, and some regulation is urgently needed so as to enable the physician to differentiate between the true diastase preparations and those which are falsely alleged to contain diastase.

Dr. F. R. **Stoddard** of Shelburne, Vt.—I am impressed with the importance of the positive determination of the digestive power of diastase and preparations which claim to have diastasic power, and of the necessity of the establishment of some uniform test by authority of the pharmacopeia. This is a question which should interest every physician who prescribes these remedies. The manufacturer, under present conditions, sends out these preparations, and the physician uses them, expecting them to fulfil the claims of the manufacturer and do a certain amount of work in the digestion of starchy foods, but at present he has no means of knowing whether these claims are true or false. I therefore heartily second the proposition that a committee be appointed to report on the feasibility of the adoption of a uniform test for diastase.

Dr. W. B. **Hill** of Milwaukee, Wis.—This is a question of great importance. It is a subject which should engage our attention as physicians who prescribe these preparations; and we should have better knowledge of their digestive or diastasic value. We need it especially, because the American people suffer from what may be called amylolytic indigestion, owing to a number of contributing causes. In the first place, there is so much starch in our food; and in the second, owing to hasty deglutition, there is a deficiency of ptyalin. There is, therefore, a great demand for diastase and preparations which assist in the digestion of starchy foods, and there is no doubt that some form of diastase will be introduced in the next pharmacopeia, and a higher test should be established and a standard be made before its introduction. It is well for us to take it up and give it due consideration at the present time, so that we may offer some well matured suggestions to the Committee on Revision, either at this or our next meeting.

Dr. F. **Woodbury** of Philadelphia—The chemistry of the digestive processes is now so well understood by physicians that the form of dyspepsia characterized by deficient amylolytic power in the secretions is now generally recognized. As a result, physicians no longer prescribe pepsin for all conditions of imperfect digestion, but they differentiate the cases in which a starch-transforming ferment will afford the desired relief from those in which the proteid digestion is at fault. Therefore, measures to promote the secretion of saliva, and of the pancreatic and intestinal juices, are recommended, and there is a constantly increasing demand by the profession for starch transforming ferments. It is most important, therefore, that some uniform test should be formulated by the biologic chemists, which may enable us to distinguish between the physiologically active and the inert, or fraudulent, diastasic preparations offered to us by the manufacturers.

Dr. R. **Harcourt Anderson** of New York—I would ask Dr. Fite as to the effect of increased secretion of gastric juice upon the action of diastase. Does hypersecretion and increased acidity retard or prevent the action upon starch? If so, what measures may be adopted to overcome this difficulty?

Dr. **Fite**—In reply to Dr. Anderson, I would say that an increase in the acidity of the gastric juice will retard the action of diastase in the stomach. In cases of hyperacidity, it is necessary to administer an alkali before the meal, and then by the use of diastase taken with the food, we can overcome this difficulty and relieve the symptoms. The reason why so many physicians have failed to relieve patients suffering from starchy indigestion is owing to the existence of this condition of hyperacidity and their neglect to administer the alkali before meals. It is, however, true that a moderate degree of acidity does not inhibit the action of diastase. Bicarbonate of sodium, in ten to twenty grain doses immediately *before* each meal, will be of great assistance to the action of the diastase taken *during* the meal.

Six years ago, when I first took up the study of this subject, diastase was practically unknown to a majority of practitioners, whereas now it is used to a great extent by physicians all over the world. The loss of saliva by tobacco-chewers, the defective mastication of food and the limited secretion in young children, with the great proportion of starch in our food, as pointed out by our Chairman, contribute to make diastase and its preparations prominent in therapeutics, and there should be some method of standardizing these products, or of ascertaining the real value of diastase by some practical and convenient test by authority, so that there should be some uniformity on the subject.

The Chairman, Dr. Hill, put the motion, which was adopted unanimously, and appointed to serve on the committee with him Dr. Fite of New York and Dr. Stewart of Detroit.

IMPROVED METHOD OF COCAIN ANESTHESIA.

A REPLY TO A KINDLY CRITICISM OF THE AUTHOR'S METHOD OF ANESTHESIA, BY J. F. OAKS, PH.C., M.D., PUBLISHED IN THE JOURNAL OF JULY 17, 1897.

BY P. L. ANDERSON, M.D.
CHICAGO, ILL.

The object of the new method is to avoid toxic effects, allay fears of patient, saving of time and cocain to both patient and surgeon, and incidentally to bring before the profession the fact that, in the prone position, patients recover from toxic effects cocain, and that if patient is cocainized in the prone position, and operated upon in the same position, there will be no toxic effects of the drug so long as that position is maintained. With this brief statement of facts from the original article I will reply to the Doctor's criticisms in the same order as he presents them.

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[1] Medical News, Feb. 6, 1897, p. 167.

[2] Boston Medical and Surgical Journal, Dec. 31, 1896, p. 669; Albany Medical Annals, March, 1895.

The preliminary use of the one-tenth per cent. cocain spray solution is no essential factor in the ultimate anesthesia of the nasal mucosa; its purpose is merely to allay the hypersensitiveness of the mucous membrane preceding the application of the 25 per cent. cocain solution on a cotton wrapped probe. It is simply a nice, pleasant way of introducing a very disagreeable subject. To touch or rub the nasal mucosa with any foreign substance without some previous spraying of a weak solution of cocain causes a disagreeable tickling sensation, more or less pain, while a certain amount of fear takes possession of the patient's mind, which keeps him on the *qui vive* until the operation is completed. He is constantly expecting more trouble because he was hurt at the preliminary step of the operation. I use the Davidson spray tubes, and with the improved instantaneous cut-off, made by a firm in Port Huron, Mich., there is not the slightest trouble in controlling the amount of one-tenth per cent. solution to be used as an initial step. As to the strength of the solution of cocain used (25 per cent.), to be candid with the gentleman who so kindly criticises my article, I privately whisper to him (of course I would not say it to anyone else) that I have for two years used a 50 per cent. solution; but in writing for publication I think it poor policy to advocate such strong solutions to others, who might misunderstand my meaning or who, through carelessness or inexperience, might do much harm with such strength of solutions. Idiosyncrasies are so decided, sudden and rare that the difference between a 5 per cent. solution with tampon and 25 per cent. solution new method amounts to little or nothing, for as serious results have been reported from the use of 2 per cent., as well as 5 or 10 per cent. The demonstrated clinical fact is that less cocain is absorbed into the general system by this criticised method than is done by the weak solutions with the tampon method, theories to the contrary notwithstanding. In relation to the time required in ordinary cocain anesthesia I beg to refer to no less authority than Professor Ingals of Chicago. Dr. Ingals, in speaking of cocain anesthesia in Gould's year book of treatment for 1897 says: "For intranasal operations ten to twenty minutes or more is required for cocain anesthesia."

It might be of interest to learn that since the publication of the original paper, the author has in several test cases succeeded in producing complete anesthesia for acid or galvano-cautery in one and one-half minutes, using a 50 per cent. solution of cocain. The shorter the time required for anesthesia, the less is the toxic effect. In comparing the tampon method with the author's method, Dr. Oaks forgets that the tampon, in order to retain its position in the nose, necessarily presses just as much against the septum as it does against the turbinated body, which produces the absorption of double the amount of cocain required. Again, acid and galvanic cauteries cover but small spaces, sometimes a mere dot no larger than the letter O in the title of this article; often it is but a line, one-eighth to one-sixteenth of an inch in width, and from a half to an inch or more in length. It is not logical to contend or theorize that a tampon one-half to one inch or more in length and one-fourth to half an inch in width, in close contact with two or more parts of the nasal cavity, and remaining there for fifteen to twenty minutes, will produce less toxic effects than the application of a 25 per cent. cocain solution on a probe wrapped with just sufficient cotton to cover its metallic end, which can be accurately applied to only those parts to be gone over by the cautery. From my early experience in the use of the tampon method and 5 per cent. cocain, I observed that my patients speedily recovered from the toxic effects of the cocain by assuming the prone position. After the unpleasant occurrence of fainting during some six or seven septum operations, I have for the last few years anesthetized and operated for spurs, ledges and deflections of the septum with the patient in the prone position, and not once have I had the occurrence of the toxic effects of cocain, nor a case of hemorrhage that was not easily controlled in from one to three minutes by the use of hydrogen peroxid. The use of this drug as a hemostatic in intranasal operations was first brought to the notice of the profession by the author in an article on "Abnormalities of the Nasal Septum (*New York Medical Journal*, Feb. 23, 1895). Clinical facts must always speak stronger than mere argument or theories. While the improved method of cocain anesthesia is new to the medical profession, it has been in constant use in the author's practice for the last two years, during which time I have treated 2,114 cases and operated on 1,163 for intranasal disease. The method of anesthesia and the prone position of operations is not a fancied theory to be torn to pieces by mere argument; it is a solid, substantial clinical fact based on actual work done by the author, and capable of verification by records of cases and by Drs. Stuart Johnson, F. A. Leusman, G. H. McFatrich, T. Wilson Deachman, W. H. Weaver, Carl von Klein and many others who have on many occasions witnessed the anesthesia and operations of the author.

A STUDY OF THE CAUSE AND EFFECT OF URIC ACID IN DISEASE, WITH SPECIAL REFERENCE TO ALKALINE DRINKING WATER.

BY W. W. REED, M.D.
FOWLER, COLO.

I have been incited to an investigation of this subject by the great frequency with which I have met with cases of various manifestations of uric acid in the Arkansas valley, where the drinking water is almost universally impregnated with alkali, and where the people partake largely of a meat diet.

Since reading Professor Haig's little book, "Uric Acid in the Causation of Disease," I have become extremely interested in the subject, and find in it a wide field for study and investigation.

That the alkali water is in some way accountable for so many cases, I am fully persuaded, but in so far as I have ransacked the authorities and the literature on the subject, I have failed to find any satisfactory explanation of the phenomenon. In this paper I do not presume to advance anything new, but only offer a few facts gleaned from a study of my own cases and from a careful review of my library, on the subject. Some points have been entered into rather minutely, and many well known physiologic facts reviewed, but this will be excused on account of the importance of the subject.

Of the seventy elementary substances known to chemists, only sixteen are found by chemic analysis to enter into the composition of the human body, and these, aside from oxygen, hydrogen and nitrogen, are not found free, but in compounds which go to make up the various tissues and the blood. These compounds naturally divide themselves into organic and inorganic

The most important of the organic compounds are: 1, water, forming two-thirds of the entire weight of the whole body; 2, common salt, found in all the tissues; 3, phosphate of lime, largely entering into the structure of the bones and teeth; 4, potassium chlorid, which exists in the blood, nerves and muscles.

The organic compounds are subdivided into nitrogenous and non-nitrogenous, the former represented by the proteids, the latter by the carbohydrates and fats.

Hence, to enable an active, living human organism, constantly undergoing a loss of substance by the mechanical force exerted and the heat given off, to provide material to exert this force and repair worn out tissue, is the chief function of the food we consume.

The food must contain compounds of proteids, fats and carbohydrates, with water, that every constituent part of the body may be supplied with the necessary material for the performance of its function. In the digestion of these compounds a certain proportion of useless and indigestible material leaves the body in the form of water, carbon dioxid, urea, and certain unimportant saline compounds. The chemic composition of these compounds before entering the body as foods can be very accurately determined, as can the excretions; but the physiologic chemist is still puzzled over some of the intermediate chemic changes taking place during assimilation and absorption within the body. However, it is well known that in the vital processes, and metabolic activity, the fats and carbohydrates are broken down into simpler substances, and their unused carbon, combined in part with oxygen, is passed out of the lungs as carbon dioxid, while their hydrogen, combined with oxygen, passes out as water.

We are now interested more particularly in the study of proteid oxidation, its suboxidation, and its relation to the formation of the nitrogenous wastes, viz., urea and uric acid. Proteid oxidation differs from the oxidation of the fats and carbohydrates, in that some of its liberated carbon not only combines with oxygen to form carbon dioxid, while its hydrogen combines with oxygen to form water, but also some incompletely oxidized carbon and hydrogen remain, and combines with nitrogen and oxygen to form urea, which represents the chief nitrogenous waste.

In the processes of assimilation and nutrition, every healthy cell in the body not only takes from the food the material required for its immediate use, but lays by some little excess. In addition to this functional economy on the part of the cells, we find special food reserves or reservoirs within the body, from which the tissues can draw food substance. The oxygen reserve is found largely in the blood, and special storage of oxygen is rendered unnecessary, as it can be drawn from the air at any time. The two great storehouses of the body are: 1, the liver for the carbohydrates; 2, the adipose tissues for the fats. These supplies are drawn upon in the intervals between meals and during starvation.

As the proteids probably are but little concerned in energy production, and are only required to renew proteid waste in the tissues, nature has provided no storehouse for their excess. Proteids are not only oxidized after being organized into the tissues, but if taken in excess are oxidized without being converted into the tissues. Hence, to get rid of this excessive nitrogenous waste, which is brought to the kidneys in the form of the incompletely oxidized substance, urea, with its concomitant uric acid, is much more laborious to the system than to get rid of the carbon dioxid and water which are formed by the oxidation of the carbohydrates and fats. Here, as I take it, we have a key to the situation in the treatment of the uric acid diathesis: *i. e.*, to cut off proteids from the diet.

Accepting it then, as a demonstrated fact, that the progenitors of urea excreted from the body, are the proteids taken as food, and that urea itself represents the ultimate product of nitrogenous oxidation of the food and of the destructive metabolism in the tissues, the question naturally arises as to what intermediate steps are taken before the urea is excreted in the urine; and whether urea is finally formed in the kidneys, or merely separated by them from the blood.

A great deal of theorizing has been indulged in, regarding the antecedents and place of formation of urea, and the ideas and investigations of able men do not yet harmonize on these points. Murchison believed urea to be formed by the liver, and his views, until recently, were more widely accepted than those of any other writer. Garrod still holds, that the kidneys not only are concerned in its excretion, but also have to do with its formation. Cantoni, whose teaching the German and American writers accept, regards the living tissues as its direct source. Ebstein thinks it is formed, chiefly, in the muscles and bones. Thus it will be seen that our physiologic knowledge is such, that we are not in a position to draw safe conclusions even yet on these questions, but notwithstanding this diversity of opinion, certain facts that may guide us in our meager investigations, have crystallized out of this chaos.

We learn that the muscles contain by far the most proteids of any tissue in the body, and so naturally look to them for a solution as to the origin or source of urea.

Clinical analysis shows that they contain no urea proper, but that they always contain kreatin, which is a substance known to be directly intermediate between proteid and urea.

Kreatin is also found in the brain and nervous system, in the spleen, and in many glands. Since it belongs to a group of nitrogenous compounds, which the body is unable to utilize for reconstruction into proteid, but must be gotten rid of, it seems quite probable that it is the first step in the chemic decomposition of the proteid tissues, toward urea. Kreatin is soluble, and readily dializable, and therefore fitted to pass rapidly into the blood stream. The blood always contains urea, but it is doubtful just where the kreatin is changed into urea. On the whole, the evidence seems to show, and it seems to be very generally conceded too, that it is only separated from the blood by the kidneys, and is not produced by them. Blood from the renal artery contains more urea than blood from the renal vein. which would not be the case, did the kidneys produce the urea. Moreover, we can find no sign of any special activity of any group of tissues, either in the liver or kidneys, such as one would expect to find, if the urea always came from the breaking down of formed-tissue cells. In suppression of urine it is also found, that urea accumulates in the blood, which would not be the case. unless it was normally formed elsewhere, and carried off by the kidneys

Urea itself, is, as we have seen, normally found, both in the blood and the urine, and may vary widely in amount, depending upon the food and the metabolic activity, within a physiologic limit.

By virtue of the fact that it is a neutral substance, unirritating and readily soluble, it is constantly drained off by the kidneys, but not so with its copartner in human misery, uric acid.

Uric acid being much more insoluble, and forming many insoluble salts, and also owing to its irritant action on the vasomotor system, is extremely liable to be retained, and may become a potent pathologic factor in the causation of many diseases, where faulty elimination occurs. Like urea it is a product due to deficient nitrogenous oxidation, and also has an imperfectly understood pathology. Garrod and Liebig suppose that uric acid is an early stage in the transformation of urea. Hoffman believes, that it is formed from the decomposition of the urates, and Haig, whose ideas and investigations have recently revolutionized the whole subject. teaches that uric acid and urea have the same antecedents but that uric acid is not formed from urea, but concomitantly. In his experiments he has shown that it is formed in the system in the constant and direct ratio, of 1 to 33, *i.e.*, for every 33 grains of urea 1 grain of uric acid punctually forms.

Before entering into the consideration of the elimination of urea and uric acid, let us recall for a moment the minute anatomy and physiology of the kidney structure. It is made up of peculiarly arranged tufts, of very small arteries called glomeruli; these are enclosed in the finely constructed cellular capsule of owman, and this capsule is held in a fibrous enve- or capsule of Malpighi, the continuation of which tes the contorted uriniferous tubule. Into the mit of each capsule of Malpighi, one of the ulti- branches of the renal artery enters (the afferent l) and breaking up into a capillary network, forms the glomerulus. The blood is carried away from this glomerulus, by a small vein (the efferent vessel), which does not at once join other veins, but breaks up into a capillary network, which surrounds the adjacent uriniferous tubule. By means of this mechanism, a thin stream of blood constantly flows through the glomeruli, only separated from the excreting tublule by a very delicate membrane—the wall of the capillary vessel. The Malpighian capsule has been regarded as a funnel, and the membranous walls of the glomeruli as very delicate filtering paper, into which the blood is poured. The mechanism of the renal secretion, is then seen to consist of two distinct parts.

1. The glomeruli through which the filtration of water—dehydration of the blood—takes place.
2. The active secretory apparatus, consisting of the secreting cells of the capsule of Bowman, and those of the uriniferous tubules, which have to do with the removal of urea. Normally the organ is abundantly able to perform both the functions properly.

The blood which supplies the kidneys, is brought directly from the aorta, by the renal arteries, so that it has but recently left the heart. The venous blood propelled to the lungs is there purified of its carbonaceous waste, but the nitrogenous waste remains, so that the arterial blood in the aorta is pure, only as regards carbonaceous waste, but impure as regards nitrogenous waste. In the normal condition, the walls of the minute renal arteries and veins are relaxed, and the passage of blood is very free, with a profuse urinary flow, while but little of the nitrogenous waste is allowed to re-enter the blood current. Hence, strictly speaking, the blood that leaves the kidneys, is the purest blood in the body, but not infrequently, certain pathologic conditions arise, whereby the opposite obtains, and the urinary flow becomes scanty while the secreting cells of the kidneys fail to remove from the blood, a part of the nitrogenous waste, and it re-enters the blood stream, and becomes a pathologic factor as a result of this faulty elimination. Professor Haig believes, that where the physiologic oversteps the line, and becomes pathologic, there is a defective elimination by the kidneys, rather than an excessive formation of the uric acid, and by numerous and accurate tests he has demonstrated, that its elimination is regulated by the degree of alkalescence of the blood. That is to say, that under normal alkalescence, the uric acid is conveyed to the kidneys, in a state of solution, and eliminated as fast as formed; but in conditions where the alkalescence of the blood is diminished, uric acid and its salts are not so readily held in solution, being very insoluble, and demanding a highly alkaline medium to effect complete solution. Hence, imperfect elimination must follow a lowered alkalescence, allowing an accumulation in the blood. The degree of alkalinity of the kidney structure probably determines, to some extent, how much shall be excreted, and how much retained?

That Professor Haig's views of the pathology are true in the main, I would not presume to question, but under certain environments, with a heavy nitrogenous diet and a continuous ingestion of an alkaline drinking fluid, as is the case with my *clientèle*, it seems quite probable (from my own observation) that an excessive formation also enters largely into the pathogenesis. As the alkalescence of the blood is liable to fluctuation, from so many causes we may have uric acid retention in varying degrees, in which case it may be again carried back into the circulation, and from the blood be precipitated into the fibrous tissues, joints or muscle sheaths, giving rise to rheumatism or gout; or by its irritant action on the vasomotor system of nerves which control the caliber of the blood vessels while circulating in the blood, a rise of arterial tension with a contraction of the arterioles, may occur. Among others, the arterioles in the Malphighian tufts contract, and the urinary excretion is thus greatly decreased. This state of affairs soon brings about a condition of general toxemia, which may give rise to various neuroses. The nerve centers being most susceptible to the irritant action, are the first to feel the deleterious effects of the toxic state, and those organs that are constantly under nerve control in their function, manifest the earliest symptoms. It is now almost universally believed that migraine, epilepsy and chorea are due to this effect of uric acid on arterial tension. In fact all diseases of uric acid origin except gout and rheumatism, are consigned to this category.

We have then two prominent factors in the creation of uric acid diseases.

1. An excess of uric acid in the blood acting as an irritant.

2. An increase in blood pressure from vasomotor spasm, producing a strain on the heart, and causing a hyperemic engorgement of the blood vessels, in the brain, liver, kidneys, etc. As a matter of fact, this process may not stop with simply an hyperemia, but inflammatory changes in these organs not infrequently result. In this relation, it is lately being assumed, by good authority, that albuminuria and glycosuria owe their pathology to this effect of uric acid. That endocarditis, pericarditis, endarteritis, pleuritis, etc., are of uric acid origin has long been an accepted fact.

Now assuming the correctness of Professor Haig's conclusions (and all late practical experience admits that they are true), and using his data, at first glance it seems rather paradoxical, that alkali water could give rise to uric acid diseases. Nevertheless, I have been forced by tracing its origin in so many cases to the firm belief that this is the case. As the pathogenesis of uric acid is, as we have seen, still somewhat obscure, I shall not presume to offer an infallible explanation of this phenomenon. Yet I have worked out an explanation, that seems reasonable and to me accords best with Haig's investigations and my own observations. It is briefly this:

That a free consumption of proteid diet and deficient oxidation of the nitrogenous material generally gives rise to an excessive amount of uric acid. This, by its irritant action on the arterioles of the kidneys, bring about an increased arterial tension there, and consequently diminishes the urinary flow. As a result of this all the uric acid is not eliminated. The alkalinity of the blood being kept high by the constant ingestion of alkali in the water, uric acid is not allowed to leave the circulation, and becomes deposited in the tissues, glands, joints, etc., neither can it be completely eliminated because of high arterial tension in the kidneys, etc., but it is carried round and round in a vicious circle that keeps the arterial tension high and is thus productive of the many evil consequences, the most notable being those of the nervous system. The symptomatology of uric acidemia may be so various in its manifestations, and depends so greatly upon the *locus minoris resistentiæ* of the patient, that to enter upon its discussion would protract this paper to an undue length.

Professor Da Costa, in an article in the *Journal of the American Medical Sciences*, 1881, on the "Nervous Symptoms of Lithemia," has graphically pictured the mental condition of these cases when he says:

"There are spells of languor and lassitude which befall the man whose blood is charged with lithic acid, in which all exertion is painful and which strangely contrasts with his usual energy. Then there is depression of spirits, and gloom that may amount to melancholy. But above all is irritability of temper; odors annoy, sounds infuriate; nothing pleases and it requires more than ordinary self-control to prevent explosions of temper. The man is on edge, and the acid blood literally makes an acid temper. Indeed many a man who has the reputation of being a crank is simply a lithemic, who finds it impossible to control his engendered irritability."

Again the irritating influence of uric acidemia, on the temper, and its magical disappearance, and consequent production of gout, as a result of its deposit in the joints, is typically illustrated in Macaulay's description of the Earl of Chatham: "A cloud settled on him, he, a most affectionate father could not bear to hear the voices of his own children. He bought up houses contiguous to his own, that he might not have neighbors to disturb and annoy him with their noise. His appetite was fanciful and capricious, he was melancholy and irritable. The disputes of his colleagues, the responsibility of state bewildered this boldest of men, who behaved at times like a hysterical girl, bursting into a flood of tears. He had passed months without a twinge of the gout to which he had been subject since boyhood. At length the gout returned, his nerves were newly braced, his spirits became buoyant, he was once more the proud resolute statesman."

Again, Haig, in a quotation from *Punch* aptly illustrates the seeming trivial circumstances which the mind of the lithemic will seize upon, as a cause for worry. A middle aged man is represented as reclining in an easy chair, in a luxuriously furnished sitting room and surrounded with all the comforts of life. It is afternoon. On the floor near him is lying his dog, resting with half an eye open. But this man in spite of all his luxury and comforts is not happy, and the cause of his misery is the uncomfortable thought which has gradually forced itself upon him that his dog does not love him. Presently he arouses himself sufficiently to call his dog with the object of putting to the test the cause of his misery, but the animal rushes to him and evinces such evident pleasure and affection that his master is soon compelled to abandon the idea, that his dog does not love him. The man who is thus unable to make himself believe that his dog does not love him is still unhappy and he rushes to the other pole, and begins to worry himself, because he does not love his dog. This is more difficult to disprove and Punch intrudes no further upon him. There is no doubt whatever that these descriptions are drawn from nature for I have seen just such cases and they well illustrate the symptoms of uric acid sufferers, and point out conclusively, that the cause of the misery is central, *i. e.*, the circulation in the brain. The inference is, that in all cases characterized by recurring and persistent headache, irritable temper, aversion to mental or physical exertion, with a scanty urinary secretion, uric acid should be suspected and a careful and systematic analysis of the urine should be made. As we have seen, acids, or any drugs acting as an acid, by causing a lowered alkalinity of the blood, will clear the blood of uric acid, thus relieving headache, lowering arterial tension, etc., but by so doing, the uric acid is drawn into the fibrous tissues and joints, and may precipitate an attack of rheumatism or gout; therefore, where it is desirable to relieve the headache and lower arterial tension, etc., quickly by giving an acid the salicylates should follow in large doses to effect its removal from the system. As a matter of course the proteids must be restricted, to cut off the amount of uric acid introduced into the system.

Animal food, rich soups, strong coffee and tea, should be studiously avoided by all lithemics. To clear out the uric acid after an attack of rheumatism has already developed, the salicylates are indicated.

It is impossible here as in all other diseased conditions to work out a plan of treatment that will fit all cases, as each case differs from the other.

No subject in medicine merits a more careful study today and none offers a wider field for investigation than this problem of uric acid as the causation of disease. Professor Haig goes so far, in speaking of its importance as to say:

"If my premises are good and my deductions sound and if uric acid really influences the circulation, to the extent which I have been led to believe that it does, it follows that uric acid really dominates the function, nutrition and structure of the human body to an extent which has never yet been dreamed of in our philosophy, and in place of affecting the structure of a few comparatively insignificant fibrous tissues, in which it is found after death, it may really direct the development, life, history and final decay and dissolution of every tissue, from the most active glands to the matrix of the nails and the structure of the skin and hair."

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

(*Continued from page 380.*)

Sometimes they were obliged to move the entire hospital, if the location was not safe enough, for the enemy had no respect for them and knew no neutrality. Schmucker with his hospital in Schweidnitz was captured by the Austrians and discharged on parole only after five days. Theden was also taken in 1744 with his whole equipment for the first time, and by the Austrian hussars in the battle of Leuthen, and remained a prisoner the entire winter. He met the same misfortune at the overthrow of Hochkirch, whereupon the king paid him 300 thalers for his loss and gave him free medicines for the following campaign. Again in 1759 he was captured in Poland by the Cossacks and held for several months, being well treated in the meantime. In the next chapter we shall listen to a few German voices which were raised in favor of the neutrality of the hospitals. Very few figures are available on the subject of mortality in hospitals. We will save Bilguer's data for the chapter on gunshot wounds. At one time 15,000 sick and wounded passed through his hospital, of which number about 1,500 died. During the whole campaign this hospital had cost 9,684 thalers, besides nearly sixteen groschen for medicines for each patient.

The prophecy of Frederick the Great, that after his death evil tongues would have their way, found fulfillment in respect to the field-hospitals. A pensioned Prussian general wrote in 1787 concerning the battle of Torgau as follows: "The greatest part of the wounded lost their lives through the intense cold, which was the usual fate among the Prussians where the hospitals were so badly constructed and so ill smelling that every soldier looked upon himself as already dead as soon as he entered one of them. The physicians and surgeons in the hospitals had orders to let all those die who were so wounded that they could not serve again after their recovery, in order to save the cost of their maintenance." Perhaps the general meant to reflect on the admonition of his king who had called to his surgeons: "Do not make me too many cripples," but had taken pains to provide excellent invalid hospitals with the greatest solicitude for the rest of the cripple's life. Of course it can not be denied that in the course of the many wars some abuses had crept into the Prussian system of military sanitation, so that Frederick William II. found sufficient material for reorganization. As before mentioned he placed the system of field-hospitals under a special department of the newly erected chief bureau of war (or war ministry which had not existed under Frederick the Great). Then he improved the station of the military physicians, liberated them from the razor and the broad sword, and a year after the death of Frederick the Great, in 1787, made them a part of the new dispensation in field-hospitals based upon the plans of Dr. Fritze, which left nothing to be wished for in respect to care of the wounded. Out of 100,000 men they estimated about 10,000 sick, and for the whole army in war time allowed four staff physicians and eighteen field-physicians, thirty staff-surgeons, forty over-surgeons and 600 under-surgeons. Besides these there were provided two chief field-apothecaries, four provisors or traveling apothecaries, forty under-apothecaries and ten assistants. The attendants were semi-invalid soldiers who were married, and five of them were allotted to each 100 sick with internal diseases, and ten were allotted to every 100 surgical patients.

A few years later new improvements appeared in Prussia. In 1793 the general staff-surgeon Gorcke called the field hospital into existence, a portable hospital for 1,000 sick and wounded, which according to an order of Frederick William II. was built in six weeks. These portable hospitals were easy to establish and immediately proved their value in the siege of Mainz. Görcke had for a long time entertained the plan of a comprehensive military medical training-school, which was now realized in the year 1795, when the *Chirurgische Pépinière in Berlin* (Surgical Nursery) was founded. It was at first designed to admit and to train a surgical hospital force of fifty men who were not at that time to be lodged with the army.

In 1797 the institution was considerably enlarged, obtained a building of its own and was then to admit company surgeons, to give a better training to those already at hand and to create a good supply of surgeons for the field hospitals. Under the control of a lieutenant-general the general staff-surgeon as director conducted the institution, admitted the students and later gave them appointments; he was represented by a chief staff-surgeon. Of the four staff-surgeons one had oversight of those students who were ordered to the Charité, while the others took their part in the scientific training in the institute. The real governors were the chief-surgeons, eight in number, who attended the students in the colleges and controlled their time, their military apparel and their dinners, which were taken in common, etc. For the most part the earlier students at the Pépinière were promoted, after an examination before the Collegium Medico-Chirurgicum to staff surgeons and regimental surgeons, in about twelve to fourteen years. The number of the students was fixed at eighty-one, aside from an indefinite number of volunteers, who might be foreigners, and that included a number of company surgeons who came to Berlin to study. Before their acceptance the applicants were obliged to agree to serve at least eight years. Every half year nine of them were sent to the army and the same number of new ones taken in. Each one remained in the Pépinière four years and a half: during that time he heard every course twice and received six thalers monthly besides free residence. Besides instruction in the German, Latin, French and Polish languages, in pure and applied mathematics, logic, ethics, history and geography, the professors of the Collegium Medico-Chirurgicum gave theoretic instruction in all the medical sciences. There followed a half year's practical service in each position in the Charité. The Pépinière possessed a library, a collection of anatomic specimens and medicaments, an herbarium, etc. The students were appointed as company and squadron surgeons, and later were promoted either as over-surgeons of the institution or as surgeons of the guard, or regimental surgeons. They could also be appointed as district surgeons or enter the civil service, as they wished. The founding of the Pépinière was for that time, when medicine and surgery were still separated, a progressive step, for both sciences were taught there, but a free scientific spirit could not develop there under the strict discipline. In 1818 it became the Medico-Surgical Frederick-William Institute.

Among the *military surgeons of Frederick the Great*, whom we shall now notice more closely, the great mass were wholly uneducated. Everywhere they were still obliged to appoint barbers' men and barbers' journeymen as army surgeons, who had to shave the soldiers and officers, whose most intimate associates were under-officers and common soldiers, whose most frequent vice was drunkenness. If they indeed found opportunity to listen to their colleagues in Berlin, whose institutions for anatomy and surgery at that time had a great reputation in Germany, yet the regimental surgeons had to bestow an inconceivable amount of labor on their education, which was in accordance with their duty, for all ambition and all school training were lacking. Upon how low a plane of surgical training the army surgeons were, is shown by certain observations noted in 1754 by Muzell, the physician of the Charité. When a pair of scissors penetrated a musketeer's buttock, and excessive bleeding with swelling followed, Muzell advised a dilatation. As the army surgeon could not trust himself to do it, the physician was obliged to do it himself, "probably the severest case he had ever had, and one which required real resolution." Deep in the wound, he found an aneurysm and saved the patient by ligature, not as he supposed of the art. obturatoria but of the art. ischiadica. This ligature is the first made on the last named artery, as I have shown in my work on wounds and aneurysms of the art. glutea. Another regimental surgeon was not in condition to stop an usual flow of blood after the extraction of a tooth, which Muzell accomplished by pressing a sponge into the gap left by the tooth. At one time when gangrene followed an amputation of the forearm, made on account of caries of the hand, Muzell saw the only safety in exarticulation of the humerus, but his salaried surgeon advised against it from fear of the bleeding that it would occasion. Nevertheless it was done. Several days were spent in extracting the bone because they introduced a compressed sponge and let it remain for a long time in order to somewhat separate the head of the upper arm from the shoulder cavity; the patient recovered. This kind of cases, which show clearly the melancholy condition of army surgery, might easily be multiplied. The complaints over their scanty training were so general that Surgeon-General Theden decided to write a book on "Instruction for the Under-surgeons of the Army" (2 vols., 1774). This is said also to have been the guide according to which the master trained his apprentices, since the handbooks of Platner and Ludwig were quite beyond the comprehension of the barbers. Unfortunately in that work the elements of anatomy and physiology were treated so briefly and impracticably that the army surgeon could learn nothing from it. What idea could he get of the frontal bone, for example, when Theden taught him that os frontis had two areas or surfaces, an inner concava (hollow) and an outer convexa (rounded), and various margins or edges, etc. They tormented the students, especially in anatomic studies, quite too much with dry names and figures, which were quickly forgotten again. In 1783 Bilguer published "Directions for Field Surgeons" as everything that had hitherto been written on field-hospitals had been the product of the pens of learned gentlemen who had never participated in a campaign. But when it is seen how minutely and carefully Bilguer treats the subject of gunshot wounds with respect to the direction and shape of the wound and the location of the foreign body, describing the incision in each particular case, it will be understood that the army surgeons worked only from memory and not with talent.

Even at the end of the century, in 1791, Bilguer wrote: "It is well known that on account of the low wages of the under-surgeons in the regiments [the under-surgeons received at that time 4 thaler 3 groschen monthly, and 21 groschen additional from the regiment surgeons, while the Hanoverian squadron or company surgeons received 6 thalers monthly], and the severe military discipline, but few devote themselves to this hard service, and those who do so are usually men who have had no moral training and still less education, and most of them come from the lowest class of society. If the state would see to it that only well-behaved young men with education and a good moral character should devote themselves to surgical science, then the regiments and the provinces might be provided with skilled surgeons and not with privileged murderers; but the state would be obliged to pay these useful and indispensable men better and to respect them more." Richter was right in asserting that a field surgeon who must be told in every particular case how to act, who did not understand how to use his own judgment in applying a general rule to particular cases, was not at all warranted in being a surgeon. If there were any excuse for the ignorance of the under-surgeons it lay in the circumstance that their superiors, the regimental surgeons, frequently knew nothing, although the surgeon-generals often gave daily surgical lectures while in winter quarters. We will not leave the Prussian army surgeon without learning how he looked. For that purpose our poet Schiller shall don the uniform; for the Würtembergers were dressed out in the old Prussian style, which was very stiff and absurd. When Schiller was an army surgeon, in 1780, without the decoration of the sword tassel, having only the rank of sergeant, and with a yearly salary of 216 guilders besides about 36 kreutzers daily, he wore on each side of his face three stiff rolls of plaster of Paris which looked like curls, while a small military hat scarcely covered the crown of his head. A cue hung down his back and a horsehair band encircled the long neck. Felt was worn under the leggins so that the legs, like two cylinders, had a greater diameter than the thighs compressed by tight breeches. As Schiller, in leggins very much spattered with shoe-blacking, could not bend his knees properly, he walked like a stork. In Hanover the squadron or company surgeon in the dragoons had to wear a green, in the infantry a red, and in the artillery a blue uniform.

The leading Prussian war surgeons, at the same time with Richter and Siebold the best surgeons in Germany, were Bilguer, Schmucker and Theden. Yet we must confess with shame that even in these men there was lacking a genuine scientific depth, and many of their works are today scarcely worth reading. The most talented among them was *John Ulrich Bilguer* (1720–1796) of Chur in Graubunden. where his father was guildmaster. After his departure from the gymnasium he studied in the University of Basel and then spent four years in Strassburg, where he lived with the anatomist Vaquin, on whose advice he devoted himself entirely to surgery. Taking his place among the Strassburg surgeons he began to practice, and went to Paris for further training. He was now offered the position of surgeon-major in a cavalry regiment which the Duchess of Wurtemberg was raising. After an examination in Tubingen he began his duties; but in the following year (1742) he went with the regiment, which had been turned over to the king of Prussia, to Berlin, in order to be again examined by Eller and Schaarschmidt, and then be confirmed in his position. Bilguer did not allow himself to lack in courtesy to his French colleagues; originally he wrote his name Bilger, but for their sake he afterward inserted a "u" so that they might pronounce his name properly; but what educated German was at that time without French affectations? In 1744 and 1745 the war took him to Bohemia and Saxony and promoted him to regimental surgeon. After the battles of Kesseldorf, Prague, Rossbach and Leuthen he continually had large hospitals to direct, especially in Dresden and Breslau. When the surgeon-general Boness, successor to Holtzendorff, died, Bilguer received his place. After he had erected the field hospitals in Liegnitz, Jauer and Striegau for the siege of Schweidnitz, he accompanied the army of Prince Henry and later that of the king. After the battle of Kunersdorf, where the supervision was incumbent upon him, he was ordered to Stettin with a large transport of wounded (among them ten generals and over 400 officers). In 1760 he worked in Torgau. He was greatly pleased with the doctor's degree which was conferred on him by the University of Halle (1761) for his dissertation on "The Discussion of the Very Rare Use of, or the Almost Total Avoidance of the Amputation of Human Limbs." This work on amputation, which he wrote in Latin during a four weeks march and amid the greatest disquiet, was published in the same year in German, and within a very short time made Bilguer famous in European surgery.

He was even more famous among the French than the Germans after the celebrated Tissot in 1764 conferred on the book the great honor of translating it into the French. His glory increased when an English and later a Spanish translation followed, based on Tissot's edition, for the proud Briton did not concern himself much with the Germans. The work was one of the few skyrockets which German surgery sent up during the eighteenth century; it flamed all the more brilliantly because Bilguer dared to directly contradict the views of the Académie de Chirurgie, and so caused an enormous sensation. Men like Pott, John Bell, Kirkland, Morand, Martinière, Gesscher. Bertrandi and Schmucker felt moved to subject the maxims laid down by Bilguer to an exhaustive criticism. The author had not imagined that his work would win general applause from the learned physicians and surgeons as "he did not feel himself strong enough to write for the present age" and latter confessed that he had suffered from jealousy and prejudice until Kirkland came to his aid. A year after this publication Bilguer became a member of the Society of Science in Göttingen, of the Roman Royal Academy of Scientists; of the Academy in Erfurt; and a Master of Wittenberg. The winter of 1762 found him in the quarters at Torgau and Leipzig, where he gave daily and free surgical lectures to the surgeons, which formed the groundwork of a new book, "Guide to Surgery in Field-Hospitals" (1763). This work was dedicated to Prince Frederick Henry of Prussia and among other things was enriched with 126 medical and 132 surgical formulæ; this also was translated into French. As Bilguer had served in the hospital with Surgeon-General Theden after the attack on Freiberg, he turned back to Berlin, on the the conclusion of peace, in order to publish his "Surgical Observations" (1763). This contained notes made by him and by various "industrious and observing hospital army surgeons" during the Seven Years' War, and found favor in the eyes of the British. There followed some very thick volumes; "Information for the Public in Regard to Hypochondria" (1767); "Medical, and Surgical Questions in the Injury to the Skull" (1771), suggested by the wound of a superior officer of whom the King had said that only centuries could produce such a man. In this there was chiefly discussed the diagnosis and treatment of concealed fractures, fissures and extravasations. Then appeared "Experiments and Results with Putrid Fever and Dysentery" (1782), and a practical "Guide for Field Surgeons" (1783). Toward the close of his life, 1791, after he had served fifty years, taken part in twelve campaigns, in nine of them as surgeon-general and three as regimental army surgeon, he wrote his last work: "Recollections for Sketches on the Enlargement of Medical and Surgical Knowledge, Together with a Treatise on Cynic Spasm in Case of Wounds." He had earlier been appointed court physician to the Queen and in the year 1794 was enobled. He died two years afterward. Bilguer enjoyed a great reputation and in the translation of his works was a marked exception among German surgeons. Nevertheless, in the best years of his life he possessed so little self-confidence that he asked "some learned, experienced and celebrated physicians" whether his works deserved to be printed or not. His "Restrictions on Amputating" was an eminent scientific achievement, and if he with a too one-sided courage in almost entirely discarding it, shot far over the mark, yet therein lay the starting point of our conservative surgery of today. Bilguer showed here and there an excellent insight, which must, however, be deciphered out of terrible German.

The other surgeon-general *Johann Leberecht Schmucker* (1712–1786), received his first instruction in the collegium medicochirurgicum and from Eller, Buddeus and Senff in the Berlin Charité. Appointed to the tall grenadier guards he was sent to Paris as salaried surgeon for two years, at the expense of King Frederick William I. Here he studied with Petit, Morand, St Yves and especially with le Dran, with whom he became intimate, and to whom he owed most of his surgical knowledge. The first patient whom le Dran turned over to him suffered from stone; he operated for it. and indeed, according to the order of his teacher before a large audience; moreover, he was obliged to maintain the patient at his own expense until his recovery. Le Dran taught his pupil the wise lesson never to follow slavishly in his studies the opinions of individual scholars, and always to hold truth higher than the authority of any man. Schmucker visited the Hôtel Dieu or the Charité daily, where he saw very many operations performed. On his return from Paris he was appointed in 1739 regimental surgeon in the Sydow infantry regiment; in 1749 to the regiment of the guards in Potsdam, and finally, under Frederick the Great, he was made first surgeon-general and director of the surgical field-hospitals. He made eleven campaigns and was active in almost every battle of the Seven Years' War. "A drachm of experience outweighs many pounds of brilliant theories;" according to this principle Schmucker followed his science, and he wished too that in all medical institutions the students at once begin their study in the hospitals, because all theoretic knowledge in advance of practical, however necessary it may be, avails nothing. However, if the causes of certain appearances lay entirely in the dark he would seek to elucidate them by hypothesis, because by means of this so often neglected philosophy, the science of medicine would make very much greater progress. The time was as yet far from ripe for a system. Medicine and surgery were for him closely bound together and of equal value, so that the strife for the precedence of the one or the other seemed to him very ridiculous. While he censured the prejudice, superstition and credulity of his time, he himself still believed in the "mad-worm" of dogs, and recommended the cutting out of a tendon as a preventive of madness.

Schmucker had a large practice, but in his whole life he performed only seven castrations and twelve lithotomies, only one of which proved fatal. When he boasts of having operated gratuitously on poor patients and having maintained them at the same time, and says that he felt richly repaid by their silent gratitude, and the consciousness of having relieved much misery and brought back happiness and joy to a disconsolate family, this information would sound better from the mouth of another than from his own. His fame was wide-spread. Indeed his most celebrated patient was the court physician Zimmermann, who traveled from Hanover to Berlin on the advice of his friend Meckel, especially to be operated on for hernia by Schmucker. Schmucker's best friend and colleague, as he called surgeon-general Theden, assisted him in this operation. To be sure, full of jealousy Theden, when both operator and patient were dead, related that Zimmermann had previously applied to him in Stettin for the operation. Then when Schmucker was to perform the operation and Theden to assist, the latter asked his principal how the operation was to be performed and recommended his vulnerary water, to which Schmucker replied in an unfriendly way. Under dry bandages recovery followed within thirteen weeks after much suffering, which Theden said would have certainly come to pass with his vulnerary water in five or six weeks. Schmucker's greater experience was very gladly conceded by A. G. Richter, who honored him as one of the most skilful and expert surgeons in Germany. He never omitted a dissection in special cases and kept an accurate day-book of all important cases. Since he felt himself unable to carefully observe all the wounded after a great battle he turned his entire attention during one campaign to certain injuries, and with this in view had as many as possible of those having the same kind of injuries laid together. At the siege of Schweidnitz he did this with injuries to the head, and later, in order to test hemlock for cancer, he had thirty sick with scirrhus brought from all the hospitals in Breslau into his hospital. He took no pride in operating quickly; he valued safety more highly. Yet, as a man 70 years of age, he operated with a quick hand and a good eye. After he had performed many difficult operations with success he at times in operations for hernia still feared the criticism of old physicians, who frequently out of jealousy sought to destroy the reputation of their younger colleague.

He upheld warmly the simplifying of instruments. Although in his time much was improved, much that was useless was abolished; the large inconvenient bistouries for the dilation of wounds were made smaller; a scirrhous breast gland was extirpated with a small knife, instead of with an enormous kitchen knife the very sight of which made the patient tremble; the instruments for trepanning and lithotomy were much improved, yet they still kept the great awkward things for amputations. A surgeon who was not especially skilful could scarcely control these frightful amputating knives. Schmucker had them made only five or six inches long but curved like a bow and the handle of the saw was smooth, without any of the ornamentation by which the old saws were rendered so cumberous. He had the entire apparatus for amputating packed so conveniently that it could be easily carried with him in the field. It is difficult to reconcile his usually somewhat exaggerated humane sentiments with the fact that he kept secret the composition of an eye wash, and that "he did not know that a physician could be blamed if he withheld such a remedy, of whose efficacy he had convinced himself by many successful experiments. If the public were more justly disposed toward physicians every upright man would find such a reservation unfair. Meanwhile I have the example of other great physicians before me." Yet the search after novel and strange things which distracted so many, was abhorrent to him; he did not adopt new remedies and methods in the first heat of their discovery, but waited till time proved their merit.

As was usual in that time, his friends first had to persuade him to write; literary fame had no charm for him. He was honest enough as an author to accuse himself of some negligence, since most of his notes were written in the field-hospitals amid the disquiet and hardships of war, and afterward his many duties would not permit him to add any finishing touches. Schmucker was very truthful and tried to report his cases as faithfully and accurately as possible, in the belief that careful and correct observations would retain their value for all time. Therefore he omitted all learned ornamentation, but made the mistake of purposely avoiding every *raisonnement*, in order to leave that entirely to the reader. In his 70th year he feared that his works were written without fervor and charm and was willing to lay down his pen whenever the public should give him the hint. He was already first surgeon-general when he entered on the career of an author with his "Surgical Perceptions" (2 Vols., 1774). The first part contained fifty observations on injuries and diseases of the head. The introduction of cold water applications in wounds of the head secured to him the gratitude [illegible] has made his name immortal.

injuries and diseases of the breast, abdomen and extremities are treated, chiefly gunshot wounds in the lungs, cancer of the breast, radical operation for hernia, hydrocele, lithotomy, amputation. conservative healing of gunshot fractures, etc. From the point of view that progress comes about more quickly through united forces and in order to join the Prussian military physicians together more cordially and to stimulate them to scientific work, Schmucker published some miscellaneous "Surgical Essays" (3 Vols., 1776–1782), into which are collected 135 observations, partly made by himself, partly by regimental surgeons. These, after the manner of their chief, submitted almost entirely bare reports of cases without any epicrisis. He himself published in the collection papers on amputation, the use of the leeches, black cataract, coagulation of milk, hernia. cevadilla seed, etc.

(To be continued.)

SOCIETY PROCEEDINGS.

American Association of Obstetricians and Gynecologists.

Proceedings of the Tenth Annual Meeting, held at Niagara Falls, N. Y., Aug. 17–20, 1897.

First Day—Morning Session.

The Association met at the Cataract House under the presidency of Dr. James F. W. Ross of Toronto.

An Address of Welcome was delivered by Dr. W. R. Campbell of Niagara Falls, which was responded to by the President.

The first paper was read by the Secretary of the Association, Dr. William Warren Potter of Buffalo, entitled

PUERPERAL ECLAMPSIA WITH SPECIAL REFERENCE TO TREATMENT.

The author, at the outset, referred to the views advanced by M. Charpentier at the Geneva Congress last year relative to the treatment of puerperal eclampsia, especially as to the applicability of the induction of premature labor for its relief, and which he said was so at variance with those that he had been accustomed to entertain, and the verity of which he had so frequently tested, that he confessed surprise thereat. It was not in any spirit of controversy that he ventured at this time to oppose M. Charpentier's teachings, but simply in the interest of professional progress and science. The author then gave his own views regarding this subject, saying that they were fortified by an experience and observation extending over a period of many years. Furthermore, in the application of the principles he would lay down and advocate, a measure of success had been obtained at his hands that did not present itself under a contrary method previously pursued. The prinpal object of the paper was to advocate principles which the speaker grouped under the following heads:

1. Though the pathogenesis of eclampsia is unsettled it belongs solely to the pregnant or puerperal state. It is not appoplectic, epileptic or hysteric in character.

2. It depends upon toxemia due to overproduction of toxins and under elimination by the emunctories.

3. These toxins probably have their origin in the ingesta, in intestinal putrefaction, in fetal metabolism, one or all, and there is coexisting sluggishness, impairment or suspension of elimination.

4. When the prodromes of eclampsia appear, the kidney should be interrogated as to its functions and all symptoms carefully watched.

5. Treatment is preventive and curative. Preventive treatment is medicinal and hygienic; curative treatment is medicinal and obstetric.

6. Milk diet and distilled water should be given in the pre-eclamptic state to dilute the poison, hasten its elimination and nourish the patient.

7. Blood letting should only be employed in plethora or cyanosis. It is liable to cause anemia if persisted in or repeated, whereas red blood corpuscles must be conserved, not wasted. Glonoin diminishes vasomotor spasm, hence may be given freely in appropriate cases. Veratrum viride is a cardiac depressant and a dangerous remedy if pushed to an extent that will control convulsions.

8. Eclampsia is the expression of a further maternal intolerance of the fetus; hence as a prime measure the uterus should be speedily emptied of its contents.

9. Medicinal treatment alone is delusive and, when relied on exclusively, is fraught with danger to both mother and fetus; whereas in the prompt induction of labor is found a rational application of science to a desperate condition.

10. Finally, it furnishes, in the present state of our knowledge, the only basis of expectation for a diminished mortality in a toxemic disease of high death rate.

Dr. John M. Duff of Pittsburg opened the discussion and said, relative to the induction of premature labor in cases of eclampsia in which albuminuria is present, that conscientious practitioners would not hesitate, although in exceptional cases careful attention to medicinal treatment would cause the albumin to disappear and the patient would go on to normal labor. As a diuretic, he had secured excellent results from the use of milk, with a spoon, as hot as it could be borne by the patient.

Dr. H. W. Longyear of Detroit was surprised that the essayist did not mention the necessity of inducing premature labor before the occurrence of eclamptic symptoms. Such treatment appeared analogous to snuffing out the light of a fuse after an explosion had occurred. Premature labor should be brought about in every instance in which a daily examination of the urine showed a constantly increasing amount of albumin, with prodromal symptoms of toxemia. During the past year he had induced premature labor twice under these circumstances. In one case the patient was seven and a half months pregnant and in the other eight months. He would not advocate this course merely because albumin was present in the urine, but because of this and the fact that the amount of urea eliminated was constantly decreasing. Hot milk was very valuable, in his opinion, in the treatment of these cases.

Dr. Walter B. Chase of Brooklyn stated that the decrease in the daily amount of urea was a most valuable indication of the probable occurrence of toxemia in these cases. Unfortunately, many eclamptic patients were seen for the first time only when in convulsions, and then the induction of premature labor was the single measure that could be relied on. In certain cases, however, in which the urine clears after a few days, it was unjustifiable to end the period of gestation prematurely. The best method of stopping the convulsions, particularly when arterial pressure is high, is by the administration of veratrum viride.

Dr. W. H. Wenning of Cincinnati doubted the advisability of bringing on premature labor under all circumstances in which toxemic symptoms develop. In many cases, if the os was rigid and not dilated, there was danger of inducing convulsions in the attempt of the obstetrician to dilate. He considers the psychologic element an important one. He gave the history of a patient who presented no symptoms whatever of toxemic infection, there being no albuminuria or edema present, but who died shortly after the birth of her child. Another patient fearing that her child might be born before the expiration of nine months from the date of her marriage was in a state of constant nervousness on this account, and when labor finally took place forceps had to be used. The patient soon developed a condition of marked apathy and would pay no attention to her child. On six different occasions she had a convulsive seizure immediately after the physician's visit and just as he was leaving the house, but each immediately ceased on his being recalled. The patient finally died, although there had been no true symptoms of toxemia.

Dr. Charles Stover of Amsterdam, N. Y., said an important point was, how soon can the condition of puerperal eclampsia be diagnosticated? He emphasized the importance of a daily analysis of the urine. If the physician is called to see a patient late in the progress of the case the uranalysis might present entirely different features from that in the beginning. He knew of three cases which occurred during the past three months in which the attending physician had waited for more marked symptoms to occur after albuminuria had developed, and each of the patients died. He referred to the method of Dr. James H. Etheridge of Chicago of estimating the amount of urea, and considered it a valuable one. He also spoke of a case which came under his own observation, in which but 500 grains of urea were excreted daily when there should have been 1,300, the patient developing eclampsia.

President Ross said that he had found that the occurrence in females during early life, of exanthematous fevers, had a marked influence on subsequent renal insufficiency; and in more than one instance he had been able to trace this insufficiency to an attack of scarlet fever, or diphtheria, occurring during childbirth. The question of puerperal eclampsia was still unsettled; its pathology was shrouded in darkness, and a step forward would be for the larger medical associations to institute a series of investigations with the hope of determining its cause. In many of the worst cases premonitory symptoms were not present at all. He considered it unwise to use haste in emptying the uterus, when this has been determined on, as there was great danger of lacerating the parts. The question as to the advisability of inducing premature labor in the case of a patient who. in a former gestation, had eclamptic attacks, but in whom at the time of the subsequent pregnancy no symptoms of toxemia were present, was an important one. The speaker had completed the period of gestation in a number of cases of this sort, and believed such action entirely justifiable, although it can not be denied that a woman might go through a number of pregnancies normally before the occurrence of a second series of eclamptic seizures.

Dr. LONGYEAR—Would you advise the induction of premature labor under these circumstances if there are no symptoms whatever of renal insufficiency?

President ROSS—Yes. (The President then reported a case in which he had practiced it.)

Dr. RUFUS B. HALL of Cincinnati, looked upon such a doctrine as extremely dangerous and strongly opposed it. Simply because a woman at some previous time had had eclampsia was not sufficient reason for terminating gestation prematurely when no symptoms of toxemia were present.

Dr. POTTER, in closing the discussion, said the occurrence of albuminuria was a danger signal, but that decrease in the daily amount of urea excreted by a pregnant woman was still more valuable as a diagnostic sign. The violent production of premature labor was never justifiable. If eclamptic attacks occurred some time previous to labor the physician might take time in emptying the uterus, but in the intrapartum variety, the cervix should be carefully dilated by means of a steel dilator and the hand, and, if necessary, forceps applied and the fetus delivered. He had accomplished this within three hours when the cervix was rigid, without lacerating the tissues, and had saved the life of both mother and child.

Dr. H. W. LONGYEAR of detroit, read a paper on

PUERPERAL DIPHTHERIA,

the object of which was to bring before the profession the fact that the Klebs-Loeffler bacillus is a potent factor in the etiology of puerperal infection, six cases being reported in proof of the position of the writer. The diphtheritic character of each case was determined not only by clinical evidence, but by bacteriologic examination made by the bacteriologist of the Detroit Board of Health. Five of the cases recovered and one died, the one death being the only case in which antidiphtheritic serum was not used.

The writer recommends bacteriologic examination in all cases of puerperal infection, condemns curetting in all cases where a membranous exudate is present, and recommends the use of antidiphtheritic serum, the intra-uterine application of a strong solution of iodin and carbolic acid at the beginning of treatment, drainage of the uterus by a tube, intra-uterine irrigation with antiseptic solutions, bi-hourly vaginal injections of hydrogen peroxid, and the usual supportive treatment with quinin and whisky. In mixed cases of Klebs-Loeffler bacillus and streptococcus, he would first use the antidiphtheritic serum, and then in twenty-four to forty-eight hours, begin the use of the antistreptococcic serum. He believes that the true character of this form of infection has not been heretofore recognized, but that it will be found to be more or less prevalent in all localities in which diphtheria exists if sufficiently critical examinations are made. The physician and midwife are warned to use especial care in such localities, as the postpartum parturient canal furnishes the most favorable soil for the growth of the Klebs-Loeffler bacillus.

Dr. JOHN M. DUFF of Pittsburg, followed with a paper on

THE SOURCE OF PUERPERAL SEPSIS.

The source of puerperal sepsis he said was given by the authorities as contagion from a woman similarly affected, from suppurating or decaying tissues, from putrefying substances within or without the body, and from zymotic diseases, especially erysipelas and diphtheria.

The exact source in any given case was not always easy to determine. In a large proportion of cases, however, a careful inquiry would be rewarded with the revelation of a source. When found it generally proved to be one which could have been avoided.

Aseptic midwifery had done much to prevent puerperal sepsis, and consequently to lower the rate of mortality following childbirth. He had heard and read remarks by members of the profession in sentiment expressing the opinion that the accoucheur who was so unfortunate as to have a case of puerperal sepsis occur in his obstetric work was guilty of malpractice. Such expressions he thought were extravagant and were not warranted by our present knowledge and experience. Sepsis does occur sometimes despite the best efforts of the practitioner to prevent it. While he believes puerperal sepsis can not always be prevented, he does believe that with ideal surroundings, with a careful and skilful physician, supplemented by an educated and conscientious nurse, the number of cases could be reduced to a minimum. His observations teach him that while on the one hand there was no attempt at aseptic or antiseptic precautions, there was frequently too much reliance placed upon antiseptics. For instance, a well known member of the profession had said in his hearing a short time since that he felt perfectly safe in going to attend a case of labor after waiting upon a case of erysipelas or diphtheria, if he washed his hands well in a strong bichlorid solution. Dr. Duff thinks his patients will be safer if he went to them under such circumstances with fear and trembling, which would cause him to perform further ablutions if possible.

Without discussing at length the different known sources of infection or defining the varieties of sepsis, the author reported fifty cases of puerperal sepsis that had come under his observation.

These two papers were then discussed together.

Dr. A. GOLDSPOHN of Chicago, said such papers as the one presented by Dr. Duff were calculated to do a great deal of good. The old idea was still prevalent that puerperal fever was something specific. This was a mistake. It was an infection, just the same as a phlegmon or other inflammation which occurs in any other part of the body. The cause of it was thoroughly settled, viz., septic germs. Men who had labored exhaustively in Europe on this subject had come to the conclusion that the most dangerous germ of the disease was the streptococcus, which was present in about 4 per cent. of the cases.

Dr. LEWIS S. MCMURTRY of Louisville, said physicians were apt to think that because puerperal sepsis was discussed a number of times and so much had been written about it, that professional sentiment was crystallized and that it was a work of supererogation to agitate the subject, but if we would look around us in our respective localities we would find that the number of deaths from puerperal sepsis is very large. He sometimes thought that we do not realize at the present time, in large cities and in country districts, how great the mortality is from this altogether preventable disease, and until the mortality is reduced very materially the subject should be discussed repeatedly and published to the profession, showing the responsibility and duty that rest upon practitioners.

Dr. CHARLES G. CUMSTON of Boston, spoke of the principal cause of puerperal sepsis from a pathologic standpoint. In 1893 he conducted a series of experiments with reference to the bacterium coli. Among the specimens and autopsies that he performed in view of ascertaining the virulence of this organism he had five cases of puerperal septicemia, in all of which the uterus was carefully examined. The folds of the membrane lining the uterine cavity contained the bacterium coli, as was subsequently proven by cultures. Two of the uteri were removed by the vaginal route, and on the other three patients he performed autopsies. He could not give the clinical history of the cases, but only the anatomic and bacteriologic findings. A second cause of puerperal septicemia, and a very potent one, was the gonococcus, in that it prepares the way for pus producing organisms to enter the uterine cavity and thus set up infection.

Dr. JAMES F. BALDWIN of Columbus, Ohio, stated that in three cases of so-called puerperal fever that had come under his observation the infection was found to be due to appendicitis, and he supposes it was attributable to the bacillus coli communis. Two of the cases were operated on and recovered. The third case was operated on by another surgeon and died.

Dr. WM. WARREN POTTER of Buffalo, drew attention to the point that in discussions on certain papers presented to societies, and even in magazine articles, there was a disposition to drop from the literature of the subject the term puerperal fever. There were some old fashioned things that the profession need to cling to because they were good, but puerperal fever was no longer recognized as a distinct entity. The term was misleading in itself, because it leads to an erroneous pathology and an equally erroneous treatment.

Dr. ADAM H. WRIGHT of Toronto, said that in the majority of cases of puerperal sepsis the poison comes from without and the condition can be avoided. It is a preventable disease.

Dr. EDWIN WALKER of Evansville, Ind., said that it was a much more rational thing to dry out the genital tract than to wash it out. He would admit that even if the genital tract was dried out we could not get rid of all the germs, but we could deprive them of their nourishment. If we use a douche of clean water we furnish the germs a pabulum for their nour ishment. In puerperal sepsis he would advise wiping out the genital tract rather than douching it.

President Ross said he had seen a large number of cases of puerperal sepsis in consultation, owing to the fact that the patients had either pus tubes, pelvic abscess, or some such condition present, although he did not do an obstetric practice. He gives the causes of puerperal sepsis as follows: 1. Gonorrhea. 2. Retained placenta or membranes. 3. Dirty hands and instruments. 4. Lacerations of the cervix and perineum, improperly repaired or protected. 5. Intra-abdominal disease or tumors.

Dr. Albert Vander Veer of Albany, said he was quite sure that he reiterated the experience of other abdominal surgeons when he said that it was sad to witness the amount of ignorance that existed in regard to careful aseptic obstetric work. If we are to use serum therapy, it is very essential to make a differential diagnosis, as was touched upon by Dr. Longyear, and the speaker fancied that the future history of this work would be in the direction of the serum of streptococci. The cases must be seen as early as possible.

Dr. Albert Goldspohn of Chicago, said the gonococcus was not the exciting, but merely the predisposing cause of puerperal sepsis. There was no case of puerperal sepsis on record in which the gonococcus alone was the cause of the trouble. Other pus microbes were present in this condition, and the infection was a mixed one.

First Day—Afternoon Session.

Dr. Adam H. Wright of Toronto read a paper on

TOXEMIA OF PREGNANCY,

in which he said that the chief symptoms of this condition were salivation; disorders of digestion, with sometimes a peculiar taste, and constipation; general malaise; anemia; nervous disturbances or headache; disorders of vision; irritability; deficient excretion of urine or some of its constituents, and albuminuria. To speak briefly, he thought any sign of the slightest departure from ordinary health during pregnancy should make us suspect the advent of general toxemia, and should receive careful investigation and thorough treatment. If, for instance, there be general malaise, with slight headache, but no albumin in the urine, let us not be deceived, since albuminuria was only one of the symptoms of systemic poisoning, and sometimes the last to appear. Its absence proved absolutely nothing.

Coming to the treatment, reference was made to milk diet for toxemia or albuminuria of pregnancy. He believes that a purely milk diet is good for young babes and calves, but he does not think that it is suitable for adult human beings. Yeo, in his admirable book on "Food in Health and Disease," shows clearly that milk is not a suitable food for healthy adults because it contains an excess of albuminates and fats, and that it should be mixed with other foods, especially the carbohydrates. If it be conceded that milk alone is not the best food for healthy adults, it is difficult to conceive how it can be the most suitable in any case of disease.

In connection with his results in the Burnside Hospital, in nine years they have had sixty-five cases of toxemia with albuminuria with two deaths, both from eclampsia. One of these two patients came into the hospital in a dying condition with eclampsia, having received no previous treatment. In the sixty-five cases mentioned there were many cases where the albuminuria and other symptoms were only slight.

In conclusion, the author enumerated the main points in his treatment as follows: 1, a carefully selected mixed diet with plenty of water, plain and mineral, lemonade without sugar, etc.; 2, rest, good hygienic surroundings and proper clothing; 3, the regular and persistent use of purgatives for weeks or months, with a preference for epsom salts; 4, a warm daily bath; 5, the induction of abortion or premature labor in rare cases.

THE TREATMENT OF PUERPERAL ENDOMETRITIS BY THE CAROSSA METHOD.

By Edward J. Ill, M.D., Newark, N. J.

There appeared a pamphlet early in the winter of 1896 by K. Carossa, describing a method which consists simply in the use of alcohol as an irrigating material, supplemented by gauze packing of the uterus in such a way that the alcohol finds its way into the most distant recesses of the uterus. A catheter is introduced into the uterus and this organ filled with absorbent gauze in a lightly, but thorough fashion. At the external end of this catheter a funnel is attached through which a 20 to 25 volume per cent. of alcohol solution is poured so as to flow into the gauze with which the uterus is filled. The quantity to be used is from 30 to 50 c.c. every hour, day and night. In three to six days the gauze is removed.

The originator of this method presents some fantastic theory of the evaporation of alcohol which the author of the paper can not agree with, and to which Dr. Carossa attributes his results. Dr. Ill has used the above method, slightly modified, with good results and recommends it for further trial, especially so on account of its great simplicity.

Dr. Rufus B. Hall of Cincinnati, discussed some of the

SEQUELÆ FOLLOWING SUPRAVAGINAL HYSTERECTOMY.

He said he thought the profession had been too hasty in approving the present methods. They had taken the stand that there was nothing more to be desired; the operation was complete. While the Doctor had no new method to offer, he hoped the discussion of his paper would suggest something to improve the technique of the present methods.

He referred to objections to the extraperitoneal method, and then spoke more in detail of total extirpation. He was one of the first to advocate and make this operation, and he had attained excellent results with it. However, it did not meet his ideas of a perfect operation. The final results were good, but there was a primary difficulty that was disagreeable. Suppuration necessarily took place about the ligatures on the sixth or seventh day, causing a slight rise in temperature. To overcome the suppuration, he used specially prepared catgut for the ligatures below the peritoneum. He found the catgut unreliable on account of the danger from hemorrhage through slipping of the knots, and so abandoned its use.

After seeing Dr. Kelly of Baltimore, in 1895, make the supravaginal operation with his modifications in the technique of the Baer method, Dr. Hall adopted that method. He operated according to it forty-six times, but was not pleased with his results. Eleven of the cases had post-operative sequelæ, due to the buried ligatures. All the patients made good primary recoveries, only one showing any signs of trouble earlier than the seventh week. This one had a discharge of pus from the vagina at the end of the fourth week. The discharge disappeared to return again at intervals of a few days to four or five weeks, and only ceased when the ligatures were removed. The other cases had similar histories except that they did not have any trouble until from four to eleven months after the operation. Within a few days after the ligatures were removed, the patients were well and have remained so, except two. These two, one sixteen and the other eighteen months since the operation, are still having trouble as the ligatures have not all come away. The Doctor said he knew the material was not at fault or there would have been trouble immediately following the operation. Besides, the same material was used in other operations and no trouble resulted. He said he believed a large percentage of the patients so operated on would certainly have this trouble. The general surgeons are abandoning the use of silk, silkworm gut and silver wire in Bassini's operation for this very reason, and he felt it only logical for the gynecologist to expect to have to do the same. He urged the other gynecologists to tell their results with this method and compare notes.

The Doctor closed his paper by saying that in spite of the fault he had to find with total extirpation, he preferred it to supravaginal hysterectomy as practiced by Baer and modified by others. He felt more certain of his final results with the former method.

Dr. George M. Hughes of Philadelphia read a paper on

THE SEQUELÆ OF DEAD LIGATURES AND SUTURES.

While assisting Dr. Joseph Price in his abdominal work the essayist had recently been greatly interested in a number of cases in which he reopened the abdomen for the freeing of adhesions and the removal of dead ligatures and sutures. Sutures and ligatures should be of that material which is easiest sterilized and which combines great strength in a small bulk. It was always preferable to use a material capable of being rendered aseptic by heat or boiling. If this could be done, we could at all times have the means at hand to render our ligatures perfectly sterile. For this purpose he finds that for pedicle ligatures and for bowel work the twisted Chinese silk is the best, of finest quality and sufficiently small to secure safe tying; for closure of the abdominal incision silkworm gut and the through and through method. What becomes of the ligatures? If small and sterile, they become encapsulated and rapidly absorbed. If plaited ligatures and large hawsers are used, whether infected or not, they are never absorbed, but their presence as foreign bodies give a train of symptoms unbearable in their distress and constant in their duration. The same conditions are found about the pedicles, only here we have the adhesions of omentum, large and small bowel and bladder to both the pedicles. To obviate post-operative sequelæ we should select that method of applying ligatures which gives safety with the least quantity of material. For pedicles the simple figure of-eight tie is the best, in that it gives a firm, small, strong tie and one not liable to slip. The pedicle is then cut cone-shape. The pedicle must be made as small as possible; large pedicles are prone to behave badly, and to this is due the post-operative adhesions of omentum, bowel or bladder. To illustrate his remarks the essayist selected and reported five instructive cases.

(*To be continued.*)

SELECTIONS.

The "Plaque-System" of Filtration of Water Supplies.—Engineer Fischer of the public works department of the city of Worms, Germany, has invented a filtration method that is claimed to have decided advantages over the ordinary sand or gravel beds. The basis of the new system is found in the fact that clean, sharp sand when mixed in due proportion with finely pulverized glass, which may be derived from the waste of a high temperature, may be hardened in any desired form. The inventor in this case hit upon the plan of molding this porous cement into hollow plates or "plaques" about forty inches square and eight inches thick, that is, with walls three inches in thickness and about two inches of hollow space at the center of the plaque. The system is sometimes spoken of as the "plaque system of filtration." In constructing the filtering plant, these plates are set upright in groups or batteries of any number, according to the desired size and capacity of the establishment, and are ranged along the lower portion of one or more tanks of hydraulic masonry, where they can be covered to a depth of three or four feet with the water to be filtered. The water is then forced by its own pressure through the porous walls of the plates into the interior hollow space, where it trickles down and is drawn off through pipes laid at the bottom of the tank, to the reservoir which receives the filtered water. These discharge pipes are rigged with cocks so that each plate and group of plates may be isolated for cleaning or other purposes while the adjacent batteries are in operation. The water, in passing through the three-inch walls of vitrified sand, is filtered as perfectly as by traversing three feet of loose sand or gravel in the ordinary sand filtering process. The plates being set upright and close to each other increase from eight- to ten-fold the filtering surface that may be condensed within any given superficial area, thus securing an important economy of space between frost-proof constructions, and where, as is often the case, land is costly and difficult to obtain. According to an official report by M. Janssen of the University of Brussels, who made an exhaustive study of the whole subject at Worms, that city began in 1889 the filtration of Rhine water for general purposes by the ordinary sand filtering process similar to that then used at Berlin. With a filtering surface of 1,300 square meters (approximately 13,000 square feet), 3,000 cubic meters (792,510 gallons) of water were filtered in twenty-four hours. This supply proved insufficient for the city, and it became necessary to construct an addition to the filtering plant, the cost of which, on the sand filter plan, was estimated at $30,000. It was then that the Fischer system was given a practical trial. Instead of occupying new land and building additional constructions, one of the ten vaults containing the sand filters already in use was isolated, cleaned out and the space filled with a battery of five hundred plates of the Fischer pattern. The whole cost of the change thus made was about $9,600, and the new filters, occupying one-ninth as much space as the sand filters, doubled the filtering capacity of the entire installation. In other works, five hundred Fischer plates costing, set up and ready for operation, $9,600, and occupying only 130 square meters of space, filtered as much water as the sand filters which occupy 1,170 square meters of space and cost $30,000. To substitute the Fischer plates for sand throughout the entire establishment would be to increase the filtering surface from 1,300 to 10,000 square meters (approximately from 13,000 to 100,000 square feet) and multiply by ten the daily filtering capacity of the plant. From a long series of analyses and careful observations by the sanitary authorities at Worms, it appears that the efficiency of the two systems of filtering, which are there worked side by side, are practically identical, so far as regards their effect on the chemic purity of the water, but the percentage of bacteria left by the Fischer process is somewhat greater than is left by the sand filter when clean and in good working condition. This, however, is not considered a defect of practical importance. The water delivered by the new filter at Worms, as well as at the other places where they are in daily use, is certified by high and impartial authority to be thoroughly purified and fitted for drinking, as well as for culinary and manufacturing purposes. In addition to the city of Worms, the following towns have adopted this system: Kiel, Landberg (near Berlin), Madgeburg, Frankenhausen and Winterthur, and it is thought possible that certain of our inland cities, like Cincinnati, Louisville and Cairo, may find in the experience of the above towns an aid to the solution of the problem of the safe utilization of their near-by river supply.—*Consular Reports.*

Lord Lister on Physiologic Research.—Lord Lister has made an important and interesting address on the subject of modern pathologic research at the opening of the Belfast Physiological and Pathological Laboratories, an extract from which as published in the *British Medical Journal* is given below:

"There are people who entertain exaggerated views," he says in effect, "regarding the work that is accomplished at such laboratories. There are people who do not object to eating a mutton-chop, people who do not even object to shooting a pheasant with the considerable chance that it may be only wounded and may have to die after lingering in pain, unable to obtain its proper nutriment, and yet who consider it something monstrous to introduce under the skin of a guinea pig a little inoculation of some microbe to ascertain its action. Those seem to me to be most inconsistent views. With regard to all matters in which we are concerned in this world, everything depends on the motive. A murderer may cut a man's throat to kill him; any one of you medical students may have to cut a man's throat to save his life. The father who chastises his son for the sake of the good of his morals is a most humane man; a father who should beat his son for the mere sake of inflicting pain upon him would be an inhuman monster. And so it is with the necessary experiments upon lower animals. If they were made, as some people seem to assume, for the mere sport of the thing, they would be indeed to be deprecated and decried; but if they are made with the wholly noble object of not only increasing human knowledge, but also diminishing human suffering, then I hold that such investigations are deserving of all praise. Those little know who lightly speak on these matters how much self-denial is required in the prosecution of such researches when they are conducted, as indeed they always are, so far as I am aware, with the object of establishing new truth. The exercise of a little charity might lead those who speak of us as inhuman to reflect that possibly we may be as humane as themselves.

"The profession to which I have the great honor to belong is, I firmly believe, on the average, the most humane of all professions. The medical student may be sometimes a rough diamond; but when he comes to have personal charge of patients, and to have the life and health of a fellow creature depending on his individual care, he becomes a changed man, and from that day forth his life becomes a constant exercise of beneficence. With that beneficence there is associated benevolence; and in that practical way our profession becomes the most benevolent of all. If our detractors knew this, common sense would enable them to see that our profession would not be unanimously in favor of these researches if they were the iniquitous things which they are sometimes represented to be.

"I have been interested in the following account of a part of Pasteur's work on rabies: It had been established that the introduction of a portion of the brain of a mad dog under the skin of a healthy animal was liable to cause rabies, and Pasteur had reason to believe that it was principally in the nervous centers that the poison accumulated. He felt a very strong desire to introduce some of the poison into the brain of an animal; but he was a peculiarly humane man. He never could shoot an animal for sport. He was more humane than the great majority of human beings, and for a long time he could not bring himself to make the experiment of trephining an animal's skull and introducing some of the [illegible] of rabies into the brain. He [illegible] sirous [illegible] establish the patholo[illegible] he s[illegible] one occasion, when he was absent from home, one of his assistants did the experiment, and when Pasteur came back he told him that he had done so. 'Oh!' said Pasteur, 'the poor creature! His brain has been touched. I am afraid he will be affected with paralysis.' The assistant went into a neighboring room and brought in the animal, which was a dog. It came in frisking about and investigating everything in a perfectly natural manner, and Pasteur was exceedingly pleased, and although he did not like dogs, yet he lavished his affection upon that particular animal and petted it; and from that time forth he felt his scruples need no longer exist. So soon as our poor selves are directly concerned our objections vanish into thin air; a tiger threatens to invade our camp; who would care much about what kind of trap was set for it, or what suffering the trap caused the animal, so long as it was caught? When the matter affects only the welfare of others, including that of generations yet unborn, the good done does not appeal to the individual and the objector sees only the alleged horrors of modern scientific investigation; of which horrors, however, he quickly loses the sense as soon as he becomes personally concerned."

PRACTICAL NOTES.

Sub-diaphragmatic Abscesses are usually fatal if left to themselves, but the symptoms are so contradictory that they are rarely diagnosed during life. The experience of H. Graves has been therefore exceptional, as he reports six cases in his practice in Sweden, diagnosed and operated in time to save all but one.—*Hygeia*, 1.

Belladonna for Tuberculous Abscesses.—Hamant recommends the use of a belladonna salve (extract bellad. 3 to 30 grams vaselin), for the abscesses caused by the external eruption of an underlying tuberculous focus, as he has found it possessed a favorable, even perhaps a specific effect in such cases, the more remarkable as it has no effect on non-tuberculous ulcerations.—*Therap. Woch.*, July 25.

Some Points in Scarlet Fever Cases.—Dr. Joseph W. Hickler of Orange, N. J. (New York Academy of Medicine meeting, June 3), in his experiments for an immunizing serum, discovered that the mucus of the throat and mouth contained the contagium of scarlet fever, and that the early eruptive stage was very infective because of the discharges from the mouth and throat. He found the average period of incubation to be thirty-two hours; time before vomiting, twelve hours; shortest time for desquamation, three days; and the longest, nine days.

Decalcification of the Arteries; Rumpf's Treatment of Angina Pectoris.—Professor Rumpf of Hamburg ascribes the etiology of certain affections, notably angina pectoris, to accumulations of lime in the arteries, and has secured remarkably favorable results in twelve cases in which he has produced increased elimination of lime through the urine and feces, while reducing to the minimum the amount of lime ingested. He denounces the use of milk in cardiac affections, as it is rich in calcareous salts, and restricts his patients to the following diet per day: Meat, 250 grams; bread, fish, potatoes and apples, each 100 grams. This menu contains 93 grams of albumin, 14 of fat, 93 of carbohydrates, and furnishes 892 calories. Adding 100 grams of butter, 100 of cream and 50 of sugar, the number of calories is 2000. It contains ten times less lime than a strictly milk diet and three to four times less than the Hoffmann substitute diet. The potatoes can be replaced by an equal quantity of green peas, beans or cucumbers, but he forbids any milk, eggs, cheese, beets, spinach, rice, or any food rich in lime. For a drink he orders distilled water, or at least water boiled and cooled. His medication is limited to the following, to be taken during the day: Sodium carbonate, 10 grams; lactic acid, q. s. to saturate. Add lactic acid, 10 grams; simple syrup, 10 grams, and 200 grams aq. dest. This medication can be employed for a long while without inconvenience. The amount of lime eliminated with this treatment increased 50 to 52 per cent. Rumpf does not hope to cure, but merely to arrest the development of the affection, and his truly remarkable success in relieving severe cases of angina pectoris should encourage others to persevere in this line.—*Presse Méd.*, July 17.

Importance of the Motor Functions of the Stomach.—According to J. Boas of Berlin, we have been inclined to ascribe altogether too much importance to the chemic action of the stomach as the chief factor in normal digestion, when in fact its motor capacity is the most important. He asserts that the hydrochloric acid of the stomach is not a secretion necessary to the integrity of the organism nor of the stomach, also that even with copious secretion of hydrochloric acid, fementation occurs as soon as any serious mechanical obstruction intervenes, but adds that ulcerations of the gastric mucosa may produce limited fermentation even without mechanical obstruction to the outflow. It is therefore the main task of gastric therapeutics to cure disturbances in the motor functions of the stomach. In determining insufficiency, inflation and illumination are less reliable than the Leube or Boas test supper. (The latter consists of a cup of tea, two wheat rolls with butter and cold meat.) If food is found in the stomach in the morning following this meal, there must be great mechanical disturbance of the process of digestion; much gastric juice with it signifies hypersecretion; mucus, gastritis; bile, some obstruction in the duodenum or upper jejunum; stearic acid, fermentation of fats; alcohol, lactic acid, carbonic acid, marsh and hydrogen gas indicate fermentation of carbohydrates; sulphuretted hydrogen, etc., fermentation of albumin. Of the micro organisms, the sarcinæ thrive best on hydrochloric media; the bacilli on lactic acid fermentation; scantily in benign ectasia with hydrochloric acid. Saccharomyces are found in every case. Removing the cause is the first indication; extirpating cancer of the pylorus, stretching the contracted pylorus (Oreta), pyloroplastics (Heineke-Mikulicz), separation of adhesions. Gastro enterostomy may cure in benign cases, even without removing the cause. Surprising success is sometimes attained by palliative measures. He classifies the indications for the diet as follows: 1, "insufficiency with permeable pylorus and retained (increased) secretion of gastric juice, require restriction of the fluids allowed; 2, pylorus contracted, normal (increased) secretion of gastric juice, indicates that fluid and soft food will be better digested, especially milk in small amounts; 3 and 4, suppression of the secretion of the gastric juice, carcinoma with stagnation and severe gastritis. Fluid food is best adapted to all these cases, taken in small, frequent meals. In benign stenosis with abundant secretion of gastric juice, the best diet is animal albumin with restricted non-nitrogenous food; in stenosis of the pylorus with lack of gastric juice, carbohydrates and fats are preferable, with easily assimilated vegetable albumin. In every case milk must be tried. If it is impossible to maintain the nitrogenous equilibrium of the organism by the food taken into the stomach, which shows imperfect diuresis, it must be supplemented per rectum. As the tissues dry out rapidly in such cases, the introduction of salt solution is valuable; also of alimentary fluids, such as milk with eggs, red wine, starch and salt. Irrigation of the stomach is only required in severe stagnation, but can be employed occasionally, if care is afterward taken to entirely remove all the water. It should be made late at night or early in the morning, with salicylic acid added, 3 to 1,000. The effect of massage and electricity is not yet sufficiently determined. There is no medicine for motor insufficiency, although strychnin, orexin, cetrarin and columbin have been recommended. To curb fermentation, salicylic acid (0.3 to 0.5 gram), or salicylate of soda (1 to 2 grams) are best, administered in the evening. Sodium bicarbonate, magnesia and Carlsbad salts expel the gases. Hydrochloric acid can be administered when it is absent, and opiates and laxatives are demanded in certain cases.—*Memorabilien*, July.

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SATURDAY, AUGUST 28, 1897.

KLONDIKE NOSOLOGY.

Since the appearance of "Medical and Anthropological Notes on Alaska," by Dr. IRVING C. ROSSE of Washington,[1] who went on Arctic voyages in search of the exploring yacht *Jeannette* and the missing whalers, nothing of importance has been contributed to our medical or anthropologic knowledge of the glacial zone. In addition to writing the "Cruise of the *Corwin*" the Doctor, being a Fellow of the Royal Geographical Society, wrote an account of "The First Landing on Wrangel Island with some Remarks on the Northern Inhabitants," besides contributing to WOOD'S "Reference Hand Book of the Medical Sciences," the articles on "Scurvy" and on "Cold," which embody much of the information and experience gained on the fore-mentioned voyages.

Now that the wild and thoughtless rush to the Alaskan gold fields is uppermost in the public mind, everything relating to our far-away hyperborean possession calls forth an intensity of interest that makes all Alaskan matters pertinent and brings them to the front once more.

Of the many facts of scientific interest observed and recorded, those of a medical and anthropologic nature remarked by Dr. ROSSE may be classified according as they concern the effects produced upon the visitors by the peculiar conditions under which they found themselves, and those phenomena observed among the aboriginal inhabitants, owing in part to those same conditions, become permanent, and in part of course to race idiosyncracies.

Under the former heading we notice that a discrepancy was often observed between the record of the thermometer and the feeling of the observer, or, as the writer expresses it, between physical and physiologic cold. With the thermometer at 45 degrees F., the temperature was described as uncomfortably warm, and again at 60 degrees F., the direct sun heat was *once almost overpowering.* Whereas the experience of travelers in other latitudes, as for example in the Peruvian Andes, is cited as showing a keen and penetrating cold at the same temperature, 60 degrees F. As Dr. HAYES went swimming in a pool of water on the top of an iceberg in Greenland, and as other northern travelers have bathed in Siberian waters, so one writer took his plunge into the icy Arctic Sea on one of the physiologically warm days, and enjoyed it. The whole subject of heat production and temperature equilibrium among northern peoples as well as in the marine mammals is one of exceeding interest, and the reported facts of a physiologic rise of temperature after exposure to cold water or air in temperate climes may possibly indicate some special adaptation of thermic functions in these hyperboreans. At all events it is much to be regretted that want of instrumental facilities prevented any observations being made on the temperatures of the human subject under varying conditions; especially unfortunate is it in view of the suggestions as to the value of alcoholic beverages in cold climates. Contrary to the teaching of physiology regarding the vasomotor effects of alcohol, and contrary also to what has been often claimed, as in a recent paper by Dr. LEFFMANN before the Philadelphia County Medical Society, to be the experience of Arctic explorers of the deleterious effects of alcohol among northern voyagers, we find that Dr. ROSSE cites numerous Arctic travelers, and coincides with their testimony, to the effect that the moderate use of alcoholic beverages is found to be advantageous in the severe weather of the high latitudes. But it is possible that the discrepancy is more apparent than real, for we have no thermometric records on the spot to offset the physiologic evidence, while alcohol seems to be one of the best antiscorbutics, and we know scurvy to be one of the great banes of northern voyagers. The "heavy-headed revel which HAMLET confessed his countrymen to be addicted to, and to which travelers in general have observed a tendency in northern peoples, may be, as one author rather intimates, but nature's call for a protective against the inclement conditions of life; but if so, nature seems in some danger of overdoing the matter, for we read of the rapid depopulation of St. Lawrence Island, where one thousand of the inhabitants have perished in three years, and many villages are already quite extinct, a result ascribed to too much of the "bay rum," "Florida water," and other euphonious brands of poor alcohol which struggle past the revenue officers, and for which the Eskimos exchange their furs with great eagerness. Much of the responsibility for this physical deterioration ascribed to intemperance properly belongs to the vile liquors used, and again to starvation. But certainly more exact observations as to the effects of alcohol in the human economy in cold climates are much to be desired.

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[1] Government Printing Office: 1883.

The northern voyager seems to be, as a rule, tolerably free from acute bronchitis or pulmonary disorders while exposed to severe cold, but there is a marked tendency to the development of such affections after his return to a temperate climate. This was observed in the crew of the *Corwin*, as it has been in other individuals. On the other hand the natives seemed constantly suffering from colds and coughs, a fact which appears to show a greater cold-resisting power in the white race.

Some curious auditory and optic phenomena are recorded. The irregular refraction of the atmosphere at some points, taken in connection with the wonderful clearness in others, gives rise to remarkable deceptions of the vision. The distinctness with which small stones and other objects on a mountain side can be seen at times bewilders the vision, while the vagaries of the mirage and the blending of the real with with the unreal leaves one in doubt as to what he actually sees. The sound of a boatswain's orders, and of laughter and conversation at a distance of two miles, the noise of one's own beating arteries on a still day, and the repetition of echoes, in one case to nearly a hundred times after a pistol shot, are some of the freaks of acoustics.

The diseases to which the Innuit population are specially subject are scurvy, syphilis, and an epidemic which seems to have been of the nature of grippe or a species of pneumonia of an extremely asthenic type. No postmortem evidence was at hand to show whether the pathologic condition corresponded with that of the type of the disease common with us. Lung troubles in general are seen to follow a mild winter. Intermittent fever at Cook's Inlet, apparently originating on a bluff several hundred feet high, in houses exposed to a breeze direct from the inlet, is a fact more interesting than explicable. Rheumatism and gastric derangement, the latter often from overeating, are not rare.

Alaska is a favorite place for surgical operations, wounds healing with great rapidity. The presence of ozone and the absence of germs are believed to be the cause of this. Hysteria is a luxury which the female Eskimo is by no means willing to relinquish entirely to her white sister, and nervous diseases we find to be quite frequent. Our author, with much less levity for the narcotic weed than for alcohol, ascribes neurotic diseases to the senseless and filthy habit of using tobacco. Certainly they can not be considered as the sequelæ of civilization.

We may merely mention that the popular notion of the typical Eskimo cranium is said by Dr. ROSSE to be incorrect. Instead of the pyramidal skull, with prominent superciliary ridges, occipital protuberance, and zygomatic arches, and with small brain capacity, one finds the type to have a large facial angle (eighty degrees), and a brain capacity equal to the average Frenchman or German. The squamoparietal suture has not the convexity noticed in the chimpanzee and the mound-builder, and the index of the foramen magnum is about the same as in European crania. According to Dr. ROSSE, the facts regarding the natural intelligence of the Eskimo correspond with these cranial appearances, and the northern people have by no means the dulness and slowness of understanding which some have ascribed to them. Neither have they any coldness of the passions corresponding to the thermometric range of their climate. Unchastity is as common among them as among the hottest savage that swelters under the tropic sun, and it is evident that something more than external ice and snow are necessary to cool the desires of the human animal.

Much more of interest and novelty is told of the social, ethnic and other peculiarities of the Eskimo, of which space forbids further notice.

The instructive and practical value of the forementioned views of Alaska may be of great service to those seeking medical information concerning a part of the country almost unknown. Doubtless many lives will be lost and much suffering ensue from neglect of the proper precautions of a simple nature by the unprepared who, seized with the thirst for gold, brave the dangers beyond the north winds in a region best described as the "abomination of desolation." However, with the continued supply of the precious metal such a state of affairs can not long exist, for in a short time the all-powerful combination of gold and Anglo-Saxon energy will bring with it the iron horse and the electric installation, which will change present Klondike rigors into those of comfort and even luxury.

THE GERM OF YELLOW FEVER.

We have been much interested in the account given by SANARELLI of his bacillus icteroides, the recently announced *vera causa* of yellow fever. We have had so many announcements during the past twenty years of the discovery of this germ that we may be excused for hesitating to accept the cry, "Eureka!" Nevertheless SANARELLI's claim to the identification of the bacillus appears to have been based on satisfactory experimentation and to have met with official acknowledgment in South America, if we may credit newspaper accounts of a $10,000 premium awarded him for his discovery.

He found his bacillus mixed with the coli bacillus, staphylococci or streptococci, or he was unable to find it owing to the cadavers being invaded by other microbes which caused the total disappearance of the specific bacillus. He found it in the circulating blood and in the interior of the tissues, but never in the gastro-intestinal contents, hence he holds that the virus of yellow fever does not reside in the digestive tube but is manufactured in the organs or in the blood itself.

In plate culture in ordinary gelatin the bacillus icteroides forms roundish colonies, transparent and granular, which during the first three or four days present the appearance of leucocytes. The granulation of the colony becomes continuously more marked, and usually a central or peripheric nucleus, completely opaque, is delineated. With time the entire colony becomes opaque, but does not liquefy gelatin. Streak cultures on gelatin solidify obliquely, forming brilliant opaque little drops similar to drops of milk.

The culture on agar-agar presents, according to Sanarelli, a diagnostic means of the first importance. When the colonies are developed in the incubator they are roundish, gray, a little iridescent, transparent, with a smooth surface and regular margins; but if instead of making them grow at a temperature of 37 degrees C. they are left to grow at a temperature of 20 to 30 degrees C., the colonies are like drops of milk, opaque, prominent, and with pearly reflections, different from those developed in the incubator. This difference can be utilized by exposing the cultures for the first twelve to sixteen hours to the temperature of the incubator, and then keeping them for twelve to sixteen hours more in that of the room. The colonies then show a flat central nucleus, transparent and bluish, surrounded by a prominent and opaque zone, the whole resembling a drop of sealing-wax. This character, which can be obtained even in twenty-four hours, serves to establish in the most rapid and certain manner the bacteriologic diagnosis of the bacillus icteroides. It is a facultative anaerobe, does not resist Gram's stain, slowly ferments lactose, more actively glucose and saccharose, but is not capable of coagulating milk. It strongly resists drying, dies in water at 60 degrees, and is killed in seven hours by the solar rays, but lives for a long time in sea water.

Eighteen years ago Dr. Sternberg commenced his bacteriologic investigations into the etiology of yellow fever. They were made in Havana in 1879, 1888 and 1889; in Rio de Janeiro in 1887; in Vera Cruz in the same year and in Decatur, Alabama, in 1888. He concluded that among the micro-organisms found in yellow fever cases there was not one which by its constant presence and special pathogenic power could be shown indisputably to be the specific infectious agent. He recognized however, that there was a non-liquefying bacillus, which he called bacillus X, found generally in association with bacillus coli communis and which, as it had pathogenic properties and was not found in cadavers from other diseases, he at times felt convinced was the germ he was looking for; but scientific conservatism compelled him to withhold the announcement of a discovery in view of the fact that he had failed to find in about one half of the undoubted cases of yellow fever which he had examined; and he adds with exceeding naïveté, in his paper for the International Medical Congress at Moscow, that there have already been so many announcements of the discovery of this long sought-for microbe by Carmona, Freire, Gibier and Findlay, the fallacies of which he had demonstrated, that he was not willing to take any chances of making a similar mistake.

His bacillus as described in these early reports is a facultative anaerobe sometimes so short that it might be taken for a micrococcus. It is often united in pairs and is pleomorphous. Its growth on the surface of glycerin agar is white, cream-like in consistency and quite abundant. The superficial colonies are circular or irregular in outline with transparent margins and an opaque central portion sometimes corrugated. They are finely granular, iridescent and of a milk-white color by reflected light, but of a brownish color by transmitted light. This bacillus grows well at 20 degrees C., but more luxuriantly at 30 to 35 degrees C. It is not destroyed by exposure to a freezing mixture of ice and salt for two hours; its thermal death point is 60 to 62 degrees C. It is pathogenic for guinea pigs, still more so for rabbits.

We are aware that, in the paper prepared by Dr. Sternberg for the Twelfth International Medical Congress he affirms his belief in the identity of his bacillus X with the bacillus icteroides of Sanarelli. This bacillus he obtained from yellow fever cadavers in Havana, and concerning it he reported, in 1890: "Bacillus X, I have not obtained up to the present time in any comparative researches and consequently regard it as possibly connected with the etiology of the disease. But I have not been able to obtain any satisfactory experimental evidence upon which to base a positive claim that this is the case."

Some of the experimental evidence is opposed to the view that the bacillus is identical with Sanarelli's bacillus icteroides. Sternberg found that inoculation with the blood or the liver parenchyma of persons dead from yellow fever had no harmful effect on guinea pigs or rabbits except in occasional cases in which the bacillus of rabbit septicemia was present. He recorded a negative, however, at the end of five or six days, but Sanarelli states that his bacillus produces a cyclic febrile disease which always ends fatally in eight to twelve days. Again, the non-liquefying bacilli are not found in sufficient numbers, nor are they sufficiently constant to give support [illegible] they are the specific cause of the [illegible] berg's conclusion after many examinations of liver and blood. These bacilli when found in the tissues, were found also in the alimentary canal; but Sanarelli has not found his bacillus icteroides in the intestinal contents. Sternberg concluded that they made their way from the canal to the tissues; Sanarelli, that the poison is manufactured in the blood and in the interior of the organs.

Sternberg found his bacillus X in one-half of his cases; Sanarelli his bacillus icteroides in 58 per cent. This was the *status quo* when the latter made his convincing experiments on the dog, the monkey and on man.

Sternberg holds, and apparently with justice, that the identity of the two bacilli is obvious, claiming that unless this identity is conceded it would be difficult to admit that Sanarelli's bacillus is the germ of yellow fever, for unless it is identical with bacillus X it was not present in the yellow fever cases examined by him during his extended researches in Havana.

The fact that bacillus X is not destroyed by freezing is opposed to the view of its being the yellow fever germ; but the interesting observations of Sanarelli on the symbiosis of the bacillus icteroides with certain hypomycetous fungi appear to dispose of this difficulty and to throw light on many hitherto obscure matters relating to the etiology of the disease. Dr. Sternberg proposes at once resuming his experiments with the view of ascertaining whether his bacillus X has the pathogenic properties ascribed to bacillus icteroides by Sanarelli; and we may add that since his departure for Moscow intravenous experiments on dogs conducted under his direction in the Army Medical Museum have given characteristic results.

A CHEMIST UPON EXPERT TESTIMONY.

The address of vice-president and chairman W. P. Mason of the Chemical Section of the American Association for the Advancement of Science, at its recent Detroit meeting, dealt with a subject that has some interest to medical men, especially those who are called upon to give their opinions in courts of justice—that of expert testimony. Those of us also who make no special claims to expertness also have reason to desire, for the credit of our profession, that something should be done or said to better the status of the medical expert, and the suggestions here offered by one who is not a physician but a chemist, is an additional proof of what is not perhaps fully appreciated by us, that experts in all branches of science suffer under the same disadvantages before our tribunals. The pseudo-scientist abounds everywhere and discredits all the learned professions alike, and ignorant counsel and judges sneer at false and true experts alike. If we as physicians have suffered more in this way than specialists in other lines, it is for the reason that there are more of us, and especially because too many of our number, without necessary evil intent, permit themselves, it may be, to be led beyond the field in which they are truly experts and are not, like some others in the same position, as Professor Mason very properly says every expert witness should be, as fearless of legitimate ignorance as they ought to be fearful of illegitimate knowledge.

Assuming, however, that all experts are truthful and can clearly and tersely give an intelligent statement of their views and can aptly and clearly illustrate them, there are yet some conditions and situations in which they can be put in an entirely false position discrediting themselves, their cause and their profession, and some of these are very forcibly stated by Professor Mason in his address. In the first place, in a medical point of view, we have the ignorance and prejudice of lawyers, juries and judges. If this is felt to their disadvantage by chemists and others, it is still more appreciable by the medical expert. There is no nonsense so absurd that some educated and in some respects cultured people will not accept as scientific truth, and medicine is the one field of all others in which the credulity of the laity has run riot. This is one of the facts that we have to reckon with, and even a real expert who thoroughly knows his subject can not always relieve himself from the disadvantageous position in which it may place him "With stupidity even the gods strive in vain."

It is unfortunate that even the friendly counsel may often through their ignorance and prejudice thus embarrass the expert witness, who may often have to pray to be delivered from his friends. The hypothetic question, which has been editorially endorsed in the Journal as an ideal method of obtaining expert opinion, may be so imperfectly or clumsily made up as to be seriously embarrassing to any one who wishes to convey a correct idea of his opinion of the case. Questions may be intentionally asked requiring a categoric answer which is likely to be directly misleading, and the expert refused the privilege of making the proper and necessary explanations. The only recourse is to appeal to the court, and to claim that as the witness is on oath to tell the whole truth and nothing else, he should not be confined in his answers to statements that taken by themselves do not convey the whole truth or that may actually imply a falsehood. Professor Mason in this connection raises an interesting legal point as to what is the duty of the expert witness, should he in all cases simply answer questions or should he state facts as known to him which might convey different impressions. Lawyers seem to have rather divergent opinions as regards this question, one high legal authority maintaining that the expert is for the time the property of the side employing him and is therefore to confine his answers entirely to the questions as asked. Another admitted this to be the rule in civil cases but that the situation was different when the life or liberty of an individual was involved. Morally there would appear to be no question as to the duty of the expert, and it certainly would be advisable for the same, before going on the witness stand, to have a good understanding with the lawyer of the side employing him as to all the reservations of freedom of speech that his conscience may demand. No honest man would desire to wrong another by his sins of omission any more than he would to actually bear false witness against him, and the expert has not the advocate's plea of ignorance in his special field of knowledge.

An important practical suggestion that Professor Mason makes is that the expert should not trust implicitly the record made by court stenographers but should always seek an opportunity to examine the notes and ascertain if he is correctly reported. Court reporters are not always perfectly accurate, they sometimes leave out important statements and, at the best, they are inevitably ignorant of scientific terms and liable to misunderstand them. Hence the necessity of avoiding technicalities in the testimony as far as possible, for the sake of the reporter as well as the jury, and it is in this respect that mistakes and erroneous records are perhaps the most frequently made. If experts would always revise their recorded testimony they would escape the inconvenience they sometimes experience of being charged with statements they never made and of having such charges supported by the official record.

An expert is such only in his own particular department and should not fear to express his ignorance outside of it. It is a common practice of lawyers to attempt to draw from him opinions in regard to subjects outside his specialty and even those calling the witness may err in this way in the direct examination and be irritated if not answered to their satisfaction. It is always safest for the expert to avoid being thus misled, and while this trick is perhaps most often tried on non-medical experts, it is well for the physician also to be on his guard in this respect and not to hesitate to admit his lack of special information upon outside matters. The failure to do this has often resulted in embarrassing situations. The expert should also of course be well informed in regard to the authorities in his specialty, but should carefully avoid anything like the assumption of knowledge that is not possessed. It is much better to admit ignorance than to be caught by a lawyer's trick into admitting even the existence of pseudo-authorities, as some have done to their own discomfiture.

An expert may be well posted and thoroughly truthful but may fail to make a good impression for want of attention to the matters suggested by Professor Mason's address. It was delivered before a non-medical assemblage, but the points it contained are worth the attention of those called as medical experts as well.

ON GOING FANTEE.

In Africa the negro, after being pulled some little way out of his savagery by the strenuous and ethical civilized master, shows a continual tendency to drop back into the primitive condition. The missionary labors for years to pound into the head of a black brother some notion of the Christian religion, thinks at last he has succeeded, when suddenly the man disappears and is found the chief actor in some barbaric and outrageous dance of superstition or of cannibalism. The white officer finds his trusted servant is not as usual on hand to perform his hitherto well done services. He too, for a longer or shorter time, has reverted to old habits that were temporarily held in abeyance by the will of the superior. In African lingo, these and all such lapses from a later and higher to an earlier and lower state are said to be "going fantee."

But it strikes us that it is not only the poor darkey that thus goes fantee, but that his civilized brother is occasionally guilty of the same custom. Indeed, do we not all feel the pull downward and backward? Do we not sometimes relapse secretly and pull up sharply again? Do we not have our private little fantee habits that logically belie our public virtues? At best, do we not keep ourselves in line by constant spurring of our better nature and tiresome attention to conscience and Mrs. Grundy? We all know of men who are as conscious of the disgrace as can be, and yet who seem incapable of resisting the impulse to go off once in three or six or twelve months and have "an old-fashioned drunk." It has been said that country merchants, despite the drummers, find it necessary to go to the city to buy their goods, and also to "see the sights," at least once or twice a year. In some rural places the conversion, sincere enough at the time, has with certain characters to be repeated every revival season. Even ladies, and great ones too—modern, we mean, not alone Neronian and Quatorzian, have been known to relapse in the peculiar feminine way from the most civilized ideals of conduct. This is probably the reason why so many preachers' sons go wrong, and also the sons of others who are constantly in the public eye. Their fathers are so watched that they have no chance to go fantee, and their sons by natural reaction and the law of compensation have to take upon themselves the disagreeable but easy vicarious task for the parents.

Nay, more! Is not the great scientific truth of atavism but an illustration of what may be called the more general law of going fantee? It is only tissue-fantee, one type or class, whilst fanteeism in its larger scope includes customs and habits, social, religious and ethical, of universal extent and spiritual significance. Telegony is therefore but one aspect of the law, and when the son of a virtu[illegible] and r[illegible]red father runs riot with all paternal [illegible] [illegible]tabilieit is a sort of spiritual telegony or fanteeism, just as well as when the highly bred animal is spoiled for breeding purposes by one marriage-error, or when the subsequent human husband finds the children of his own begetting are quite as much the heirs of his wife's first husband as they are his own. Lucifer would undoubtedly, in these scientific days, contend that the other angels were "too virtuous by half," and that his own fall was but an instance of angelic fanteeism on the part of the very proper ones who scapegoated their own sins upon him. He had to go fantee to save them all from little lapses, and Hades is where all the virtuous may temporarily go fantee before returning to civilized life, where "good form" and "the proper thing" may be resumed until the secret drag of concealed appetite can no longer be resisted.

And so, as perfect and virtuously superhuman as we undoubtedly are, we physicians are necessarily subject to the universal law; we also have our professional fanteeisms. For example, when we see in the daily papers accounts of Dr. Vanity's doings, his operations, cures, travels and appointments to hospital postions, we know of course what it means, and we sigh for the good man whose ethical habits are not continuously and uninterruptedly strong. When we find a doctor "laying pipes" and "wire-pulling" for a year with all the political arts of a CHOKER, FLAT or SWAY, to become the president of some medical organization, we wonder if this particular fanteeism is not an illustration of a very uniform tendency that will have its regular outbreaks in some sad form or other, either annually or more frequently. When we find a member of the profession certifying to the wondrous therapeutic effects of a nostrum; when we find a dozen "professors" employing a well-paid lobby to get State endowments for their "college" or "hospital;" when we find regulars defending sectarianism and consulting with quacks; when we find men who need no "antiquated code" to keep themselves ethical—when we note one or two of a hundred such symptoms in a patient, we perhaps shake our heads as to the prognosis, but we are in no sort of doubt as to the diagnosis, and we have no indecision as to what the treatment should be. Alas! that the consultant (the whole profession) will not consent to the somewhat drastic but necessary measures required for a speedy and permanent cure.

We might revert to one instance of a certain beginning, at least, wherein the American profession seems to be starting on a fanteëistic debauch. There are a few members of the ASSOCIATION who seem to look upon its annual meeting as an occasion for going fantee. Far be it from us to look with any sort of puritanic eyes upon innocent pleasures, even those of the stomach. But there is a huge difference between these and what some think admissible in the way of drinking and eating. It is becoming somewhat of a scandal among the laity that "these doctors are about as bad a lot as the rest of us." The writer has heard more than one such disgusted person sneer at the way some physicians behave at these meetings, and the way we carry on our "banquets" and "receptions." On the score of taste alone we should not fall into blunders of excess—we who are supposed to be the teachers of hygiene and the curers of belly-aches. There is much truth in the lay criticism. We allude to no recent events, but only speak in the most general way. The indebtedness of physicians for train-loads of things for "entertainment," to commercial advertisers, the giving of banquets to mobs of roaring, hustling, half tipsy people, the forcing of "hospitalities" upon overloaded stomachs and jaded senses—all this is as absurd and sickening as it is professionally wrong. Apart from the example it sets before a gaping lay world, it is doubly wrong because of the precedent it sets *en famille.* When the meeting takes place in ensuing years at smaller cities, or where the local profession is not so wealthy, it results in flagrant injustice to these local members, who by the vicious example are forced to pecuniary expense that is compelled and not voluntary, and which they can ill endure, or else the example of the previous meeting stings in their sensibilities or those of their thoughtless guests. There is at least one word of suggestion we would make as regards the entertainment at future meetings: Let there never be another "stand-up-feed." It is simply disgusting for people to fight for food and drink and then walk about and talk, choking down the things, spilling them over floors and dresses and littering rooms with soiled and broken crockery. Let whoever gives any sort of "entertainment" to his guests hereafter, for decency's sake, let him invite only the number his table will seat, and let these guests eat and drink as becomes ladies and gentlemen of civilized times!

Finally, not to be too serious in hot weather, we may allude to one wholly excusable, nay, advisable way of indulging inherited, half-outlived but still somewhat, though too little active tendencies and primitive habits of our nature. This is the play-instinct which has lately been alluded to in these columns. It is very literally a bit of atavism and reversion to a more barbaric way, but it is one, as we have said, quite admirable. We shall not be able to fall far or long at a time, as the exigencies of life prevent that. Indeed, our danger seems to be the reverse, and the privilege of taking a vacation is fast becoming a duty to be urged. No man has a moral or professional or social right to work so hard, and with such tragic things, as do we physicians for twelve months of the year. Perhaps the harmless method of atavism will prevent some other and far more regrettable method of "wasting time." If, as seems inevitable, we must all occasionally relapse, and moreover, if we always keep the strings too taut, they may snap, it is perhaps best that we choose the better rather than the worse forms of reversion. We have a choice even in such things as fanteeism. Death itself is but going fantee, and yet we may all more or less postpone this big "go" by wisdom and forethought. It should be a part of the "New Code" (if there is to be one) which every practitioner ought solemnly to swear to keep, that we would all take at least one month of play and rest. Leave the crowds, get to some quiet bit of nature, where man and his ills can not intrude, get on the old clothes, romp with the youngsters, read poetry, listen to the birds, and court your wives in good old primitive fashion. *Go fantee!*

TRAUMATIC RUPTURE OF THE HEART WITHOUT EXTERNAL LESION.

Wounds of the heart, while not actually rare, are by no means common. Occasionally recovery may follow such injury without surgical intervention, but as a rule death results. Recent experience in several recorded cases has shown that incised wounds of the heart are susceptible of successful surgical treatment, provided of course the lesion be not too extensive, the loss of blood not too large and the measures of relief are employed without undue delay. Contused and indirect wounds of the heart are even less common and naturally more difficult of recognition and correspondingly less amenable to surgical intervention. An interesting case of this sort, in which death took place suddenly a month after the reception of the injury has been placed on record by GROOM (*Lancet*, May 1, 1897, p. 1202). A lad 16 years old was caught between the shaft of a trap drawn by a runaway pony and some wooden railings. He was kept in bed for five days, but remained weak and unwell.

A month after the accident, while walking out of doors, the young man fell on the pathway, face downward, and was soon dead. Upon postmortem examination no sign whatever of injury to the superficial structures or the ribs was found. When, however, the pericardium was opened the sac was found to be filled with blood, some of which was clotted. On removal of this and turning the heart over without detaching it, a hole about the size of the end of a little finger through the middle of the posterior aspect of the left ventricle was discovered, the actual size of the rupture being about a third of an inch. On removing the heart and opening the ventricle the myocardium was found to be perfectly sound except at the spot mentioned. The hole was quite conical and bulging when the little finger was introduced, and the rupture external and consisting merely of the pericardial covering of the wall.

The conclusion is reached that the accident had caused a partial rupture of the inner portion of the wall of the left ventricle at a spot opposite to the point at which the shaft of the trap had pressed, and that the blood pressure had during the month intervening between the accident and death caused an aneurysmal bulging of the weakened part, its wall becoming thinner until ultimately it burst. The rupture viewed from the interior of the ventricle looked much like a bullet-hole.

CORRESPONDENCE.

The Treatment of Diabetes.

NEW YORK, Aug. 9, 1897.

To the Editor:—Pardon my further contribution to the subject of diabetes, now so wisely occupying attention in the JOURNAL.

I have no quarrel with Dr. Munson; he is too good a student and careful observer for me to do anything but welcome his opinions and observations no matter how I may differ from him. He knows things that I do not know and I believe I know some things that he does not know. The disease in question is very fatal and any light that can be thrown from any source should be welcome.

Carbonic acid, sulphydric acid and other paralyzing gases do directly act on the liver and help to increase the production of sugar in diabetes. Horses and cattle die suddenly from colic because of the self-same paralysis. Small boys sometimes die in a few hours from the colic produced by the fermentation of green apples which they have eaten. Cases of Bright's disease under treatment, whose urine has become entirely clear of albumin, casts and fatty epithelia, will have the same abnormal stigmata of that disease brought back by eating foods which ferment into these same paralyzing gases. A man under treatment for locomotor ataxia with great improvement in strength, gait and feelings is tempted into Delmonico's and given by a friend "a dinner which will not hurt him." This same dinner ferments and brings back all his pain, distress and troubles. Cases of consumption whose cough has ceased under treatment, will when they commence to eat the wrong food which ferments, invariably bring back the cough because of the irritation and paralysis of these same gases. A boy under treatment for partial paralysis of the lower extremities had improved so that he was able to locomote easily. A birthday party was given him and his fond mother loaded him up with ice-cream with the inevitable result of fermentation and paralysis of the lower extremities. I could go on much further. I know from my personal experience in the treatment of diabetes that foods that ferment do produce carbonic acid gas and other paralyzing gases and that they help the production of sugar. If a patient can eat sugar, potatoes, bread, starches of any kind, without this fermentation I believe their cases will go along all right.

One word as to beef dyspepsia. This results in the formation of sulphydric acid gas and is a troublesome thing to handle. I have seen but two cases of it in eleven years of study of chronic cases and have never seen it in the treatment of diabetes. If such should occur the treatment would be the stopping of solid beef, giving plenty of hot water, beef tea or the whites of eggs dropped in boiling water, as the condition of the patient demands. It is generally but a few days before the condition is cleared up, but this self-same paralyzing gas hinders the course of any treatment as much as the carbonic acid gas from the starchy and sugary fermentation.

I am sorry, exceedingly sorry, that the physiologists do not back me up. As one who earns his bread and butter in the treatment of disease, dependent not upon dead men's money which has endowed some profe[illegible] ar[illegible]itution of learning, I make one of the court of last appeal in matters medical, as the practitioner has to get at the truth of all theories and observations by his work with his patient.

My income would be much more precarious than a medical man's income generally is if I had to practice medicine on the dicta of physiologists. They do not give us light as to the management of chronic diseases; in fact I lay down the broad statement that the medical colleges all over this country neglect this important branch of the practice of medicine and that the volume of light which is now being thrown on such work comes not from pathologists or physiologists or works on practice of medicine but from practitioners' contributions in medical journals, the chief of which is the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

As to alcoholic and acetic acid fermentation in the bowels, a study of morphology of the feces will show the alcoholic and acetic acid plants, and I have seen flour that has been raised into bread by the yeast, found in the feces of consumptives. As to the use of the term "morphology," as far as I know, Dr. Ephraim Cutter over twenty-five years ago was the first to employ the term in medical microscopy. The late Dr. Heintzmann then took it up and now a great many bacteriologists and some of the very recent students of the blood who are discovering the things which were worked out by Americans over thirty years ago are using this term morphology.

As to Victor Hugo and my reference to him, I simply call attention to my paper on "Tuberculosis and Vinegar" which will be published in the JOURNAL in due time, I hope, as part of a transaction of the Section on Physiology and Dietetics at the 1897 meeting. Robert Koch, no doubt, to a great many men is the beginning and end of all law and knowledge as to certain microscopic matters. Nevertheless there are others in the practice of medicine who did good work when Robert Koch was a small boy.

Dr. Munson doubts my diagnosis in the case of the young woman in 1888. As the patient was emaciated, suffered from great weakness, so that to move about she constantly had to urge herself or push herself, that she suffered from thirst and had peculiar feelings about the tongue, I thought that my diagnosis with the chemistry of the urine was right; it may have been wrong.

I do not believe in an exclusive beef diet as a panacea. There is nothing in medicine that is a panacea. If a beef diet is a panacea, perhaps I should not have buried my wife last Thanksgiving day though there were small cavities healed in both lungs which she had carried for seven years despite a fatal prognosis made in 1889 that she could live but three months. I believe, however, that if she had not lost her appetite three years ago, she would be living in fair health now, because a beef diet with but little other food prolonged her life and she died literally of heart failure.

I have had so many medical friends and enemies attack me on the ground that a meat diet did cause uric acid, coma and death, that I am very glad to find out that the profession is thinking differently.

Dr. Munson speaks of a case which suffered under a diet of meat, fish and eggs; I do not wonder. How any medical man would take a feeble case of diabetes and shove so much food on him, I can not understand. A diet of fish is not long tolerated; the yolks of eggs are a direct cause of cystinemia, as I have found in patient after patient, and cystin in the blood will produce rheumatism and neuralgias of the most excruciating types; oatmeal feeders also suffer with this. Parenthetically I might say that the best solvent of cystin is lemon juice.

Now, it is the bottom principle in feeding in chronic cases that the simpler you feed the more your patient improves. I generally put a case of diabetes on the broiled chopped beef with hot water one hour before meals, and on going to bed at night, and with drinks of beef tea between meals. I have invariably seen the sugar diminish under this regimen, and as soon as possible bring in other food, studying the case carefully.

Now, beef can be borne longer than any other single article of food: it digests easily, assimilates well and nourishes all tissues. I well recognize the fact that physiologists condemn it as an exclusive article of diet and I do not believe in putting any patient on one food unless absolutely necessary, but when patients have lived on beef alone, seasoned with pepper, salt, butter, Worcester sauce, horse-raddish or lemon-juice, as desired, with clear tea or coffee for from one month to two years, what am I going to do? Am I to give up all of my clinical evidence simply because physiologists say that the evidence does not exist, and patients can not live that length of time? Let me take other cases of chronic disease. A girl sick with epilepsy of several years duration could live on beef alone without seizures. She would be fed on it solely for several months, then solely on steamed whole wheat for a while. Either food alone caused no trouble; the two together would produce the explosions. After a while as she progressed she could eat them both together. Occasionally fits would come on her which we found were due to her stealing sugars or molasses, the same sugars and molasses fermenting (I am so sorry I again run *contra* to the *dicta* of the physiologists which state that there is no such thing as fermentation in the alimentary tract) and producing carbonic acid gas, this carbonic acid gas would start the seizures again. This case after two years of treatment and dieting, getting to the age of fifteen years, received some local treatment for amenorrhea and has remained cured for over six years.

In closing I want to call attention to one law in the treatment of chronic cases: unless a case is moribund, there is almost invariably an improvement under treatment; no matter if the case is so close to the grave that one doubts the wisdom of endeavoring to do anything, if, under careful management it is found that the nerve forces are not so wasted by the battle of life that there are some left to work upon or, if the nerve forces are nearly all run out, the patient has such a temperament that he will take on strength and will vegetate like a dog does when he is sick, there is a good-working chance of his recovery provided one can control finances and causes of worry; but the *contra* is often true; cases will make improvement for a while, but, despite the most careful management, the use of money and ample means, the best of nursing, the closest of study of everything impinging upon the patient, if that patient has wasted his nerve forces so far that they are practically gone and he has not the temperament to take on strength, he will surely go under and pass to his reward; hence, it is in the management of all these cases, Dr. Munson's, my own and others, we can not cure everybody, and we can not even temporarily relieve everybody and, therefore, our results can not not be based wholly on mortality lists.

Yours faithfully, JOHN A. CUTTER, M.D.

Increase of Diabetes.

MILTON, DEL., Aug. 12, 1897.

To the Editor:—In the JOURNAL of Aug. 7, 1897, I notice a communication from Dr. Ball of Philadelphia, Pa., calling the attention of the profession to the alarming increase of that dread and fatal disease, *diabetes*. One of his reasons assigned was the increased population of Jews in this country, and, he says, that the presentation of patients with that class of diseases to the hospitals far outnumbers that of any other nationality. His observation is without a doubt correct, but in this part of our country, where there is no other nationality except the native born, I find the same thing among us. So you see, that it is not confined to the Jews alone, but the gentile world as well. There is a cause for this. What may affect the Jews in their country and cause such troubles may not be a cause in this. At least I would not think the nationality had anything whatever to do with the disease. More than once I have advanced the idea that our modern way of living, the patent roller-made flour, which is deprived of all the coarser part of the flour, and must be of all or nearly all of the carbohydrates, which go largely into the nutritious element of the same. The low price of it puts it within reach of the poorest families, and they, too, indulge in what is called the best grade of flour, when, at the same time, it is the life nutrition, and when you intrude upon native with improved or adulterated foods I many times see that some of the organs and fluids of the body must suffer.

James A. Hopkins, M.D.

Medical Legislation.

Iowa City, Iowa, Aug. 15, 1897.

To the Editor:—At the meeting of the Iowa State Medical Society, at Des Moines in 1896, discussion was had concerning a project to unite the practitioners of the State into an association to "influence legislation." Nothing was done by the society but subsequently an association was organized and an effort made to secure a union for political purposes of all practicing medicine, including sectarians with various labels. Many declined to unite with the organization; some because they believed the discordant elements would prevent any useful work, and others because they believed that the attempt to organize a political club out of a profession would lead rather to adverse legislation than to any legislative reform of advantage. A circular is the first fruit that has emanated from the association; and it appears to the writer that the introduction of the profession to practical politics of this kind, is undesirable. The physician has the same rights and duties as other citizens, and experience has shown that the study of medicine does not lessen the capacity of a man to serve the people in legislation or administration. It would probably be better for the country if, as individuals, the members of the medical profession took the practical and active interest in politics that has been so noticeable among their *confrères* of France. The reproach, that such an association has been used to advance personal interests, can not help lessening its value as a protector of general interests. The association however is not an offshoot or a part of the State Medical Society of Iowa.

"Haller."

A Suggestion for the Next Meeting.

Boston, Aug. 18, 1897.

To the Editor:—Permit me to make a suggestion. If it be carried out I think it will add to the interest of our annual meetings. Some of us in the Association are engaged upon original work. This work can be presented to our brother members in two ways: by reading a paper about it, and (when it concerns something concrete) presenting the thing itself. The combination method at present employed could be improved on without infringing on the practical work of the Section. Instead of the momentary presentation of instruments, etc., in conjunction with the reading of a paper, would it not be well to have such devices and objects placed where the members could examine them at their leisure? Such an exhibit could be conveniently made in the rear of the hall where the Section meets, or in a reserved space in the usual exhibition hall. It would add nothing to the expense of the meeting, as a few tables is all that would be necessary for the purpose. Members of the Section having instruments, devices, X-ray pictures or other objects of practical interest could thus place them where their fellows could have access to them. If members had the opportunity to get a working knowledge of the new devices that are constantly being applied in the art of surgery, the practical utility of the Section would be increased. In time, perhaps, a surgeon who wished to keep abreast of his art could not afford to miss a meeting of the Association, not alone for what he could hear, but for what he could *see*. Trusting this suggestion will meet with consideration by interested members, I remain, respectfully,

Edward A. Tracy, M.D.

Infectious Disinfectors.

Groveland, Mass. Aug. 21, 1897.

To the Editor:—The following case was recently reported in the *Journal of Hygiene*, France: "A child suffering from a light attack of scarlatina is confined to his room for forty days, the room is disinfected by the board of health. Two days later the child presents undoubted symptoms of diphtheria—a patch on one tonsil. The physician in attendance does not doubt that the disinfectors brought this disease, as the child had seen no one but them and the physician who had himself not been exposed."

Such a theory seems hardly tenable. I have had cases in my own practice, of mixed infection, and others where diphtheria has followed scarlet fever, the patient ill at first with all the symptoms of scarlet fever and then with those of diphtheria. In none of these cases were cultures made demonstrating the presence of Klebs-Löffler bacilli. More recently I have had under my care a case where the symptoms were unmistakably those of scarlet fever supplemented by symptoms of true diphtheria. In this case cultures failed to show Klebs-Löffler bacilli, but supplied abundant evidence of streptococci. That there is a remarkable relationship between diphtheria and scarlet fever there can be no longer any doubt. Those who believe in this theory of unity of disease are finding considerable evidence to support their views.

W. Thornton Parker, M.D.

How the Defunct Osteopathy Bill was Passed by the Illinois Legislature.

Oneida, Ill., Aug. 20, 1897.

To the Editor:—I send you a *Journal of Osteopathy*. I know something of how they managed the late House at Springfield, which may be of interest, as I am well acquainted with our representative, Murdock. While the bill was being agitated I went to him and asked for his influence against it. He informed me that he was in favor of it, that one of the operators in the cult was at the capital demonstrating the treatment and one of the members who had sometime previously been laid up with an attack of rheumatism for six weeks, was taken suddenly one evening with a similar attack, and the osteopathic gentleman asked to be allowed to treat him just once and was granted the request. He at once proceeded to carry out the treatment in view of several of the other members. To use Mr. Murdock's expression, "he doubled his legs up and then pulled them out with a snap; thumped and pulled and doubled and rubbed and yanked. The patient the while yelled like a bull." After about half an hour of that he let his victim alone and by the next morning the man was as well as usual. Another patient was also exhibited. A man with dislocated wrist which the "doctors had failed to set or help," and he proceeded to at once replace it and let the man go without splint or bandage. To sum up, the man simply "pulled the leg" of the whole Illinois Legislature. Was it any wonder that the bill passed speedily on for the Governor's signature! But he showed himself a man with decision enough to refuse to sign it, thereby gaining the friendship of every reputable physician in the State and the ill will of a few cranks.

Yours for good, T. W. Davidson, M.D.

No Itinerant Quacks In Kentucky.

Executive Office State Board of Health
of Kentucky, Bowling Green, Aug. 7, 1897.

To the Editor:—After careful examination of the authorities Judge Thompson of Louisville has just handed down his opinion in our test case with the osteopaths. They had plenty of money and were ably defended, but after the proof was heard we never had any doubt as to the result. They are not only the most ignorant, but also the most unscrupulous lot of empirics with which we have yet had to contend in this State. Our law has now been in operation nearly four years. It has been tested upon every point and so far we have not failed to secure a conviction in each case tried. We convicted the Copeland people, the "K. & K.'s," and all other concerns of that kind doing business here, and are able to report that there is not now an itinerant or advertising doctor within the limits of the State. Very respectfully,

J. N. McCORMACK, M.D., Secretary.

[*Vide* JOURNAL, Aug. 14, 1897, pp. 351-352, Louisville column, for the text of this decision.]

Honorary Medical Degrees.

PHILADELPHIA, PA., Aug. 19, 1897.

To the Editor:—Apropos of the editorial in the JOURNAL of August 14 concerning the conferring of an honorary fellowship in the Royal College of Physicians on the Prince of Wales, it may be of interest to note that the first medical degree granted on this continent was an honorary one, bestowed on Daniel Turner of Connecticut by Yale College in 1720. As this was intended as a token of gratitude for Dr. Turner's liberal gifts to the college and not as a recognition of any particular fitness on his part to practice medicine, a wit of the time interpreted M.D. to signify *multum donavit.* Yours truly,

FRANCIS R. PACKARD, M.D.

PUBLIC HEALTH.

The Bacteriologic Laboratory of Princeton, N. J. is the recipient of a $3,000 appropriation from the State Legislature.

Disinfection of Bombay Mail.—The mail sacks from Bombay, per Cunard steamship *Servia,* from Liverpool, Eng., at New York, August 19, were transferred at quarantine for disinfection.

Ice Sources Must be Pure.—The Paterson (New Jersey) Health Board and the Police Department have united to enforce the law against persons dealing in ice cut from filthy ponds, rivers or lakes.

To Hurry Mortals Home.—The Health Commissioner of St. Louis has ordered an inspection of Chinese laundries. He fears that some may mouth-spray their work with tubercle bacilli, which being ironed into the clothing may cause contagion. Once these experts were in high esteem for washing infected clothes rejected by their timorous rivals.

Health in Michigan.—The report for July, 1897, as compared to that for June (*vide* JOURNAL, July 17, p. 186) shows consumption present at two places more; measles at 65 less; diphtheria at 26 less; scarlet fever at 19 less; whooping cough at 19 more; and typhoid fever at one place less. Compared with the July average for eleven years (1886-1897), measles was more prevalent; intermittent fever, cholera infantum, erysipelas, consumption, remittent fever and diarrhea less prevalent.

Health in Chicago.—The total number of deaths during July, 1897, was 2,275 or 1.44 per thousand against 1.52 per thousand in July, 1896. Of these deaths, 835 were persons under one year of age and 287 were between one and five years. The principal causes were: Infantile diarrhea, 413 deaths; diseases of nervous system, 231; consumption, 184; violence, 157; heart disease, 117; pneumonia, 79; cancer, 63; bronchitis, 48; diphtheria and membranous croup, 44; typhoid fever, 27.

Bovine Tuberculosis.—The State Board of Health of New York announces its belief in the efficacy of the tuberculin test for preventing the spread of cattle tuberculosis. Governor Black, however, vetoed an appropriation of $15,000 for the use of the Board in its investigations. The Saranac Board of Health intend to maintain a complete quarantine against the importation of untested cattle within the limits of their milk supply. As it is, nearly all the animals at this lake resort are native common stock and the more intelligent buyers of thoroughbred cattle refuse to accept purchases that do not pass the test in question. The State Board can do little more than merely approve these intentions.

The Duration of Infection in Whooping Cough.—Weill, who in 1894 expressed the opinion that whooping cough is contagious only during the premonitory catarrhal stage, has since put his opinion to the test (*Lyon Méd.*). On various occasions he permitted nearly one hundred young children who had not previously suffered from whooping cough to be associated in the same ward, for twenty days or more, with children suffering from the disease during the stage of whooping. In only one case was the disease contracted, and in this instance the patient from whom the infection was derived was in the very earliest period of the whooping stage. In three small epidemics, Weill was able to satisfy himself that infection was contracted from children who had not yet begun to whoop. He concludes that infection ceases very soon after the characteristic whoops commence, and that therefore in a family it is not the patient who is already whooping, but his brothers and sisters who have not previously had whooping cough, who ought to be isolated.—*Brit. Med. Journ.*

Smallpox Mortality in London, 1887-96.—The Asylum Board was first called upon to provide for the accommodation of smallpox patients at the end of 1870. During the ten years, 1871-80, they dealt with upward of 33,000 cases, all of which were treated in the town hospitals. The deaths in London in the ten years were 15,539, including 7,912 in 1871. In May, 1881, the "camp hospital" was opened at Darenth, and the system of removing cases of smallpox to the country thus initiated was gradually perfected, so that for many years all of the sufferers coming under the managers' care have been treated at extramural hospitals. During the ten years 1887-96, the number of cases admitted to the hospitals was 5,232. The deaths in London were 429 only, and of these 206 were registered in 1893, in which year 2,376 cases of smallpox were admitted to the managers' hospitals. Had the mortality during the ten years, 1887-96, been at the same rate as in the ten years, 1871-80, regard being had to increase of population, the deaths would have been not 429, but 18,752. The net gain in life saved during the ten years, therefore, was represented by 18,323 lives. In other words, had the average death rate from smallpox in the ten years 1871-80 continued throughout the ten years, 1887-96, 18,323 lives would have been sacrificed in addition to the 429 which were actually lost by death from this cause. This satisfactory result is admittedly due in a large measure, if not entirely, to the removal of nearly all cases of smallpox out of London.

Bacillus of Yellow Fever.—The superintendent of the Institute of Experimental Hygiene at Montevideo, J. Sanarelli, announces that he has succeeded in isolating a bacillus from the blood and internal tissues of yellow fever patients (See editorial in this issue.—Ed. JOURNAL), which produces the disease in animals inoculated with cultures of it, and also in man. The shape is that of a rod with rounded ends, growing in pairs or small groups in the cultures, developing on the usual media, with a specific appearance resembling a wax seal on a letter, when first developed ten to twelve hours in the oven and then the same length of time at the ordinary temperature. In the oven the culture develops iridescent and transparent, while at the ordinary temperature it forms shining, opaque drops like drops of milk. It is pathogenic for almost all animals, producing a cyclic disease lasting from five to twelve days, "analogous to the disease observed in man." He has also succeeded in isolating the toxin developed by the bacillus and producing the same disease with it as with the cultures direct. Two persons inoculated subcutaneously, and three with intravenous injections of comparatively feeble doses of the filtered cultures, developed the typical picture of yellow fever, with all its clinical and anatomic manifestations. He is now engaged in serotherapeutic experiments, which already promise well.—*Semaine Méd.*, July 7.

A Decrease in Immigration.—In the entire period of federal supervision which dates from 1882, 7,432,016 immigrants have entered the United States. The arrivals of Russian Jews for the last year numbered 22,750, as against 45,137 for the fiscal year ended June 30, 1896. Italy furnished the greatest number of immigrants, 54,431, a decrease of 8,629 from last year. The cause of the heavy Italian immigration of 1896 was believed to be the war with Abysinnia, but the figures for the last year are not abnormal, having been exceeded by several years of the period. Since 1882 there has been a large and steady decrease in German immigration; in 1882, 250,630 people entered the United States from that country, while in 1896 only 22,533 arrived. It will be seen that the number of German immigrants in the first year of Government supervision exceeded the immigration from all countries in the last year. Immigration from Austria-Hungary decreased from 55,103 in 1896 to 33,031 in 1897. The decrease from other countries is as follows: England, 19,492 in 1896 to 9,974 in 1897; Sweden, 21,137 to 13,144; Norway, 8,155 to 5,842; Ireland, 40,262 to 28,421. By way of commentary it may be said that much encouragement has been disallowed by our own government as against the false representations of steamship lines, whose aim was for the profits of the steerage. Labor was not actually in demand and depleted purses left the victims of delusion stranded in the larger seaports. Fortunately neither crime nor disease became rampant because of the counteracting forces of dispersion and the lessons of governmental indifference taught from very infancy.

The French Academy of Medicine and the Prevention of Phosphorus Disease.—The important part taken by the French Academy, acting as an advisory department of the government, in this branch of disease prevention should not be overlooked. In that country the manufacture of matches is a state monopoly, and in view of the numerous cases of sickness and criticisms in the press, the authorities have requested the Academy to frame new regulations for the management of the factories. In the discussion that ensued it was evident that medical opinions were divided. One party advised that white phosphorus should no longer be used, as has been done in Belgium; others, however, thought it would be sufficient from a sanitary point of view to alter the arrangement of the workshops so as to obtain thorough ventilation, while refusing work to all who had not good teeth. The workers must be under strict medical supervision, and, as far as possible, machinery should be constructed so as to allow the whole process of manufacture to go on under glass, the workmen being protected from the poisonous fumes. In two factories, viz., at Algiers and Aix, there has not been a case of phosphorus poisoning for twelve years owing to the strict hygienic rules which have been in force. The cases which have so excited public opinion occurred at Aubervilliers, a suburb of Paris, in a very old factory which it is impossible to put into a sanitary condition and which ought to be pulled down, as to make it really healthy would cost more money than to build a new one. The real fact is that the workmen of Paris object to the introduction of machinery for the safe manufacture of matches with white phosphorus—that is to say, under glass—for in that case far fewer hands would be wanted, and they therefore demand the use of red phosphorus, to work in which necessitates a larger staff. This is the reason why, in Belgium where the manufacture of matches is free to anyone the workmen object to red phosphorus, and why in France the State, which panders to the political influence of the workers, is ready to satisfy them on this question, despite the increased expense. Matches made with red phosphorus are not so good as the others, for they are more difficult to light, the wood is very brittle and often breaks and the composition for tipping them demands the use of explosive materials which, like poisoning, constitute a serious source of danger. The Academy has agreed to the following answer being sent to the Minister: 1. It is necessary to put a stop to the unhealthy conditions which exist in many of the match factories of France. 2. The suppression of the use of white phosphorus is the only certain way of insuring health to the workers in this manufacture. 3. The employment of perfected automatic machinery is a costly matter and carries with it the condition that all dangerous operations should be done under glass. 4. Until these recommendations can be carried out as a whole the present condition of unhealthfulness can be reduced by careful sanitary supervision.

NECROLOGY.

CORNELIUS KOLLOCK, M.D., Cheraw, S. C., August 16, aged 73 years. Dr. Kollock was graduated from Brown University in 1845, and from the medical department of the University of Pennsylvania in 1848. He then studied two years in Paris under Malgaigne, Cazeaux, Record, Velpeau, Siebel and other French surgeons of eminence. He was president of the Pee-Dee Medical Society for many years; of the South Carolina Medical Association in 1887; was elected vice-president of the American Gynecological Society in 1892, and in 1894 was president of the Southern Surgical and Gynecological Association.

Dr. MORVAN has died at Lanniles, France, aged 73 years. In 1871 he was a member of the legislative assembly, but had for a long time given up politics for the sake of scientific work. He was the first to describe the group of clinical symptoms known as "Morvan's disease," which he considered to be a form of syringomyelia. Since then Dr. Zambaco-Pacha of Constantinople, having traveled in Brittany, where Dr. Morvan studied the disease and where it is very common, came to the conclusion that it is an abortive form of leprosy. Dr. Morvan was a corresponding member of the Academy of Medicine.

JOHN J. H. LOVE, M.D. Draft of a minute adopted at the meeting of the visiting staff of the Mountain-Side Hospital Aug. 16, 1897, in reference to the death of Dr. John J. H. Love (*Vide* JOURNAL Aug. 7, 1897, p. 297).

No words can express the loss which the Mountain-Side Hospital has sustained in the death of Dr. Love, nor is it possible to so construe language as to give the measure of our personal loss in the death of our beloved leader. Filled with the courage and self-sacrifice that are born of high purpose and unselfish broad mindedness, and always willing to prefer the well-being of others to his own, he gave freely of his time and substance to the hospital. Its good name was as dear to him as his personal honor, and from his clear and comprehensive mind came most of the suggestions by the adoption of which the enterprise has been successfully carried on. Without Dr. Love it would have failed, with him it has achieved an enviable measure of success and usefulness. We can no longer enjoy his friendship, his guidance, his counsel nor his sympathy, but we have the brilliant example of his noble life, and of his devotion to the best interests of this hospital.

RICHARD C. NEWTON,
E. M. WARD, } *Committee.*
H. B. WHITEHORNE.

JAMES COZAD, M.D., Reynolds, Ill., August 15, aged 61 years.—Adam B. Finney, M. D., Washington, D. C., August 9, aged 61 years.—Cornelius A. Groot, M.D., Auburn, N.Y., August 12. E. M. McPheron, M.D., Janesville, Wis., August 12, aged 25 years.—John Townsend, M.D., Holgate, Ohio, August 13. Dr. Dewindt of Alost, president of the Belgian Medical Association.—Dr. O. Boer, co-laborer with Koch.

SOCIETY NEWS.

Election of Officers.—At the meeting of the American Association of Gynecologists and Obstetricians, just closed at Niagara Falls, N.Y., the following officers were elected: President, Dr. Charles A. L. Reed of Cincinnati; vice-presidents, Dr. Richard Douglass of Nashville, Tenn., and Dr. Walter B. Dorsett of St. Louis; secretary, Dr. William Warren Potter of Buffalo; treasurer, Dr. X. O. Werder of Pittsburg. The next meeting will be held at Pittsburg, Pa., Sept. 20, 21 and 22, 1898.

The Second Congress of Hydrology in Italy was held at Sangemini, and was principally devoted to exploiting the qualities of the famous mineral waters there, and its exquisite scenery. The waters are "acidulo-bicarbonate-calcic," and the establishment is managed according to the latest scientific theories, under the supervision of Olivieri, Santucci and Violati. The inauguration of a "Cure tax," like those of Germany, was discussed and approved. Dr. Fabbri proposed to found a large sanatorium at the Falls of Terni, where the climate and scenery are equally superb. He invited co-operation to render the project a success. Carlinfanti reported the results of his investigations on the solubility of uric acid in acidulo-alkalin waters, which proved that they will dissolve in nine hours five times more uric acid than pure water.—*Gaz. d. Osp. e d. Clin.*, July 18.

MISCELLANY.

The Boston Medical Library has been enriched by the collections of the late Drs. Edward Wigglesworth of Boston and William G. Wheeler of Chelsea, both of whom were industrious bibliophiles.

The Contractions of the Stomach studied with the Roentgen ray have resulted in establishing the fact that in the human stomach, like that of the frog and the dog, the larger part serves as the receptacle for the food, while the smaller prepyloric part is the motor organ of the stomach.—*Semaine Méd.*, July 28.

Progressive Osteoporosis.—Debove distinguishes by this term the form of osteomalacia in which the bones do not become softened but merely grow more and more porous, leading to progressive deformity and final death from thoracic accidents. The *Bulletin de l'Acad. de Méd.*, July 20, contains three typical observations.

Almshouse Amenities.—An Albany (N. Y.) dispatch to the New York *Herald* of August 11 reports that at the almshouse in North Hempstead, Queens County, one woman gave birth to four children while she was in the institution, and another woman had one child born under the same circumstances. The women are feeble minded and have been allowed to go out at intervals and return when they pleased. The State Board of Charities has ordered them sent to the Newark Asylum, where they can not have liberty. The five children have become county charges.

Admissible Evidence of Previous Condition.—A physician who had treated the plaintiff some three or four years before she was injured by an accident, and who had seen her somewhere from six months to two years prior to the happening of the accident, should be allowed to testify as to her physical condition prior to the happening of the accident. So holds the appellate division of the supreme court of New York, in Loudoun v. Eighth Avenue Railroad Company. The testimony, it says, being as to knowledge obtained in regard to the party's condition within a period of from six months to two years prior to the happening of the accident, was not so remote but that it formed some basis for comparison between her condition then and that which he exhibited at the time of the examination before the trial.

The Celluloid Bandage Casts proposed as a substitute for plaster casts, made by dissolving scraps of celluloid in acetone and spreading it on mull (*vide* JOURNAL, p. 437, Vol. xxvii), are highly recommended by Maass of Berlin, who has applied more than a hundred during the last ten months and is convinced of their superiority to the usual cast. They are extremely light, elastic, clean and imperishable, not affected by heat, perspiration nor pus, so solid that no steel supports are required, while they can be made with celluloid hinges when desired for articulations. The technique is very simple; any physician can make them without the assistance of an expert, and the danger from fire is slight; it is impossible for the cast to explode. The only disadvantages are that they take longer to harden, 8 to 12 hours (usually having to be made over a cast), and are a little more expensive on account of the acetone.—*Deutsche Med. Woch.*, July 29.

A Question of Values.—"I suppose," remarked the sarcastic house wife, "that in the course of time ice will be worth as much as diamonds."

"Well," replied the ice man, reflectively, "diamonds are pretty good in their way, but you can not rely on their melting down so as to keep up a steady demand."—*Washington Star.*

Death by Poison.—A man, feeling slightly ill, went into a drug store in Detroit, and asked the proprietor to give him something to relieve the pain, and the proprietor, by mistake, gave him some aqua ammonia. It burned his mouth very severely, but he lived some fifteen days thereafter, when he died from the effects of the potion taken. The supreme court of Michigan holds that, under the circumstances, it was "death by poison," in contradistinction to the contention that it was a death from shock experienced when it was discovered that something wrong had been taken. (Early v. Standard Life and Accident Insurance Company.) The fact that the poison was accidentally administered, supposing it to be another substance, the court further holds could not take the case out of, but rather brought it within the exception in a policy of accident insurance excepting from its provisions death from poison.

Some General Principles that Should Govern Operations for Otitic Brain Disease.—Green (*Boston Medical and Surgical Journal*, Aug. 12, 1897, p. 145) includes among otitic brain diseases external pachymeningitis with extradural abscess, leptomeningitis or arachnitis, encephalitis or brain abscess, and phlebitis and thrombosis of the sinuses and the jugular vein; all caused by infections from the ear, the microbes being the same varieties as are found in the suppurating ear cavities, chiefly streptococci, staphylococci and pneumococci. In cases of otitic brain disease early operation is advisable, but an early exact diagnosis is often impossible. The chances are seventy-nine in a hundred that a fistula through the bone from the ear will lead directly to the brain abscess disease. The infected ear requires operation in any case, and this operation can be combined with an exploration for the bony fistula and the recognition and treatment of the brain disease.

The Memory of the Very Aged.—By reference to the newspaper statements of incidents in the lives of our still living centenarians, General Washington's nurse seems to have entirely vanished. One derelict, however, claims to have chatted with the first President when she must have been only six years old. As the reciter's years were made to fit the incident, in a medico-legal way, we should not hasten to gainsay it. Still the deduction is that the happening, provided it did occur, was of the nature of a faint impression developed by the iterations of others through a series of years. Personal vanity no doubt painted as usual with its yellow colors and not without its best art. How curious that the distance of four-score years lends both a haziness as well as an enchantment to the declining years! May we not add how fragmentary is the mosaic of all knowledge! Still, in the present instance, with all the fantastic tricks of the reigning psychology, we shall not pretend to make an allegation of falsehood. Let the poor subjects of an extravagant longevity hug their delusions of a golden age to them gone forever, for no doubt they were excused from the grosser sins, or their lives would not have been so indefinitely prolonged.

Hospitals.

By the will of the late William Lewis Dayton the Mercer Hospital, Trenton, N. J., received $2,000.

The West Pennsylvania Hospital, Pittsburg, Pa., is to be enlarged by a new wing 145 by 55 feet, constructed of brick and four stories in height.

Ground will be broken in September for a hospital at Jamaica, Long Island, N. Y. The plans call for a substantial modern structure, extremely plain in its architectural lines. The building will have open plumbing throughout, special attention being given to the fixtures in the operating rooms and ventilating devices.

Societies.

The following meetings of societies are noted.

Indiana—Henry County Medical Society, Newcastle, Aug. 12.

New York—American Association of Gynecologists and Obstetricians, Niagara Falls, August 17-20. Cayuga County Medical Society, Auburn, August 13.

Pennsylvania—Berks County Medical Society, Reading, August 10. Bradford and Susquehanna County Medical Society, Lake Carey, August 10.

Texas—Lone Star Medical Association, composed of colored physicians, Houston, August 14. Texas Association of Railway Surgeons, Galveston, August 10.

Virginia—The twenty-eighth annual session of the Medical Society of Virginia will be held at Hot Springs, August 31 to September 2.

Wisconsin—Ashland County Medical Society, Ashland, August 12.

Louisville.

Lexington Insane Asylum. Dr. E. M. Wiley of Harrodsburg, has been appointed by the Governor as superintendent of the Eastern Kentucky Insane Asylum at Lexington in the place of Dr. Scott. Dr. Wiley's appointment has met with general approval. He was born in Jefferson County, Ind., forty seven years ago, is a graduate in medicine from one of the schools of Indianapolis, and has for several years been the surgeon of the Southern Railway at Harrodsburg. Dr. John L. Long of Louisville has been appointed as first assistant physician. Dr. Long made an enviable record a number of years ago as superintendent of the Louisville City Hospital, which position he held for several years, and he was prominently mentioned and endorsed for the position of superintendent of the Central Kentucky Insane Asylum at Lakeland in the place of Dr. McNary deceased, to which place Dr. Goslee, the former first assistant was finally appointed.

School of Reform. A year or so ago, as recorded in these columns, the State Legislature passed a law appropriating $100,000 for the purpose of establishing two reform schools for youthful criminals. Since that time the commissioners appointed by the Governor have been trying to decide upon a location, and at a meeting held this week in this city it was decided to locate one of the institutions in Fayette County near Lexington, if the offer made some time ago for a contribution of $5,000 from the city and $8,000 from the county is held good. At present both sexes will be received at this institution, though it is ultimately expected to have separate institutions. The commissioners are authorized to borrow the necessary funds by special act of legislature. A farm of not less than 100 acres will be selected at once to be approved by the commission and work will be begun immediately. The limit of the cost of the institution will be $50,000.

Muldraugh Hill Medical Society. This society, which is composed of the medical men of Hardin, Hart, Larue, Grayson, Meade, Bullitt and Jefferson Counties, has just concluded its second semi-annual meeting at Elizabethtown with Dr. Jerome Smith of Larue, president, in the chair. The next meeting will be held in the same place in December.

Pension Examiners. At the last meeting of the two boards, the new one appointed by President McKinley and the Democratic Board which claims that it is covered by the Civil Service rules, it was ascertained that all applicants for examination held instructions from the commissioner of pensions at Washington, to appear before the new board for examination. The old board will appeal to the Civil Service Commission for a ruling on the subject. The old board is composed of Drs. Ewing Marshall, T. P. Satterwhite and M. K. Allen.

Dr. E. W. Logan, who has been prominent in local politics for several years, has sold out and will go to Oregon for the winter, when he will leave in the early spring for Klondike and the Alaskan gold fields.

The University of California and the Homeopaths.—We publish below the recent correspondence in the matter of the petition for recognition of the homeopathic sect in the medical faculty of the university. The tenets of Hahnemann long since died in Europe, the place of its birth, but in the fertile soil of the newer, freer America, ill weeds grow apace.

PETITION OF THE HOMEOPATHS.

To the Honorable Board of Regents of the University of California.

Gentlemen: We, the undersigned directors and stockholders of the Hahnemann Hospital College of San Francisco, having been appointed a special committee by the board of directors of the said institution to present to your honorable body a petition praying for the affiliation of the Hahnemann Hospital College of San Francisco with the University of California, thereby forming a homeopathic department of the university, do hereby ask that such prayer be granted. The Hahnemann Hospital College of San Francisco was incorporated in 1881 and threw open its doors to students in June, 1884, since which time it has given a regular course of lectures each year in all branches of medicine and surgery. There have been graduated from said institution 125 students, and there are at present twenty-seven students in the various classes. The college has always demanded a high standard of education from its graduates. It required three full years of study in the college from its beginning and was with the medical department of the University of California, the first to demand a full four years' course of study in the college, as a compulsory requirement for graduation. The college, though not endowed, is wholly free from debt. There are in the State of California in actual practice today about twenty-three hundred licensed physicians of all schools, of which number, by actual count, 465 are of the homeopathic school, about one-fifth of the whole number. As the patrons of homeopathy are among the well-to-do class of citizens and not so much among the masses as the patrons of other schools of practice, it is undoubtedly a fact that such patrons pay at least one-third of the taxes of the State. Because we believe it to be for the best interests for the Hahnemann Hospital College of San Francisco, for homeopathy on the Pacific coast, for the large number of citizens and taxpayers of this State who do now or who may in the future employ homeopathic physicians, that the said college should be under the protection of the State University, and also because we believe it to be for the best interests of the University of California, as a great university, that there be a homeopathic department connected with it, we do therefore pray that the Hahnemann Hospital College of San Francisco may become affiliated with the University of California.

REJOINDER OF THE MEDICAL FACULTY.

To the Regents of the University of California:—A petition has been placed before your honorable body by the Homeopathic School of Medicine of this city praying that they be made an affiliated college of the University of California, which would therefore constitute them a teaching body of the University of California. There is, however, already a Medical Department of the University of California, which has always discharged its duties faithfully and unselfishly, working zealously for the honor of the university and for the advancement of medical knowledge. The present medical department feels that it would be an unjust criticism of their work if another faculty were appointed and tantamount to an assertion by the regents that the work of the present faculty was incomplete from a university standpoint. If such an opinion be held by the regents then it is only fair that they should first apprise the present faculty of its deficiencies so that an attempt may be made if found necessary to rectify them. But the present faculty of medicine does not believe that the regents have any intention to make such a criticism of its present faculty of medicine. They believe that the regents, in lending an ear to the petition of the homeopathic school of medicine, are simply wishful to find if it might be for the greater advancement of the university to take in a school which asserts itself to be possessed of a more enlightened and successful mode of treatment than any other so-called school or collection of individuals now practicing medicine. The following facts would seem, however, to indicate that their boast of having a superior mode of treatment or a more advanced knowlege of medicine than the regular school of medicine is not well founded: Homeopathy began in 1810 with the publication by Hahnemann of his "Organon der rationellen Heilkunde." From then till now, a period of eighty-seven years, all scientific advance has found a ready ear and quick appreciation in all the civilized countries. Let us now examine carefully what respect and appreciation the homeopaths have been able to win either from the scientific world or from the general public. They are not recognized either in the army, navy or civil service of any government in the world, including our own. They are recognized by no institution of learning in any foreign country, and by only two institutions of learning in our own country, viz,, Ann Arbor and the University of Iowa. Johns Hopkins University, for example, that particularly prides itself on its work of investigation, has not a single homeopath on its medical faculty. There are very few homeopaths in Germany, the birthplace of the founder, and no university there teaches homeopathy, but the verdict of the scientific world has been endorsed by the general public in so far that all steamships, all railroads and all life insurance companies choose almost invariably the medical services of the regular profession.

During all the eighty-seven years that the homeopaths have been in existence we can not recall a single instance of a scientific discovery in the field of medicine by one of their number, nor the fostering of scientific thought in one of their schools. The discovery of the sleep producing effect of ether and chloroform were made by regular medical men, working in regular medical schools. Lister, the originator of antisepsis in surgery from which the whole vast progress of modern surgery dates, is a regular physician and surgeon. Koch, the discoverer of the *cause of consumption and of cholera, is a regular medical practitioner*, working in a regular school. Pasteur, a chemist, worked under the auspices of a regular medical school. The discovery of the germ causing typhoid fever, and in fact the whole system of modern sanitary medicine and quarantine measures have developed under the influence of the regular school of medicine. The serum treatment for diphtheria by Behring was instituted in a regular working in the University of Berlin, a regular medical school. The great medical events of our own city have been carried out by members of the regular profession. The curing of an aneurysm of the abdominal aorta by Jno. F. Morse, the perfecting of the crushing operation for stone of the bladder by Chismon and the finding of a rare form of skin disease close to a parasite called a psorosperm by Rixford have all been done by members of the regular profession. Both Professor Le Conte and President Jordan, two of the most distinguished leaders of thought in the natural sciences in this country, are graduates from regular medical colleges and although not engaged in the practice of medicine yet serve to show that an education in a regular medical college does not dull a man's intellect or render him illiberal. This list of discoveries, investigators and educators, proves, if it proves anything, that the regular medical profession is not inimical to progress. It is therefore not likely, if homeopathy were in the line of progress, that it would meet with opposition from such an enlightened body of men as compose the regular medical school. And furthermore, it is to be said that not one of the propositions put forward by the homeopathic medical school has advanced out of the realm of theory into that of actually realized fact, and this after a trial of eighty-seven years in an age of scientific progress.

THE PUBLIC SERVICES.

Army Changes. *Official List of Changes in the Stations and duties* of officers serving in the Medical Department, U. S. Army, from August 14 to 20, 1897.

Col. Dallas Bache, Asst. Surgeon-General (Chief Surgeon, Hdqrs. Dept. of the Platte), leave of absence granted is extended one month.

Capt. Henry A. Shaw, Asst. Surgeon (Ft. Snelling, Minn.), *is granted* leave of absence for one month, with permission to apply for an extension of one month.

First Lieut. Charles *Lynch*. Asst. Surgeon (Ft. Robinson, Neb.), leave of absence granted is extended one month.

Capt. Henry S. T. Harris. Asst. Surgeon, is granted leave of absence for one month, to take effect upon his relief from duty at Ft. Preble, Maine.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending August 21, 1897.

Asst. Surgeon F. L. Pleadwell. *detached from the* "Texas" August 17 and ordered to the "*Nashville*" August 19.

Asst. Surgeon W. M. Wheeler, detached from the "Oregon" August 23 and ordered to the Mare Island *navy yard for duty in connection* with the "Marietta."

Asst. Surgeon *D. H. Morgan, detached* from the "Monongahela" and ordered to the "Cincinnati."

Surgeon A. G. Cabell, detached from the "Monongahela," ordered home and be ready for sea.

CHANGE OF ADDRESS.

Armstrong, W. S., from 12 Vine St. to St. Charles and Montrose Boul., Chicago.

Dunn, Sherwood, from Los Angeles to Hotel Coronado, Coronado, Cal.

Davis, J. S., *from Ocean Springs, Miss., to Charlottesville, Va.*

Eastwood, A. Y., from Cleburne, Texas, to Marsdin, I. T.

Eichberg, J. H., from 18 E. 9th to N. E. cor. 7th and Race Sts., Cincinnati, Ohio.

Fitzpatrick, T. V., from 186 W. 8th St. to 32 Garfield Place, Cincinnati, Ohio.

Fisk, S. A., from St. Luke's Hospital to 37 18th Av., Denver, Colo.

Hall, R. B., Dr., from 154 W. 8th St. to Berkshire Bldg., Cincinnati, Ohio.

Hefflebower, R. C., *from 628 Elm to N. E. cor. 7th and Elm Sts.*, Cincinnati, Ohio.

Owen, W. E., from Fox Lake, Wis., to Williamsburg, Iowa.

Pearce, C. T., from 20 W. 7th St. to N. E. cor. 7th and Race, Cincinnati, Ohio.

Reed, C. A. L., Dr., from 311 Elm St. to N. E. cor. 7th and Race, Cincinnati, Ohio.

Stewart, R. W., Dr., from 25 E. 8th St. to Ortiz Bldg., Cincinnati, Ohio.

Schultz E. T., from Reedsburg to Milwaukee Hospital, Milwaukee, Wis.

Semple, John M., from Medical Lake to Review Bldg., Spokane, Wash.

Shadle, J. E., Dr., from Endicott Bldg. to Lowry Arcade Bldg., St. Paul, Minn.

Taylor, H. S., Dr., from 590 Endicott Bldg. to Lowry Arcade Bldg., St. Paul, Minn.

Wiley, E. M., from Harrodsburg to Lexington, Ky.

LETTERS RECEIVED.

Adkinson, L. G., New Orleans, La.; Ammonol Chemical Co., The., New York, N. Y.

Bernd, Henry & Co., St. Louis, Mo.; Bradley, Theo. J., Albany, N. Y.; Bruyere, John (2), Trenton, N. J.; Boehringer, C. F. & Soehne, New York, N. Y.; Bicknell, George, Omaha, Neb.; Battle Creek Sanitarium, Battle Creek, Mich.

Castle, C. H. *Cincinnati, Ohio*; Cain, J. S., *Nashville*, Tenn.; Cutter, John A., New York, N. Y.; Clune, W. M., Germantown, Ill.

Dickson, D. K., Lead, S. D.; Darrow, E. & Co., Rochester, N. Y.; Davidson, E., Blackwater, Mo.

Eastman, T. B., Indianapolis, Ind.; *Ewing, W. G., Nashville, Tenn.*; Eshner, Augustus A., Philadelphia, Pa.

Flint, Austin, New York, N. Y.; Ferguson & Goodnow, Chicago; French, *Pinckney* (2), St. Louis, Mo.

Gillette, W. J., Toledo, Ohio; Gessner, H. B., New Orleans, La.; Gould, George M., Philadelphia, Pa.; Galbraith, F. B., Pontiac, Mich.; Giffin, L. M., Boulder, Colo.

Hodges, J. Allison, Richmond, Va.; Hogan, Geo. A., Birmingham, Ala.; Heaton, Conley, Aurora, Ind.; Hubbard, G. W., Nashville, Tenn.; Holland, J. W., Philadelphia, Pa.; Holsteen, W. F., Chicago; Hyndman, Jas. S., Cincinnati, Ohio; Hoover, Thos. C., Columbus, Ohio; Harrison, E. E., *West Concord, Minn.*; Hogue, J. H., *Altoona*, Pa.

Jackson, D., Pleasantville, Iowa; Jones, Charles H., Tempe, Ariz.; Jenkins, J. F., Tecumseh, Mich.

King, A. F. A., Burlington, Vt.; Knott, Van Buren, Sioux City, Iowa, Kennard, K. Sellers, Cynthiana, Ky.

Lutz, E. J., St. Louis, Mo.; Levy, Robt., Denver, Colo.; Lindsley, J. Berrien, *Nashville, Tenn.*; Lewis, T. N., Kissimmee, Fla.

Mills, Samuel C., Richmond, Ind.; McBride, M. A., Tahlequah, I. T.; Mongomery, Douglass W., San Francisco, *Cal.*; Merrick, M. B. (2), Passaic, N. J.; McIntosh Battery and Optical Co., Chicago.

Nelson, Chesman & Co., *St. Louis, Mo.*; *Nieschang*, Charles C. F., Fort Wayne, Ind.

Powell, S. D., New York, N. Y.; Parke, Davis & Co., Detroit, Mich.; Parker, F. L., Charleston, S. C.; Punton, John, Kansas City, Mo.; Potter, Samuel O. L., San Francisco, Cal.; Peirce, C. N., Montreal, Can.; Patch, Wm., Sibley, Ill.; Patterson, J. C., Chapel Hill, N. C.

Rathmell, J. R., Chattanooga, Tenn.

Seidler, W. F., Newark, N. J.; Sajous, Chas. E. de M., Philadelphia, Pa.; Shadd, F. J., Washington, D. C.; Stemen, C. B., Fort Wayne, Ind.; Sharp, L. J., Harmony Grove, Ga.; Saunders, W. B., *Philadelphia*, Pa.; Sangree, Ernest B., Nashville, Tenn.; Starkey, Horace M., Chicago; Stewart, F. E., Detroit, Mich.; Scott, Clifton, Des Moines, Iowa; Souchon, Edmond, New Orleans, La.; Scheppegrell, W., New Orleans, La.

Taylor, P. Richard, Louisville, Ky.; Townsend, W. R. New York, N. Y.; Tracy, Edward A., Boston, Mass.; The Ammonol Chem. Co., New York.

Von Quast, E., Kansas City, Mo.

Welch, William H., Baltimore, Md.; Wilde, Julia Cabot, Chicago; *Wood, T. H., Nashville, Tenn.; Winston, Geo. T., Austin, Texas*; Withrow, J. M., Cincinnati, Ohio; Wandless, Henry W. (2), Dallas, Texas; Weir, C. F., Chicago.

PAMPHLETS RECEIVED.

Antiseptic Treatment and the Limitation of Climatic Treatment of Pulmonary Tuberculosis. By E. Fletcher Ingals, M.D. Twenty pages. Reprinted from the Journal of the American Medical Association.

Atrophic Rhinitis. By John Edwin Rhodes, M.D. Twenty pages. Reprinted from the Journal of the American Medical Association.

Bellevue Hospital Medical College, New York city. Announcement for 1897-98.

Central College of Physicians and Surgeons, *Indianapolis. Announcement for 1897-98.*

College of Physicians and Surgeons, New York city. Announcement for 1897-98.

College of Physicians and Surgeons of San Francisco. Announcement for 1897-98.

Fort Wayne College of Medicine.

Hemiplegic State and Its Treatm [illegible] : Church, M.D. Eight pages Reprinted from [illegible] rder.

Medical College of Ohio, Cincinnati. [illegible] -98.

Medical Education; Direct Autoscopy—Kirstein; Exaggerated Arytenoid Movement; Fatal Hemorrhage from the Nose and Pharynx from Unusual Cause. *By Robert Levy, M.D. Paper. Reprints.*

Starling Medical College, Columbus, Ohio. Announcement for 1897-98.

University College of Medicine, Richmond, Va. Announcement for 1897-98.

Women's Medical School, Northwestern University, Chicago. Circular *of Information for 1897-98.*

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ADDRESS.

CLASSIFICATION AND SURGICAL TREATMENT OF ACUTE PERITONITIS.

Read by invitation in the General Session of the International Medical Congress, at Moscow, Russia, Aug. 20, 1897.

BY N. SENN, M.D., Ph.D., LL.D.
CHICAGO, ILL.

An intelligent and systematic discussion of the treatment of acute peritonitis must necessarily be based on a rational classification. A great deal that has been said and written on this subject, from the distant past until the present time, is worthless from a scientific as well as a practical standpoint, owing to a lack of a proper classification. The ordinary terms used to designate the different forms of peritonitis are differently interpreted and applied by pathologists as well as clinicians. Acute inflammation of the peritoneum is produced by so many different causes and assumes such varied clinical aspects, that it is extremely difficult to formulate a uniform and satisfactory classification. A discussion of the etiology, differential diagnosis, prognosis and treatment of acute peritonitis, except upon the basis of a clear and comprehensive classification, is fruitless, misleading and usually results in the deduction of erroneous and often dangerous conclusions. The classification should include the anatomy, pathology and etiology of the disease to be of value in rendering a correct diagnosis, a reliable prognosis, and in enabling the physician and surgeon to advise and apply effective therapeutic measures. It is especially important in the discussion of the surgical treatment of peritonitis, before an audience composed of physicians and surgeons, to make a clear distinction between the different clinical forms of peritonitis with a view of pointing out the limitation of purely medical treatment and the legitimate scope of surgical intervention. The clinical classification which I here suggest appears to cover the ground fairly well, but would be incomplete without an exemplification from other standpoints, and for this reason I have prepared the following:

SYLLABUS OF CLASSIFICATION OF ACUTE PERITONITIS.

Anatomic.—Ectoperitonitis, endoperitonitis, parietal peritonitis, visceral peritonitis, mesenteritis, epiploitis, perigastritis, peri-enteritis, perityphlitis, peri-appendicitis, pericolitis, perihepatitis, perisplenitis, pericystitis (urinary and gall bladder), perimetritis, perisalpingitis, peri-oöphoritis, pelvic peritonitis, diaphragmatic peritonitis.

Etiologic.—Traumatic peritonitis, idiopathic peritonitis, perforative peritonitis, metastatic peritonitis, puerperal peritonitis, peritonitis infantum, fetal and intra-uterine peritonitis, peritonitis neonatorum.

Pathologic.—Diffuse septic peritonitis, putrid peritonitis, hemorrhagic peritonitis, suppurative peritonitis, serous peritonitis, fibrinoplastic peritonitis.

Bacteriologic.—Streptococcus infection, staphylococcus infection, pneumococcus infection, bacillus coli communis infection, gonococcus infection, tubercular infection.

Clinical.—Ectoperitonitis, general septic peritonitis, perforative peritonitis, circumscribed peritonitis, hematogenous peritonitis, visceral peritonitis (same as anatomic), pelvic peritonitis, puerperal peritonitis, subdiaphragmatic peritonitis.

1. *Ectoperitonitis.*—An inflammation of the attached side of the peritoneum is called ectoperitonitis. As compared with inflammation of the serous surface, this inflammation of the subendothelial vascular connective tissue is characterized clinically and pathologically by intrinsic tendencies to limitations of the inflammatory process. The mechanical and anatomic conditions for diffusion of the infection are less favorable than when the free surface of the membrane is affected. Ectoperitonitis, however, in certain localities may become quite diffuse, as, for instance, when the cavum Retzii (William Gruber), or the retroperitoneal space on either side of the spinal column are the seat of a suppurative inflammation. In the latter locality a paranephric or spondylitic abscess is often the cause of an extended ectoperitonitis, the extent of the disease corresponding with the size of the subperitoneal abscess. In infected wounds of any part of the abdominal wall in which the peritoneum is exposed, but not perforated, the primary ectoperitonitis is occasionally followed by the extension of the infection to the serous surface through the lymphatics, or the direct extension of the infective process through the tissues until it reaches the endothelial lining. Peritonitis of a visceral origin is always preceded by ectoperitonitis, whether the infection reaches the peritoneal cavity through a perforation or by progressive extension of the infection from the primary focus through the tissues until it reaches the free peritoneal surface. The surgical treatment of an ectoperitonitic suppurating focus is curative and prophylactic. The prophylaxis consists in the prevention of rupture of the abscess contents into the free peritoneal cavity by an extraperitoneal incision and drainage, which ordinarily results in healing of the abscess cavity and a permanent cure. Paranephric abscesses should be treated by lumbar incision and drainage; tubercular spondylitic abscesses without fistula formation, by tapping and iodoformization; pelvic abscesses in the female, whenever practicable, by vaginal incision and drainage. If the abscess is not within reach by the vaginal route, an incision is made through the abdominal wall directly over the abscess and in the absence of adhesions the parietal peritoneum is sutured to the surface of the abscess wall and the abscess incised and drained at once, or the incision is tamponed with iodoform gauze and the abscess opened and drained a few days later after the peritoneal cavity has been more thoroughly excluded by the formation of firm adhesions.

Suppurative inflammation of the loose connective tissue in the cavum Retzii leads often to extensive ectoperitonitis, occasionally to perforation into the peritoneal cavity, septic peritonitis and death. Leusser ("Ueber das Cavum Retzii [illegible] die [illegible]annten prävesicalen Abscesse," [illegible] [illegible]rgie, No. 32, 1885) has collected forty-six such cases and has made some important investigations concerning the structure and arrangement of the tissues in the prevesical space in reference to the directions in which the pus will burrow when this space is the seat of a phlegmonous inflammation. He found that the loose connective tissue between the peritoneum and the abdominal muscles is divided into two layers by a plane of fascia which is inserted into the upper border of the symphysis. An abscess in this region may therefore be submuscular or prevesical; the former occupies the space between the fascia and the muscles and assumes an ovate outline with the pointed extremity of the swelling directed downward; an abscess behind the fascia, a true prevesical abscess, resembles in outline the disturbed bladder. The prevesical abscess can be reached by rectal and vaginal examination and disturbs the function of the bladder. The indications for prompt surgical interference are particularly urgent when the abscess is deep, subperitoneal, as it is in such cases where the peritoneum is extensively involved, and the danger of extensive burrowing of the pus is greatest, and perforation into the peritoneal cavity most frequently takes place. The proper treatment of an abscess in the cavum Retzii is an early and free incision made in the same manner and with the same care as in operations for stone in the bladder by the suprapubic route.

2. *General septic peritonitis.*—The greatest confusion still prevails among pathologists, physicians and surgeons in reference to what is meant by general septic peritonitis, more particularly as to the distinction between septic and suppurative peritonitis. I understand by a general septic peritonitis an inflammation of the entire peritoneal sac with the serous covering of all abdominal organs, which, as a rule, proves fatal from progressive intoxication before sufficient time has elapsed for the formation of pus or any considerable transudate, or before any marked macroscopic tissue changes have occurred. It is the result of the most virulent infection, the patients dying not so much from the effects of the inflammation as the rapid introduction into the general circulation from the peritoneal cavity of preformed septic material. In suppurative peritonitis the primary microbic cause is less in quantity or virulence and a sufficient length of time intervenes between the beginning of the attack and the operation or death for the formation of pus and other inflammatory products. Every acute peritonitis is septic in so far that phlogistic substances reach the general circulation from the inflammatory lesion, and in that frequently the inflammation terminates in suppuration, but the term septic should be limited to those cases of diffuse septic peritonitis in which, as a rule, death occurs in a few days and before any gross pathologic conditions have had time to develop. It is a disease that is almost uniformly fatal, with or without operation, the patients dying from the effects of progressive sepsis. The claim of operators to have cured such cases by laparotomy must be accepted with a good deal of allowance. The microbes which produce this form of peritonitis are those which follow the lymphatic channels and are rapidly diffused not only over the entire peritoneal surface, parietal and visceral, but also through the subserous lymph spaces. Acute general septic peritonitis is essentially a streptococcus disease. The disease is observed most frequently after perforation into the free peritoneal cavity in the region of the small intestines of an abscess containing septic pus, rupture or perforation of any of the abdominal or pelvic viscera containing septic material, gunshot or stab wounds of the abdomen with visceral injury of the gastro-intestinal canal, and occasionally as the result of infection during a laparotomy. The gravest form of puerperal sepsis is a diffuse septic peritonitis. The subjects of this variety of peritonitis die so soon after the beginning of the disease, that at the postmortem, or if the abdomen is opened during life, at the operation, no gross tissue changes are discovered. Beside a slightly increased vascularity, nothing is found to indicate the existence of peritonitis. The septic material formed in large quantities and of intense virulence is rapidly absorbed by the stomata of the under surface of the diaphragm, discovered and described by von Recklinghausen. In putrid peritonitis the streptococcus infection is complicated by the presence of putrescible substances, which serve as a nutrient medium for saprophytic bacteria which modify the character of the inflammatory product. It occurs most frequently in connection with grave forms of puerperal nephritis. It is usually associated with more or less gangrene or ulceration of the organ or parts primarily affected, as uterus, intestine or abdominal wall. It is diffuse septic peritonitis that has so far proved so obstinate to successful surgical treatment. Surgery has done much toward its prevention, but very little toward saving life after the disease is once fully developed. Careful analysis of the cases which yielded to laparotomy would undoubtedly disclose the fact that most of them were not genuine cases of general septic peritonitis, but cases of more or less localized inflammation of the peritoneum with or without suppuration. In this opinion I am supported by no less an authority than Frederick Treves (*The Practitioner*, London, June, 1894), who, from a surgical standpoint, divides peritonitis into localized and diffuse. He states that the surgical treatment of the former has yielded encouraging results, but in general non-tubercular peritonitis it has been phenomenally unsuccessful. After speaking of circumscribed peritonitis the same author ("The Surgery of the Peritoneum," *British Medical Journal*, Oct. 3, 1896) says: "Peritonitis in the 'small intestine area' is, on the other hand, rapidly diffused and is as rapidly attended by septicemic symptoms. In the treatment of localized peritonitis surgery can claim to have made great advances, but in the treatment of diffuse peritoneal inflammation with marked constitutional symptoms there is little progress to record. The abdomen may be opened, washed out and drained, and the distended bowel may be relieved of its putrescent contents by incision, but the results at the best are not brilliant, and it is evident that the treatment of this terrible complication must still incline toward that desirable prevention which is better than cure."

I have opened, drained and washed out the peritoneal cavity in many cases of diffuse septic peritonitis and, I am free to confess, without a single successful result. All of my cases died a few hours to a day or two, after the operation, of sepsis in spite of heroic stimulation and, in some cases, of frequently repeated irrigation with sterilized water, normal solution of salt, or mild antiseptic solutions such as boracic acid and acetate of aluminium. On the other hand, some surgeons report a fair percentage of recoveries after laparotomies for what they call general septic peritonitis. Krecke (*Münch. med. Woch.*, No. 33, 34, 1892) has collected 119 cases of laparotomy in general peritonitis, the origin of which was determined in all except 18, of which 9 died and 9 recovered. In most of the cases the disease was caused by perforation. Of these 36 followed perforation of the appendix, 12 were cases of typhoid perforation, of which 5 recovered; 12 were due to perforation from gangrene and other causes implicating the intestines. Of the gangrenous variety not one recovered, and of the 8 others only 3 were cured by the operation. Of traumatic cases, 3 of punctured and 1 of gunshot wound all recovered, but of contusions only 3 out of 8 recovered. The operation saved 5 out of 13 cases of puerperal peritonitis. Lastly a group of cases of peritonitis from various other causes yielded 3 deaths and 6 recoveries. The total result is 119 cases of general peritonitis treated by laparotomy, 51 recoveries and 68 deaths.

A. J. McCosh (" The Treatment of General Septic Peritonitis," *Annals of Surgery*, June, 1897) operated (1888 to 1895 inclusive) in forty-three cases of general septic peritonitis. Of these thirty-seven died and six recovered, a mortality of about 86 per cent. A free abdominal incision was made in all, and with few exceptions irrigation was employed.

It is not easy, nor always possible, to ascertain the extent of inflammation *in vivo* by opening the peritoneal cavity, and a strong suspicion remains that at least in some of the cases which recovered the peritonitis was not general, or that the operation was performed before the entire serous surfaces were involved. Certain principles in the medical and surgical treatment of peritonitis are applicable to all forms of the disease and the best place to discuss them is in connection with the gravest variety—acute general septic peritonitis.

Medical treatment.—A more general discussion of the medical treatment of peritonitis is out of place here, but a few words in reference to what the surgeon should do and what he should not do in the way of medical treatment when he assumes charge of a case of peritonitis is pertinent to my subject. Stomach feeding must be limited to the administration of liquid food and stimulants. If, as is so frequently the case, nausea and vomiting are prominent symptoms, rectal enemata are of the greatest value. The distressing thirst can often be effectually relieved by high rectal enemata of warm water; if these are not tolerated, by hypodermatic infusion. The therapeutic indications for cathartics and opium in the treatment of peritonitis are not definitely settled. Some favor cathartics, others condemn them and rely on opium. Mr. Tait has taught us years ago the value of saline cathartics in the prevention of peritonitis and in its treatment during the incipient stage. Most practitioners have adopted his views and administer saline cathartics as soon as the first symptoms make their appearance, and certainly the results have been much better since this practice has come into more general use. It is not only clinical observation that supports Tait's teachings and practice, but his views have been substantiated by experimental investigations. The experiments of Wegner prove that bacteria injected into the peritoneal cavity readily enter the blood vessels and lymphatics and thus reach the excretory organs, notably the intestinal canal, through which they are rapidly eliminated by free catharsis.

Lawson Tait (" Diseases of the Ovaries," fourth edition) has found the most efficient treatment for septic conditions following abdominal section to be 30 or 40 grains of sulphate of magnesia, repeated every hour or every other hour until the bowels move freely. Hence, where microbes accumulate in such quantities that nature unaided can not remove them, it is rational treatment to render assistance by the administration of saline cathartics to favor the process of elimination.

I have seen many cases of threatened peritonitis after abdominal section aborted by the timely administration of saline cathartics. If the stomach is intolerant, calomel in small doses, repeated hourly, and saline enemata are indicated.

One of the great dangers in peritonitis is rapid distension and paresis of the intestines, conditions which are provoked by opium and which can be most effectually averted by early and free catharsis. The use of cathartics is absolutely contraindicated in all cases of peritonitis caused by perforation. In such cases the use of opium is legitimate and useful as it diminishes shock, extravasation of septic material and its rapid diffusion over the peritoneal surface. Peritonitis, especially the septic variety, invariably depresses the heart's action, a condition which should be met by active stimulation. Shock, general debility and, as Fritsch has shown, a weak heart increase the danger from sepsis. Strychnia, camphor and alcoholic stimulants should be employed early and at short intervals in all cases of grave peritonitis. If these remedies are not retained by the stomach they must be administered subcutaneously or per rectum. The application of ice or the cold coil over the abdomen frequently succeeds in diminishing the tympanites and should be employed to prevent over-distension and paresis of the intestines when this condition appears and the peripheral circulation warrants their use. If the heart's action is weak and the capillary circulation sluggish, hot applications are more agreeable to the patient, and a better stimulant for the feeble peripheral circulation.

Operative treatment.—There can be no difference of opinion in reference to the advisability of early operative treatment in the management of general diffuse septic peritonitis. Without operation death is certain. An early operation may succeed in arresting further extension of infection in cases in which the disease would become diffuse, and in diffuse cases may occasionally be the means of saving a life which without it would be surely lost. An early diagnosis and prompt operative interference are the conditions *sine qua non* for success. The patient should be properly prepared for the operation, not only with a view of securing absolute asepsis for the field of operration and everything that is to be brought in contact with wound, but the necessary precautions should also be carried into effect to sustain the heart's action and stimulate the capillary circulation during and immediately after the operation. This can be accomplished by administering a 1-32 grain of strychnia, if the patient is an adult, hypodermatically and two ounces of whisky or brandy by the stomach or rectum half an hour before the anesthetic is administered. I am partial to the use of sulphuric ether as an anesthetic in performing laparotomy for this indication, as it has a less injurious effect on the already enfeebled circulation than chloroform. The body must be carefully protected against loss of heat during the administration of the anesthetic and the operation by warm flannel blankets and bottles or rubber bags containing hot water.

The normal salt solution, sterile water or antiseptic solutions which are to be used for irrigation must be kept at a temperature of 110 to 120 degrees F.

Different kinds of drains and drainage material should be on hand to be used as indications may arise.

The handling of the patient must be done with the utmost care and gentleness.

History of operation for peritonitis.—Abscesses which had their origin in the peritoneal cavity have been opened for centuries, after they presented themselves as such upon any of the accessible surfaces. Laparotomy as a therapeutic resource in the treatment of peritonitis is of recent date. J. Ewing Mears, as early as 1875, operated by abdominal section in a case of circumscribed suppurative peritonitis following childbirth. He advocated at that time surgical intervention in all cases of suppurative peritonitis. Treves ("The Treatment of Acute Peritonitis by Abdominal Section," *Brit. Med. Journ.*, March 14, 1885) reported a case of acute peritonitis treated by abdominal section in 1885, which terminated in recovery, and he recommended the operation in similar cases. During the same year Péan (*Gaz. des Hôp.*, Nos. 49, 51 and 60, 1885) advocated in the treatment of septic peritonitis incision, toilette and drainage of the abdominal cavity. He favored a large median incision, removal of inflammatory product with sponges and napkins, closure of wound by suturing, except a place large enough for drainage. About the same time Oberst ("Ein Fall von Perforations Peritonitis, Laparotomie, Tod nach 9 Wochen," *Centralblatt f. Chirurgie*, No. 20, 1885) urged energetic surgical treatment in cases of acute peritonitis. In the acutest form, however, he admitted that abdominal section and drainage were powerless in averting death from sepsis. In 1886 Lawson Tait ("Discussion on Abdominal Section," introduced by Mr. Lawson Tait, *Edinburgh Medical Journal*, May, 1886) reported two cases of acute peritonitis treated by abdominal section, of which one recovered. He advised laparotomy in all cases of peritonitis if an effusion can be demonstrated and the existence of fever indicates the pyogenic nature of the inflammatory product.

In 1889 ("Traitement Chirurgicale de la Péritonite," *Presse Méd. Belge*, No. 49, 1889), successful laparotomies for septic peritonitis were reported by Demons, Bouilly, Dernuce, Brun, Labbé and Routier. It is evident that in most of these cases the operation was performed for circumscribed suppurative and not for diffuse septic peritonitis.

The treatment of peritonitis by laparotomy received a new impulse when, about nine years ago, it was found that the disease is so often produced by primary suppurative and perforative lesions of the appendix vermiformis. About the same time gynecologists began to treat suppurative lesions of the pelvis, so frequently the precursors of a similar affection of the peritoneum, upon sound surgical principles. The old dictum, *ubi pus ibi evacuo*, is now fully appreciated by surgeons and gynecologists, and is daily put in practice in the treatment of suppurative ectoperitonitis and septic and suppurative peritonitis. Future clinical experience and experimental research will make this department of surgery one of the greatest blessings to humanity.

Incision.—In the operative treatment of general septic peritonitis authorities are as yet not agreed as to the size, location and number of incisions that should be employed in opening the abdominal cavity. In circumscribed peritonitis, the rule to open and drain by the shortest and most direct route is usually followed. In perforation of any other organ except the appendix vermiformis, resulting in diffuse peritonitis, the first incision should always be made at or near the median line. The incision is made above the umbilicus if the gall bladder, stomach or duodenum is the seat of perforation, below the umbilicus in perforation of any other portion of the small intestines.

Mikulicz ("Weitere Erfahrungen über die operative Behandlung der Perforations Peritonitis," *Archiv f. klin. Chir.*, B. 39, p. 756) makes a sharp distinction in the treatment of diffuse septic and progressive fibropurulent peritonitis. In the former variety the abdominal incision should be large, the perforation closed and the abdominal cavity disinfected and drained. In the latter the adhesions should be carefully preserved and the different pus accumulations opened and evacuated separately. Some surgeons prefer to open the abdomen some distance from the linea alba.

Ramsay (London *Lancet*, Nov. 30, 1895) gives cogent reasons why in opening the abdominal cavity the incision should not be made in the median line, but through the center of either rectus muscle where the abdominal wall is thickest and strongest, and where the different layers can be sutured separately with the greatest ease, and where for these reasons ventral hernia is least likely to follow as one of the remote consequences of the operation. Prolonged drainage is always an important etiologic element in the occurrence of post-operative ventral hernia, and this complication is certainly less likely to follow if the incision is made through the muscular portion of the abdominal wall than through the thin fibrous linea alba.

In the treatment of diffuse septic peritonitis the incision should be at least large enough to insert the hand for the purpose of making a careful intra-abdominal exploration with a view of ascertaining the extent of the disease and to locate and, if possible, treat the primary lesion. Gill Wylie (*Medical Record*, Feb. 15, 1890) recommends in the surgical treatment of diffuse peritonitis an incision of this size to enable surgeons to break up all adhesions among the intestines, and to freely wash the entire cavity of the peritoneum and insert two or more drainage tubes. The question relating to the propriety of breaking up adhesions will be discussed elsewhere, as in the form of peritonitis that is under consideration now adhesions, as a rule, are absent or, if present, few and slight. As I have stated before, the incision should be large enough to enable the surgeon to find and treat the primary affection which caused the peritonitis.

Mr. Bowlby (*Brit. Med. Journ.*, Oct. 27, 1894) is of the belief that an incision below the umbilicus does not necessarily empty the peritoneal cavity. In one case, after incising and flushing out through a subumbilical incision, he found a large quantity of gas as well as fluid remaining in the peritoneal cavity above. In cases of peritonitis resulting from perforation of a gastric or duodenal ulcer he advises two incisions (one above and one below the umbilicus), to ensure complete flushing. In diffuse peritonitis incisions should be made at a number of points with a view of facilitating irrigation and of ensuring free drainage. The best points will be above the pubes and above the umbilicus, and posteriorly through the lumbar region on each side; in the female through drainage into the vagina, by incising the Douglas *cul-de-sac*, will answer an excellent purpose. A long incision, permitting the intestines to escape from the abdominal cavity and covering them with a piece of gutta-percha or rubber tissue which is sutured to the margins of the wound, a method of treatment suggested by Hadra of Texas, is based entirely upon theoretic grounds and is too hazardous to merit a trial.

McBurney has devised an incision for operations on the appendix that reduces to a minimum the risks of a subsequent formation of a ventral hernia (*Annals of Surgery*, July, 1894). "The skin incision is oblique, about four inches in length, crossing at a right angle a line drawn from the spine of the ilium to the umbilicus, and about an inch from the spine. This incision is a little to the outer side of the normal situation of the appendix. The fibers of the external oblique and its aponeurosis are not cut, but are separated with great care in the direction in which they run. When the edges of the wound of the external oblique are separated with retractors a considerable expanse of internal oblique muscle is seen, the fibers of which cross somewhat obliquely the opening formed by the retractors. With a blunt instrument the fibers of the internal oblique and transversalis muscles can be separated without cutting more than an occasional fiber in a line parallel with their course, that is, nearly at right angles to the incision in the external aponeurosis. Blunt retractors are now introduced, and these expose the transversalis fascia, which is then divided in the same line; last of all, the peritoneum is divided." This incision is an ideal one in the removal of a diseased appendix not complicated by suppurative periappendicitis. In the latter event the incision must be large enough to enable the surgeon to see what he is doing in order to avoid injuring important neighboring organs. It will be seen from what has been said that no fixed rules can be laid down and followed in regard to the size, location and number of incisions to be made in opening the abdominal cavity for peritonitis. The surgeon must be guided by his own judgment and adopt plans and methods applicable to each individual case rather than follow, as is only too frequently done, a routine practice.

Eventration.—A number of surgeons favor eventration after incising the peritoneal cavity freely for the purpose of effecting more thorough disinfection. In septic peritonitis the serous coat of the intestines is always damaged and frequently the muscular coat in a condition of paresis. The intestines are also usually very much distended. These conditions render them very liable to be injured and even ruptured when extensive eventration is made, to say nothing of the shock which always attends such a procedure, notwithstanding that the greatest care is exercised in protecting them with warm moist compresses.

Olshausen ("Todesursache nach Laparotomie," *Virchow's Jahresbericht*, 1887) has called attention to the danger of eventration and prolonged exposure of the healthy intestines in abdominal operations. He reported several cases in which adynamic ileus and death followed laparotomy which could be traced to no other cause. Gusserow recognizes the danger from these sources and guards against them by retaining the intestines in the abdominal cavity with large flat sponges. If such baneful results follow eventration and exposure of healthy intestines it is not difficult to conceive that the danger from the same source in laparotomy for peritonitis would be increased tenfold. The feeble circulation, the increased sensitiveness of the inflamed viscera in such cases would necessarily greatly increase the shock and aggravate the already existing intestinal paresis. If eventration is practiced for the purpose of relieving the over-distended intestines a limited part of the intestine should be brought forward into the wound. When prolapsed the loop is incised or punctured, emptied of its contents, the visceral wound sutured and the loop douched with hot water, dried and returned. Extensive eventration is dangerous and must be scrupulously avoided. I have many a time seen the dangers of extensive eventration in the operative treatment of intestinal obstruction, and wherever possible I am only too anxious to reach the object for which the operation is performed without it.

Irrigation.—The subject of irrigation in the surgical treatment of peritonitis has been frequently discussed, but so far no positive final conclusions have been reached. Some surgeons invariably irrigate, others believe that irrigation does more harm than good and are content to remove the inflammatory product by means of sponges. It is generally conceded that in diffuse peritonitis it is impossible, by any known methods of irrigation, to remove all of the infectious material from the peritoneal cavity. In diffuse septic peritonitis the patients die from the effects of sepsis caused by the absorption of septic material from the peritoneal cavity, and the surgeon resorts to irrigation almost instinctively to diminish the danger from this source. The use of strong antiseptic solutions has been abolished owing to the danger from intoxication resulting from the rapid absorption of the antiseptic employed and the damage which results from the irritating germicides when applied to the endothelial cells lining the viscera and the peritoneal sac. Sterilized water, normal physiologic solution of salt, solutions of boracic acid and acetate of aluminium and Thiersch's solutions are now most frequently used in washing out the peritoneal cavity. Whatever medium is employed should be used at a temperature of 110 to 115 F., and the stream should be sufficiently large and strong to wash out the most remote corners of the peritoneal cavity in the direction of the drainage opening or openings.

Reichel's ("Deutsche Zeitschrift f. Chirurgie," B. xxx) experimental attempts to successfully treat septic peritonitis, artificially produced in animals, were almost entirely a failure. Irrigation of the peritoneal cavity with sublimate, chloroborate of soda, salicylic acid, etc., were useless; the animals quickly perished. Laparotomy performed after the introduction of fecal matter, for the purpose of cleansing the peritoneal cavity, and prior to the development of peritonitis, according to Reichel, is not only useless, but even in healthy animals, proved to be an injurious measure. Somewhat better results were obtained by gently sponging the peritoneal surfaces, after opening the abdominal cavity, with gauze sponges, and employing the Mikulicz gauze drain. In nine experimental cases in dogs, two recoveries were obtained by this method. Reichel believes successful operative treatment is applicable only in cases of circumscribed empyema-like pus accumulations.

Delbet ("Recherches expérimentales sur le Lavage du Péritoine," *Ann. de Gynæcologie*, September, 1889) speaks more favorably of the results of irrigation of the peritoneal cavity in cases of general peritonitis from an experimental standpoint. He ascertained by experiments on animals that if the peritoneal cavity is irrigated for ten minutes with a physiologic solution of salt, toxic substances can be introduced without causing peritonitis or death from intoxication if the infection is followed by another irrigation with the same solution. He advocates the use of salt solution in operations on the abdominal cavity when contamination takes place during the operation and in the operative treatment of septic peritonitis.

Mr. Barker (*British Med. Jour.*, 1894, p. 920) has found by experience that a very convenient method of flushing the abdominal cavity is to use a can with three taps to which tubes of large caliber are attached, and thus the peritoneal cavity can be flushed from several points at once, the fluid flowing out through the original incisions. He uses fluids for flushing at 105 degrees F.

Wiggin (*Medical Record*, Aug. 11, 1894) believes that the use of peroxid of hydrogen, followed by plenty of normal salt solution, is most beneficial in disinfecting peritoneal cavity, and in preventing adhesions. He claims that many otherwise successful laparotomies are followed by such extensive and painful adhesions that the patients are left in a worse state than before operation, and the observance of this simple rule would avoid such a disagreeable result. Continuous irrigation so useful in the treatment of septic wounds in other localities has been suggested in the treatment of general peritonitis. In 1894, Oscar Allis (*Annals of Surgery*, 1894, p. 179) recommended in the treatment of general septic peritonitis abdominal section, liberation of pus from all pockets by tearing adhesions, continuous irrigation, the local application of cerate to the walls of the suppurating cavities, the prone position and to keep the wound open by tucking a rubber dam covered with cerate between the abdominal wall and the intestines on each side, with one border emerging from the incision. He believes that under a continuous system of flushing or irrigation the wash products would be made to float constantly to the surface, and be more effectually carried off than by dependent dorsal drainage. The peritoneal cavity can not be flushed continuously for any length of time, as adhesions will soon form around the drainage tubes and between the intestinal coils. In acute septic peritonitis, however, continuous drainage deserves a fair trial. The fluid to be used should be introduced into the lowest portion of the abdominal cavity through a non-fenestrated rubber tube and seek escape through the rubber tubes above the umbilicus and in the lumbar regions.

The propriety of tearing up adhesions for the purpose of making the irrigation more thorough is very questionable and as a rule should be avoided. The so-called toilette by using sponges must be done with the utmost gentleness, if resorted to at all, as all mechanical insults inflicted on the endothelial surface are sure to aggravate the existing conditions. If it is intended to remove the fluid from the peritoneal cavity it is better to do so by placing the patient on the side so as to pour it out instead of removing it by mopping. If no irrigation is employed and the peritoneal cavity contains a transudate of serum or pus the fluid should be disposed of in the same way when the more thorough cleansing can be effected by the gentle use of a soft sea-sponge.

Incision of overdistended intestine.—One of the most unfavorable conditions in peritonitis is overdistention of the intestines with gas and septic fluid material. A paretic inflamed intestine is permeable to pathogenic microbes, thus adding another fruitful source of infection to the existing septic inflammation. Death in peritonitis is the result more of rapid intoxication than the inflammation itself. The inflammation of the visceral peritoneum of the intestines leads to paralysis of the muscular coat, rapid distension and the escape of preformed toxins and bacteria. Boennecken's experiments have shown that the latter takes place in a remarkably short time. It is natural that surgeons should have made attempts to remove the distension and unload the intestines of septic material by tapping or by making one or more visceral incisions.

Mixter (*Boston Medical and Surgical Journal*, 1895, No. 9) advises this procedure in grave cases of general peritonitis. He recommends incision of the coils of the paretic intestines at as many points as may be necessary to thoroughly evacuate them. The intestine should be drawn out of the wound, held over a basin, incised in from one to four places and thoroughly emptied, after which the coils should be quickly washed off with a hot saline solution, the visceral wounds sutured, the intestine returned and the abdominal incision closed. Mixter has resorted to this procedure in nearly twenty cases, some of which recovered, and in those that died the visceral wounds were found to be tight. In some cases, particularly in those that have had an abdominal incision on the right side, the author secures permanent drainage by introducing a tube into the most prominent part of the cecum and retains it as long as necessary. Through this tube medicines and nourishment may be introduced if the stomach is not retentive. In a paper read before the Royal Medical and Surgical Society, Mr. C. B. Lockwood advocated puncture and incision of the paretic intestine in cases of diffuse septic peritonitis treated by abdominal section. Incision of the intestine for the purpose of relieving distension and evacuating septic contents was favored by Hulke, Knowsly Thornton and Barker. In the few cases in which McCosh incised the intestine he noted that it did not relieve the distension for a distance of more than ten or twelve inches. The writer has made visceral incisions in a number of cases in which the intestine had become paretic and although but one of the cases recovered he is fairly convinced that it is almost essential to success in such desperate cases. I am in the habit of placing the patient on the side and bringing the most distended part of the intestine well forward into the wound and making a transverse incision about an inch in length opposite the mesenteric attachment. As the intestinal wall does not contract evacuation should be secured by pouring out the contents from above and below the incision by grasping the intestine some distance from the incision and bringing it above the level of the visceral incision. By this method several feet of intestine can be evacuated through one incision. After thorough cleansing of the exposed intestinal surface with warm salt solution, the wound is sutured in the usual manner and the intestine returned. If more than one incision is made I can readily conceive that irrigation of the intestinal tract between them with a warm normal solution of salt would secure a more thorough cleansing of that part of the intestinal tract and would be a potent means of restoring intestinal peristalsis.

Drainage.—Drainage of the abdominal cavity after operations for peritonitis is an admission of the present imperfect state of surgery. It is an acknowledgment on the part of the surgeon that he has only in part fulfilled the indications for which the operation was performed; it is a confession that he was not able to accomplish what was so much needed and what he so earnestly desired—complete asepsis of the entire peritoneal cavity. With the means at our disposal at the present time drainage in the surgical treatment of peritonitis is an unavoidable evil. The question that confronts us now is not when but how to drain in such cases. In 1870, during the Franco-Prussian War, Marion Sims made a special study of the cause of death in cases of gunshot wounds of the abdomen. The result of his observations led him to the conclusion that, independently of shock and hemorrhage, death resulted from sepsis. He found that with few exceptions, if the bullet entered above the pelvis the case was fatal, while similar wounds of the pelvic portion of the abdominal cavity ended in recovery. He ascribed this difference in the mortality to the circumstance that high wounds resulted in extravasation of intestinal contents which accumulated in the pelvic cavity, while in pelvic wounds the track made by the bullet served as a drainage canal. In 1872 he recommended that in all penetrating wounds of the abdomen and in operations on any of its contents, drainage should be established. In ovariotomy he recommended tubular drainage through the wound and vagina, using for this purpose a large rubber drain. Very few surgeons at the present day would feel justified in opening the abdominal cavity for peritonitis and dispense with drainage. Voices have, however, been raised against too frequent resort to drainage, among them Olshausen ("Ueber Marion Sims," 1896), who says: "Drainage of the peritoneal cavity is an illusion. Drainage to be of service must be limited to the evacuation of preformed pathologic spaces."

Removal of fluid pathologic products by gentle sponging accomplishes the same object. The absorptive power of the peritoneum should be preserved as much as possible by handling with the utmost gentleness. Prolonged and rough manipulation of the intestines is productive of great shock. Drainage is always attended by the danger of putrefaction bacilli entering into the peritoneal cavity. In perforating wounds he recommends a careful cleansing, complete hemostasis, avoiding drainage in all recent cases.

Barker ("Remarks on the Limits of Drainage in Suppurative Conditions of the Abdominal Cavity," *British Med. Journal*, May 25, 1896) has largely dispensed with drainage of the abdominal cavity for suppurative lesions. He relies mainly on thorough flushing and sutures the abdominal incision. He only resorts to drainage in the treatment of putrid abscesses caused by appendicitis. If a drain is used in exceptional cases of peritonitis he advises its removal at the expiration of twenty-four hours. The difficulties encountered in draining the peritoneal cavity become very apparent in following the work of Bardenheuer ("Die Drainirung der Peritoneal Höhle," 1881). He describes four methods in operations on the abdominal and pelvic cavities of women. The first method is by a T-shaped tubular drain of which only the transverse piece is fenestrated and the vertical portion brought out behind the uterus into the vagina. The second method consisted in using two instead of one transverse drain, fastened together, of which the four ends were sutured to the pelvic floor with catgut. The third method had in view the prevention of prolapse of the intestines by using a fenestrated rubber plate above the drains, which was sutured to the pelvic peritoneum. This method proved useful for the first four to six days; after this time putrefaction of the contents of the cavity invariably set in. The subsequent removal of the plate through the vagina also proved troublesome and often deleterious. The last method consisted in the use of a catgut net with meshes 6 centimeters wide, sewed to the pelvic floor above the two rubber drains. The pelvic peritoneum was always united to the vaginal mucous membrane with suture. This method proved eminently satisfactory, but I doubt if it still remains in use in his practice; certainly it has never been generally adopted.

(*To be continued.*)

ORIGINAL ARTICLES.

CELANDIN, ITS PHARMACOLOGY, PHYSIOLOGIC ACTION AND THERAPY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY JOHN V. SHOEMAKER, M.D., LL.D.
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Celandin is the whole herb of the *chelidonium majus* of the natural order *papaveraceæ* and grows both in Europe and North America. The plant contains two alkaloids, chelidonin and sanguinarin. These exist in combination with chelidonic acid. A bitter, yellow, crystallin substance, termed chelidoxanthin by Probst is also a constituent, besides tannic acid, starch, cellulose, etc.

Celandin has an acid, bitter taste. Taken internally in small doses it has an appetizing and tonic effect and stimulates the intestinal glands, liver, kidneys and bronchial mucous membrane. In large quantities it causes vomiting and purging. The fresh milky juice of the plant has a local irritant action. By virtue of this property it has long been popularly used as an application to warts and corns. Internally celandin was anciently given for the relief of catarrhal jaundice.

From its power in the removal of papillary outgrowths Dr. Denissenko, a Russian physician, conceived that the fresh juice of chelidonium majus might prove beneficial in epithelioma. This observer made trial of the remedy in a number of cases and published some highly favorable results. He employed the drug both internally and externally, giving from twenty-four to seventy-five grains daily of the extract in watery solution. At the same time he made injections at several points into the tumor near to its border of a mixture of equal parts of extract of chelidonium, distilled water and glycerin. In cases of ulceration he painted the surface with the same glycerin extract. He states that after several days of this treatment there form at the points of injection, fistulous tracts, around which the tumor disappeared. In fifteen to twenty days later, according to Denissenko, the diseased is clearly separated from the healthy tissue and the tumor is diminished by half: in some cases it is entirely gone and the enlargements of the glands have subsided. In support of his statements the author reported a series of cases in which cure or marked amelioration occurred. His results have been subsequently both confirmed and denied by different writers.

Any remedy which is claimed to exert a favorable influence on so grave a malady as carcinoma deserves the most careful and impartial study. Accordingly, in order to repeat these experiments I procured a sample of *chelidonium majus* and had prepared from it the mixture of extract, distilled water and glycerin recommended. A number of cases of epithelioma were subjected to Denissenko's method, which was faithfully carried out in every particular. A brief account of a few of these may here be given.

A lady 63 years of age had noticed a dry, papillary growth upon the lower lip for about two months. The tumor was small in size, dry, wart-like in appearance and the seat of occasional stinging pain. There was no ulceration. At times the patient picked at the little tumor and caused the exit of a few drops of blood. Otherwise there was no discharge. The neighboring glands were not involved.

A second lady of about the same age, had been afflicted with a hard, dry, wart-like excrescence upon the left cheek a short distance external to the chin for about three months. The lesion was moderately painful and had very slowly enlarged. It was about half an inch in average diameter, its outline being rather oval. Here also was no implication of the glands.

Both the preceding cases, therefore, being typical superficial epithelioma not far advanced, attended by no glandular or systemic complication—in other words as yet local lesions—might fairly be regarded as particularly amenable to any treatment having power to influence carcinoma.

A third case exhibited epithelioma of the lip in a more advanced stage. The sufferer was a man aged 70 years, in whom the disease had existed for seven months. It had gone on to ulceration and there was the characteristic sore with its steep, hard edges, indurated base and raw, red surface with a tendency to hemorrhage. There was slight enlargement of submaxillary glands but no cachexia. This case was less favorable to any treatment but nevertheless was by no means hopeless.

In a fourth case the patient was a man in whom epithelioma had existed for ten months. He gave his age as 46 years, which is rather early for the advent of this disease. The lesion made its appearance as a dry scab on the tip of the nose. The patient scratched the scab off but it soon redeveloped and from that time the affection had continuously and progressively spread. In the beginning the sore had been dry, but at a later period it discharged a thin seropurulent matter when picked. He had not experienced much pain but at times a tingling or stabbing sensation affected the nose. Latterly he had begun to suffer from pain radiating from the nose into the temple and forehead. The surface had ulcerated.

A woman 66 years of age, was afflicted with an epithelioma of the right cheek. The disease had begun a year previously as a hard crust which gave no pain. In the course of a few weeks the crust had fallen, leaving a dry, scaly base. There was no redness of the surrounding skin. The spot of disease began to enlarge and the surrounding skin became red. The lesion was very hard to the touch. For two months the surface had been ulcerated and was the seat of extreme lancinating pain.

I made use of celandin in other cases of epithelioma in different stages and different situations, but it is unnecessary to cite the histories of case after case. I followed precisely the directions given above as to injections, painting the surface and internal use of the drug. I regret very much to be obliged to say that I could observe no appreciable effect on the growths. The remedy seemed to exert in some cases a certain tonic influence but beyond that action was of no value. I am consequently unable to corroborate the results of Dr. Denissenko.

An experience similar to my own has been reported by a number of Russian physicians. In some cases these observers saw collapse follow administration of the remedy. Kalabine made the same observation as myself, viz., some amelioration of the general condition and increase of strength but no local effect. Botkine has recorded an unsatisfactory experience. Nevertheless, it is proper that clinical investigation should be continued Dr. Samson journeyed from England for the express purpose of visiting Dr. Denissenko, studying his methods and observing his results and was led to the belief, from what he saw, that the treatment has a basis of merit. Dr. Robinson of Constantinople, has published the history of a case in which the use of celandin was followed by marked improvement.

There is no doubt that the local application of the juice of *chelidonium majus* will destroy certain non-malignant hypertrophic lesions as warts, corns and callosities. It may also be serviceable in chronic eczema; in fact in all hypertrophic conditions of the integument due to perverted nutrition or chronic inflammation. I am of the opinion, however, that it will be found destitute of influence upon the development of heterologous, malignant neoplasms.

CARVACROL IODID.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa, June 1-4, 1897.

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This substitute for iodoform is offered to the profession because of the unpleasant odor, often irritating character and, last but not least, of the non-antiseptic properties of the latter. It is a well known fact that iodoform is not an antiseptic, so we must look forward to a preparation which will fulfil our wants. Bacteriologists have proven that cultures of pathologic and non-pathologic bacteria may be propagated on it. Shirmunski demonstrated the non-antiseptic properties of iodoform as follows: He added to a gelatin solution iodoform and sterilized water; this mixture again was poured into shallow dishes, allowed to evaporate, on which iodin was liberated, but nevertheless bacteria grew on this culture medium. He also experimented by mixing staphylococci and streptococci with iodoform, but after making culture from the mixture found that not only were the pus germs propagating, but also that bacteria which were originally found in the iodoform were multiplying. Only freshly prepared iodoform was found to be free from bacteria in some cases.

Dry heat or steam, or washing with ether, can not be applied in sterilization of iodoform, on account of the two former decomposing it and the latter leaving scales upon evaporation. Corrosive sublimate can not be used because the red iodid of mercury results. Washing with solution of carbolic acid was also recommended, but was found to be uncertain. It will easily be seen how difficult it is to obtain a sterile preparation of iodoform, and it is no wonder we are looking forward to a preparation which will take its place.

The preparation which I should recommend to the profession for consideration is iodocrol or carvacrol iodid. Carvacrol is an isomer of thymol, differing only in relative position of the hydroxyl groups in the nucleus. It is manufactured in the following manner: Two grams of carvacrol and thirty-eight grams of potassium iodid are dissolved in 40 c.c. of a 10 per cent. aqueous solution of sodium hydrate. To this a solution of chlorinated soda is gradually added under continuous stirring until no more of a precipitate is found. During the reaction the mixture is kept cool by placing the vessel in cold water. The precipitate is collected on a filter and first washed with water to which a very small quantity of alkali has been added, and then with pure water. It is then allowed to dry at the temperature of the room. The product is a bulky, grayish yellow or buff-colored amorphous powder having a faint aromatic odor. It is soluble in ether, chloroform, benzin, carbon disulphid, volatile and fixed oils. From its solution in ether and chloroform it is precipitated on the addition of alcohol, becoming paler in color. This purified product did not show signs of shrinkage until above 170 degrees C., and at 200 degrees C. had become tarry and black, but not liquefied. It combines the antiseptic properties of carvacrol with those of iodin and possesses the advantage over iodoform in being odorless or nearly so, and in being five times as bulky.

Experiments have been made to grow staphylococci and streptococci on carvacrol iodid, but with negative results, thus proving it to be a true antiseptic. It may be used as a dusting powder, either pure or diluted with boracic acid. In the treatment of the nose and throat it is best used in a solution of almond oil or olive oil. It has been used as a dressing for wounds to a great extent in Milwaukee in the National Home of Volunteer Soldiers. It is also manufactured into gauze. It may be used with great benefit in almost all surgical dressings; eczema, pruritus, chancres, chancroids, etc.

In conclusion, I would say that this preparation has so many advantages over iodoform, especially so of being a true antiseptic, that I sincerely recommend it to the profession and hope it will be given a fair trial.

A NOTE ON TWO NEW CREOSOTE COMPOUNDS: CREOSOTE VALERIANATE AND GUAIACOL VALERIANATE.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY FRANK WOODBURY, M.D.

PHILADELPHIA, PA.

In these days of new remedies of ephemeral usefulness and evanescent reputation, it is refreshing to take up, for brief consideration, a drug with an established record of more than half a century. We recall the fact that while experimenting with tar from beech-wood, Reichenbach, in 1832, first obtained a fluid substance, which, on account of its possessing pre-eminently the power of preventing putrefaction in organic substances, he termed "creosote," or "flesh preserver." That expert chemist also fully recognized the fact that the new chemic agent was not a simple, but a very complex, substance, being composed principally of hydrocarbons of the aromatic group. It also contains a variable quantity of water. According to a recent authority, Marasse, it contains phenol, cresol, phlorol, guaiacol and creosol; also methylcreosol and the methylic ethers of guaiacol, phlorol, etc. By fractional distillation, Hofmann separated the dimethylic ethers of pyrogallol, of methyl-pyrogallol and of propyl-pyrogallol from that portion of the creosote which passes over at a temperature above 220 degrees. Hofmann discovered a new body, which he named coerulignol, possessing powerful toxic properties and which should be carefully removed from creosote that is designed to be used for medicinal purposes. Its presence may be detected by treating an alcoholic solution of creosote by a test solution of barium hydrate. If coerulignol is present the solution will turn blue or show a bluish tinge. Benzin may be substituted for alcohol with the same result. The United States Pharmacopeia has adopted this as one of the tests indicating the suitableness of a specimen of creosote for medicinal use.

I have referred to the early studies of creosote by its discoverer, Reichenbach, in order to bring into marked prominence the fact that it was first obtained from tar from the beech wood, and the early experiments made upon this agent, not only chemically but also physiologically and clinically, were made with the form of creosote which is still considered the best for medical use and which is now used almost exclusively in therapeutics. An analogous substance obtained from coal-tar is simply a mixture of phenol and cresylol of variable composition, or in other words an impure carbolic acid. These differ, chemically, principally in the following characters: Creosote from wood-tar added to an equal quantity of glycerin is precipitated upon the addition of water; added to collodion it does not coagulate it; and when treated with nitric acid and heat, by Clarke's method, yields oxalic acid. The so-called creosote from coal-tar is not precipitated by water from its gelatin solution; it does coagulate collodion, and yields picric acid when treated with nitric acid. There are corresponding and equally well marked differences between the two compounds in their physiologic action, the most important being the comparative innocuousness of pure wood-tar creosote, which can be taken in large doses, not only without toxic symptoms, but with decided therapeutic results, 500 drops daily having been taken without ill effect.

It has unfortunately occurred that, for many years, the coal-tar extractive was frequently dispensed for creosote, and the latter consequently fell into disrepute for a time on account of the accidents and untoward results from its use. Creosote, according ro Dr. H. C. Wood, is also liable to be adulterated with eupion. In the latest edition of the "United States Dispensatory," by Professors Wood, Remington and Sadtler, the statement is made that "Commercial creosote almost always contains carbolic and cresylic acids from coal-tar, and indeed, much of what is sold for creosote is nothing more than impure carbolic acid." I can not, however, agree with these distinguished authorities in the statement contained in the sentence immediately following the above, which says, referring to carbolic acid, that "this acid strongly resembles creosote, and this resemblance probably extends also to their therapeutic effects, so that the substitution is less to be regretted than might otherwise be the case." This I regard as a most misleading and dangerous teaching. A patient may take as much as 600 drops of creosote, as in Dr. Freudenthal's case (*Medical Record*, 1892), and recover practically without the use of any remedies; but would this case have resulted so favorably had the same quantity of carbolic acid been swallowed instead of creosote?

The principal constituent of creosote is guaiacol, the methyl ether of pyrocatechin, which is present in the proportion of 60 to 80 per cent. in the best specimens. Guaiacol in a pure state is crystalline, but as commonly met with is an oily-looking fluid with a peculiar pungent, smoky odor. It can be obtained, however, in an absolutely pure condition from a commercial sample, by cooling with a mixture of ice and salt and then separating the crystals which have formed, as stated by S. Winghoffer (*Pharmaceutische Zeitung*, Berlin, 1894).

On account of the liability to adulteration in commercial guaiacol and its variable composition, various compounds have been introduced into the practice of medicine as substitutes for creosote and guaiacol. Among the more prominent of these are the carbonate of guaiacol, guaiacol salol, benzyl-guaiacol or benzosol, cinnamyl-guaiacol or styracol, guaiacol phosphite, guaiacol biniodid, and most recently the guaiacol valerianate. These various compounds are administered with the view of their undergoing decomposition in the intestinal tract and yielding guaiacol at the point where it can be most readily absorbed into the blood vessels. In this way the administration of chemically pure guaiacol is accomplished more surely than by any other method. Moreover, these compounds, generally speaking, are more agreeable to the palate than the guaiacol itself.

Physiologic action.—Locally, guaiacol acts, like solutions of carbolic acid, to produce limited surface anesthesia. Dr. Newcomb of New York, at the recent meeting of the American Laryngologic Association, recommended a 5 per cent. solution in olive oil as a substitute for cocain for nasal operations. I have used the guaiacol valerianate for this purpose both in full strength and diluted, and found it to produce, after slight sensation of heat, decided anesthetic effects which are slower in appearing than after the application of cocain, and which are not followed by secondary hyperemia. The antiseptic power of guaiacol is also of great value in throat and nose operations. We know of the frequency of the presence of virulent bacilli in the nasal chambers of apparently healthy individuals, and the routine use of detergent remedies followed by a decided antiseptic, such as guaiacol in oily solution, or the more agreeable valerianate of guaiacol, is now almost necessary in the conduct of our hospital and private work. I should have stated that the valerianate has a strong odor of valerian which almost masks the guaiacol, and produces a combination suggestive of walnuts. Guaiacol valerianate is a local anesthetic to the skin when applied in full strength. The temperature-reducing power of guaiacol, discovered by Sciolla[1] in 1894, is one of the most remarkable observations in the whole realm of pharmacology. This is not likely to occur in persons of good health with a normal temperature, but it is very marked in conditions of pyrexia. Caporali[2] has found that the external applications of guaiacol not only relieve pain and reduce abnormal temperature, but also increase the utilization of albuminoids by the organism and the absorption of fat, and diminish oxidation.

Administered internally, guaiacol and creosote both exert a powerful antiseptic action on the contents of the alimentary canal. The temperature reduction appears to be due to a special action of guaiacol upon the peripheral end-organs of the nerves in the skin and mucuous membranes. Upon the heart and blood vessels there are no obvious effects from moderate doses of creosote or guaiacol. In larger doses it acts as a cardiac depressant, producing diaphoresis from relaxation of the blood vessels, also giddiness and a tendency to fainting or collapse, convulsions or coma, but these disagreeable effects are more likely to occur from commercial creosote or guaiacol than from a chemically pure article. In escaping from the blood by the bronchial mucous membrane and urinary organs, guaiacol exerts a local stimulant and antiseptic action.

From the very brief review of the physiologic action of guaiacol, I turn to the therapeutic use, confining my remarks to the guaiacol valerianate and creosote valerianate, which were recently introduced by Dr Gustav Wendt of Berlin, and which I have used, to some extent, for the past three months in private and dispensary practice. I will simply summarize some of the results of the use of these agents. Both of them are liquid and have a characteristic odor, the guaiacol valerianate being more agreeable to patients than the creosote compound.

In painful affections of the skin, attended by hyperemia such as inflamed acne, or abscess in the external auditory canal, pin-boils, etc., applications of pure guaiacol valerianate relieved pain, and checked further pus formation. In chilblains this agent promptly relieved the annoying symptoms. Small compresses wet with guaiacol and applied over the painful spots of Valleix, afforded almost immediate relief in neuralgia.

In an acute erythema of the face, apparently erysipelatous, but possibly the result of rhus-poisoning, a single application of this agent for ten minutes, followed by applications of zinc ointment containing creosote (one drachm to the ounce), afforded immediate relief and prompt disappearance of the inflammation. In the cases of children, however, or where larger areas are involved, the antithermic effect should be borne in mind, and not more than 25 to 30 drops applied at one time.

I have already alluded to the use of guaiacol valerianate in the treatment of affections of the nose. In acute rhinitis it should be diluted with three or more parts of oil of sweet almonds, or liquid albolene, and in this form it acts as a protective as well as an analgesic and antiseptic application. In chronic rhinitis, especially the purulent form, as well as in some varieties of atrophic rhinitis, it is used in full strength with advantage, as many of these cases are kept up by the presence of virulent micro-organisms, the action of which is inhibited by the guaiacol. In ulcerated conditions, even of supposed tubercular origin, a few applications of pure guaiacol or creosote valerianate materially promotes the healing process, at the same time relieving pain. This observation also applies to the larynx. I have not yet employed it in lupus, but it might be of service here for its local anesthetic effects, prior to scraping and the application of lactic acid and the subsequent use of a 20 per cent. guaiacol spray as recommended by Dr. P. Watson Williams.[3] In tuberculosis of the air-passages, external applications of pure guaiacol have been recommended by Prof. J. Solis-Cohen, and for this purpose the valerianate would have an especial advantage. Internally guaiacol valerianate is given either in milk, in dilute alcohol, or better, in the form of capsules. It checks bronchorrhea and reduces the number of tubercle bacilli in the sputum, at the same time that it tends to prevent re-infection from the intestinal tract. It is well borne in moderate doses, 10 to 30 minims daily, or one to three capsules, each containing 2 grains, or 3⅓ minims, three times a day.

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[1] Cronica di Clin. Med. di Geneva for 1892, Vol. p. 171.

[2] Riforma Medica, Naples, No. 175, 1894.

In the treatment of gastric catarrh, chronic gastritis with gastrectasia, and other conditions associated with, or producing fermentation of the contents of the stomach, I have used creosote valerianate in preference to the guaiacol as I believe it to exert stronger antiseptic action. It also overcomes nausea and in connection with lavage, favors the return to healthy condition of the mucous membrane and the re-establishment of appetite and normal digestion.

Fifty years ago, Dr. Fahnestock [4] used pure creosote as an application to erysipelas, with remarkable success. I have already referred to the use of guaiacol valerianate as a local application for erythema and would suggest its use as a topical agent in erysipelas, and also in smallpox.

In cases of pulmonary phthisis the remedy has been well borne, but I have had it under observation too brief a time to report decided results. Very favorable results, however, have been observed by Dr. Rieck of Bassum, Germany,[5] who reports increase of appetite and powers of digestion, and of physical strength under its use. In cases of the initial stage of tuberculosis of the lungs, this improvement was quite marked, with a decided diminution of the cough; the expectoration not only became more free, but it also decreased steadily in quantity. The night sweats disappeared. His report was based on the study of twenty-three cases (sixteen of catarrh of the apices and seven of developed tuberculosis), which were markedly benefited.

I have found the guaiacol valerianate of decided value in the treatment of the so-called catarrhal state which is sometimes considered as the pre-tubercular stage of phthisis pulmonalis. It seems especially suited, when properly diluted with some bland oil, for intra-tracheal injection in cases of advanced phthisis, with or without ulceration in the larynx, or cavity in the lung. Inhalations of creosote in combination with oil of pepermint is claimed by Dr. Carasso, to cause a disappearance of the tubercle bacilli from the sputum, and he reports good results clinically after nearly ten years experience with it. Certainly, the form of aerial medication is worthy of extended trial, and guaiacol valerianate would be preferable to creosote for this purpose. I am of the opinion that we have in guaiacol the best remedy known at present to counteract the pernicious activity of the tubercle bacillus, and I may repeat the words of Dr. Jacobi: "No one treatment of all forms of tuberculosis ever satisfied me to the same degree as has that of guaiacol." When introduced into the stomach, the guaiacol valerianate is decomposed and the effects of pure guaiacol, with the sedative action of valerianic acid, are simultaneously obtained, which may be expected to have a favorable effect on the nervous manifestations of the disease, reducing cough and restlessness. In pneumonia, Malderasco used applications of guaiacol to the thorax posteriorly, over the affected area of the lung, with reduction of temperature and a diminished mortality.

For further and more detailed information, I may refer those interested to reports from the medical clinic of the Royal Charity Hospital of Berlin, by Dr. Grawitz, and Dr. Rieck already referred to, which have appeared in the *Deutsche Medizinal. Zeitung* and the *Therapeutische Monatsheft* for 1896.

DISCUSSION.

A visitor stated that he had examined several specimens of creosote last year and had not found them to contain any guaiacol whatever.

Dr. WOODBURY said that this confirms the statement in the Dispensatory that commercial creosote is often merely impure carbolic acid.

MEDICAL BOTANY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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Prior to emergence from its nameless barbaric state, the human race was undoubtedly versed in botany of a strictly practical kind. All omnivorous and vegetable feeding creatures distinguish between wholesome and poisonous plants. Even the butterfly selects the right species on which to deposit its eggs, often from among others that to our eyes are almost identical with it. As our race has advanced in civilization, owing its progress to a more and more rigid division of labor, with the attendant and ever increasing specialization by which each piece of the great machine does its work more perfectly, yet more and more completely loses its direct touch with all but a few of the other parts, most men have lost much of what was at first common to all; and this is, perhaps, quite as true of a knowledge of plants as of anything else. As we go from the higher to the more primitive civilization of the present time, we approach by successive steps toward what was at one time characteristic of the entire human race. The country boy has names for most of the plants that the city boy passes by perhaps with a vague notion that they have no names, and he knows abundant uses for many of them. Many is the time that I have hunted sweet cicely and pipsissewa, wintergreen and sarsaparilla in the Connecticut woods; and hoarhound and boneset, yarrow and wormwood are still to be found in the kitchen or the attic of most New England farmhouses. In less favored parts of the globe, where the farmer is a peasant, and the peasant often little better than a clodhopper, this sort of knowledge is even more extensive and widespread.

It is said that the mongoose, when bitten by a cobra, runs at once into the jungle and seeks out a plant which it recognizes and eats as an antidote. Whatever the actual knowledge and its value may be, it is certain that every primitive community believes in the healing virtues of many plants and makes use of them for these supposed virtues; and this sort of knowledge was undoubtedly the first that came after the power of discriminating between plants that are edible and those that are not. Among many people considerably removed from the aboriginal state, even today, the only conception of a collection of herbarium specimens is that they are for some medicinal use.

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[3] Medical Annual, London, 1897.
[4] American Journal of the Medical Sciences, 1845.
[5] Deutsche Medizinal. Zeitung, Berlin, Dec. 24, 1896.

Recently in turning to the periodical cases in our library for a reference, my eye fell on a nearly forgotten volume of the *Botanic Advocate*, published in New Haven in 1843, and on opening it I found it to bear the legend: "The tree of life yielded her fruit every month, and the leaves of the tree were for the healing of the nations." The journal was published by the Connecticut Botanic Society, and I observed that it contained a series of three articles on the subject assigned me, "Medical Botany," the titles of which were "Lobelia Inflata," "Capsicum Annum" and "Myrica Cerifera." Lobelia and calomel were mentioned on nearly every page and appeared in the titles of many of the articles. It is probably unnecessary to say that the journal and the society of which it was the organ were Thomsonian! Independently of the herbalists, however, the botanists of a generation or two ago were physicians, and M.D. today is not an uncommon suffix to the name of a botanist, so that the subject assigned to me would seem to be an especially appropriate one for a gathering of medical men.

A very large part of the remedies applied by the physician today are of vegetable origin, and this branch of materia medica is an important part of the course of study of a physician. But this, as above said, is the age of specialization; it is the age of druggists and prescription clerks, of triturates and fluid extracts, and of laboratory synthesis. Few, indeed, are the physicians who can make a tincture or an alkaloid salt as well or as cheaply as the druggist or the manufacturing chemist, and, under needful restrictions, the latter are turned to by the physician as certain to supply the things needed in a pure and assimilable form, and in any desired proportion. Even water for the physician's use, that was first employed [illegible] it came from the well, the cistern or the brook, then [illegible]ed before use, and then turned over to the drug[illegible]ist for distillation, so that it could be procured in a pure and safe form for critical purposes, is finally coming into the hands of people whose exclusive business is the distillation and purification of water. The materia medica, like one's clothing, is more and more something to be ordered outside rather than a legitimate subject for home manufacture.

And so it has come that the study of medical botany has today fallen to the pharmacist to a larger extent than to the medical student. He, indeed, is expected to know his botany well. He need not be a vegetable physiologist or a mycologist, and karyokinesis may possibly be a process of which he never heard, but in certain lines he must be a botanist. As a result, we find studies of this kind omitted from the medical curriculum proper and given place in that branch of medical study which has come to have a name and a place of its own—pharmacy.

Whether taught in the medical school or the school of pharmacy or the school of botany, the knowledge which the collector and the manufacturer of drugs needs is of the most practical and useful character. A knowledge of the affinities of plants will very often lead the manufacturer to experiment with species related to those which yield useful products. You are all familiar with the various cinchonas and their relative quinin-producing properties. But in the main the knowledge which is needed is that which enables one surely to distinguish one certain plant in all its forms from all other plants. Every few years the drug trade is exercised over substitutes offered more or less honestly by collectors and jobbers. It is only a short time since cascara sagrada, the bark of *Rhamnus Purshiana*, was replaced very considerably by the bark of a related species, *Rhamnus Californica*, the latter of much inferior quality. It is also only a few years since the trade journals contained an extensive description of the substitution of the roots of *Polygala alba* for the senega snakeroot, *Polygala Senega*. Not many years ago, a sample of tansy which was submitted by a large wholesale house proved, probably as the result of a clerical blunder, to be pansy.

The direct solution of problems of identity like the preceding is the closest link between botany and pharmacy, the most obvious medical botany. It is a branch of the study of vegetable pharmacognosy. The last instance mentioned is a very simple one. The merest tyro could detect the mistake and guess pretty closely at the cause for it; but in the other cases a discrimination between the things to be compared proved decidedly more difficult.

As they come to the wholesaler and the manufacturer, drugs are apt to occur in the form of more or less fragmentary root, rootstock, bark, leaf, flower, fruit and seed. Only rarely, as in the case of opium, are the active principles collected to any great extent freed from the parts of the plant which produces them. Hence, in the great majority of cases, the medical botanist is expected to accurately name certain parts of fairly well-known plants.

It has, unfortunately for this purpose, been the habit of descriptive botanists to aim at as brief a diagnosis of each species as possible, and to use those characters which most surely and most readily serve to separate it from its congeners; or else, as is the case with much modern work, what are felt to be the less variable and consequently the surest and most permanent characters have been taken as the basis of classification, many of the more obvious features being left entirely undescribed. The result is that a person who uses the ordinary manuals of botany, unless he is quite expert as a botanist, requires flowering or fruiting specimens as a preliminary for the determination of their names, and very much of the botany taught in schools and colleges, being based on and preparatory to the use of these manuals, is confined to a study of the characters employed in them.

Medical botany, if well done, must start from a somewhat different standpoint. It by no means follows that a plant which can be determined by aid of the usual manuals only when it is represented by perfect flowering and fruiting material, can not be known with almost or quite as great certainty when neither flowers nor fruit are present. Except in certain genera, like the oaks and plums, the trees and shrubs of our flora may be known with quite as much certainty in the winter when destitute of flower and fruit, and even foliage, as in the summer season; but in the absence of manuals based on their winter characters, this knowledge is possible only as the result of individual observation and investigation, based primarily on a knowledge of the species derived while their summer characters are present; and the same is true, to a greater or less extent, of all of the fragmentary, or as the botanist would call it, imperfect material that passes through the hands of the medical botanist.

The characters which the latter makes most use of are histologic characters. Where sufficiently large fragments of root or rootstock, leaf or fruit or seed occur, these may of course be used, being subject to whatever preparation is necessary to bring them into a condition fit for comparison with either living or preserved authentic specimens; but it is only exceptionally that a superficial comparison is sufficient. Usually the distribution of the woody tissues and ducts and of the bast fibers within the specimen, the occurrence of resin passages, oil cells or latex tubes, the character and the distribution of stomata and palisade cells in the leaf, the occurrence or absence of pubescence and superficial glands, and the structure and grouping of the hairs and the structure of the seed shell have to be looked into. Sometimes, also, it is necessary to test the degree of lignification of certain cell-walls, to determine the nature of secretions, and to examine, both morphologically and chemically, the starch contained in the specimen, which is compared in each of these respects with authentic standards.

Evidently this practical botany of medicines rests upon a more or less intelligent conception of botanic classification, but is itself the application of a special skill. Quite recently a professor of pharmaceutic botany in one of the leading colleges of the country published a laboratory manual which may be held to represent his ideas as to what should be taught in preparation for it. A general knowledge of the parts of the plant, root, stem, leaf, etc., and of each of the principal tissues of the higher plants, is accompanied by a rather thorough examination of several plants of medicinal value or related to medicinal species. As thorough a knowledge as may be of a few plants is sought for, instead of a little knowledge concerning a great many, in the expectation that on this the student will subsequently build an equally thorough knowledge of all of the plants coming within the range of his observation. Not many years since another successful teacher of the same subject laid down the essential thing as being "that the course should be sufficiently comprehensive to equip the student if he desires at its conclusion to pursue further investigation of the study by himself, that is without all assistance other than books such as manuals, class-books, floras, etc." To accomplish this he divides his classes into sufficiently small sections to place specimens of each subject taken up in his lectures into the hands of all pupils, keeping before their eyes at all times on the walls of the room, a carefully labeled set of specimens illustrating the same things, and closing his course by an exercise in which a lot of mixed, unnamed material is placed on the lecture table and sorted out by the professor and students, the characters utilized being indicated step by step during this exercise.

Here, if anywhere, object teaching is essential, and each of these courses is taught as a series of object lessons. Gross characters are made out by the aid of the naked eye and simple magnifying glasses, but for others the compound microscope is brought into requisition and some of the pharmaceutic schools have as a part of their curriculum a regular course in microscopy. Unless it be biology, no word is more abused than this; but for our purpose a sufficient working knowledge of the optic and mechanical parts of the microscope and ability to make serviceable temporary and permanent preparations, is treated as of far greater value than the ability to resolve difficult test objects and to run an unimpeachable ring of Brunswick black or shellac. All that is useful in the technique of the zoologist, the botanist and the embryologist, is utilized to get serviceable sections cut with intelligence at a point calculated to show representative structure, and the skill of the chemist is made to yield, under the cover-glass, reactions as characteristic in their way as those obtained in the test-tube or before the blow-pipe. Equipped in this way, the student is able to determine those characters afforded by his material which enable him to say with certainty that it is or is not the same as a standard specimen of the thing to be compared with. Primarily he is called on to recognize this identity or difference in comparison with the plant that the material is supposed to represent. If it be different the question as to what it really is is only a secondary one, and as his knowledge increases he becomes more and more able to answer these accessory questions.

A good description is more available for use than a poor specimen, and the time is coming when this, as well as each other branch of technical botany, will be equipped with manuals employing the characters which are available in the class of material that must be studied. Perhaps the progress of American systematic botany has been retarded more by the easily acquired habit of naming new specimens by matching them in the herbarium than in any other way; and the best workers, now that monographs are increasing in number, turn first to a monograph and determine a specimen by the aid of the descriptions before going to the herbarium. But what is a good description today may be a very poor description five years from now, owing to the discovery of new material influencing the limitation of species. Hence a specimen is always potentially better than a description, since the former is the thing itself, while the latter is only a more or less subjective interpretation of it, and in medical botany, as in general botany, the herbarium is of prime importance.

The medical or pharmaceutic herbarium should differ from the general herbarium in containing only medicinal plants and their nearest allies. One familiarizes himself with an herbarium of a thousand sheets where he is utterly at sea in a collection of a quarter of a million specimens. The specimens contained in this technical herbarium should be perfect from all points of view:—good in the sense of the ordinary botanist as representing the technical characters which he uses in classifying each plant; good from the standpoint of the person who does not know general botany in representing every part of the plant which he may find in a disconnected condition and wish to compare; good from the standpoint of the histologist as affording usable material for sectioning and microchemistry; and good from the standpoint of the investigator in offering abundant material for study and comparison. Where the woods can be turned to by the student the herbarium specimens are easily supplemented when needed by freshly gathered material; but manufacturing pharmacists, like other manufacturers, drift into large cities where this is often inconvenient or impossible. Not long ago it was said in one of the leading druggists' journals that "the pharmaceutic profession more than almost any other, is inte. [illegible] osition to establish a great botanic [illegible] to the then proposed New York [illegible] tific principles become more and more extensively incorporated into the practice of pharmacy, there is increased recognition of the necessity for a practical acquaintance with the sources of our drugs. This does not of necessity imply an extensive knowledge of theoretic botany, desirable as that is, but a thorough personal acquaintance with medicinal plants is of the greatest value to him who must daily discriminate against substitutions, adulterations, inferior varieties and collections and deteriorated samples. The ideal opportunity for cultivating this acquaintance is in the botanic garden, where we have brought together for immediate comparison the doubtful species under consideration in a living state, and where the characters thus observed can be followed up closely in the herbarium and materia medica collections forming adjuncts to the garden." Besides what can be preserved in the herbarium proper and the garden, the reference collection ought to contain standard material of all drugs in their crude form, so that any changes in appearance which the specimen under study may have undergone during its preparation will be likely to be matched by a corresponding change in the standard; and besides the museum material here referred to, which is most readily utilized by the investigator if kept boxed in immediate connection with the herbarium sheets, a set of histologic preparations ought to be made, representing not only the tissues of each officinal plant from authentic specimens, but also such preparations as can be made from the fragmentary drug, of which good sections are often obtained with difficulty, while the mode of fragmentation is sometimes characteristic.

Today nearly all students are taught not only to observe, but to record their observations, both in writing and by means of sketches. The medical botanist, perhaps more than most others, is likely to be benefited by forming this habit. A sketch made while the study is fresh in one's mind, somewhat idealized, not by the introduction of fanciful details but by the omission of confusing structures which one sees in all preparations, renders the future examination of a slide much easier and the conclusion drawn from a comparison with it more certain. I should therefore sketch the essentials of every preparation so preserved, and while the matter is fresh in one's mind a brief memorandum is easily written in connection with the sketch, describing differences between related things that may be transient in the slide or liable to be overlooked.

Medical botany, therefore, as a technical study for the *manufacturing pharmacist and collector*, and to a less extent for the dispensing druggist, but hardly for the medical man, in my mind is really a minute acquaintance with each plant used in medicine, with each of its parts in the form in which they are employed for the extraction of the drug as finally used; and it is properly learned by a course of study limited to very nearly the lines sketched above. Having reached this point, the botanist very properly, if time permits, extends his knowledge of general botany. Before this point, if he know the meaning of a generic and a specific name, of a natural family and a variety, he is enough of a botanist to do his work well.

To the physician of today, medical botany, which only a few years ago seemed to be passing from his hands, is returning in twofold form, but it is doubtful if the great majority of physicians are justified in dipping very far into it. Occasionally poisoning by eating certain toadstools, or roots of a few umbellifers, demands a certain amount of botanic knowledge, but I take it that in practice the suspicion of this poisoning is as practically useful as the actual knowledge of the plant which has caused it. The dermatologist, more than the general physician, is called on to recognize causes for dermal manifestations which he often traces to the use of food of one sort or another, which in some cases the idiosyncrasy of the patient reacts to in rather a marked way, and it is only a few years since a professor in the Harvard Medical School published an exhaustive treatise on the plants which produce such effects. A few plants, like the poison ivy, are very pronounced external irritants. But so far as practical purposes are concerned, the physician needs to know to what to ascribe certain manifestations of this sort, very much as he needs to know the effect of certain drugs, rather than to have a botanic knowledge of the irritant.

With the growing knowledge of bacteria, however, a more directly necessary branch of medical botany seems to be opening up. It is not necessary for the physician to know all bacteria, perhaps hardly necessary to know any large number of pathogenic species; but tubercle, leprosy, cholera, and certain other diseases of frequent occurrence, are so clearly marked by the occurrence of bacteria in or about the diseased tissues, that a diagnosis is often made with certainty only after a bacteriologic examination has been made. The Widal test for typhoid fever now has come into general use, and in the case of cholera and diphtheria it is, I believe, generally recognized that an easily made pure culture of bacteria from the patient affords the surest and quickest information as to the positive occurrence of the disease.

Today I suppose that there is not a good medical school in the country which has not a well equipped bacteriologic laboratory. The teaching needed for this branch of medical botany, like that needed for the older medical botany, which is now more properly regarded as pharmaceutic botany, ought to be of the most directly practical kind. A knowledge of methods first and of facts afterward is what is demanded. Some bacteria, the ordinary aerobic species, are so easily isolated and grown in pure cultures that the means of doing this ought to be at the hand of every physician, though I observe that certain boards of health are now undertaking to supply the apparatus and culture media needed for diphtheria work, so as to reduce the practitioner's part to the minimum of manual manipulation. The preparation and examination of slides offers little difficulty to the medical student who is already equipped with a knowledge of microscopic and histologic technique, so that he readily learns the special treatment needed for this sort of work. Here, as in pharmaceutic botany, the reference to authentic descriptions and authentic material becomes more and more necessary in proportion as one passes from hasty diagnosis to scientific investigation; but just as the dispensing druggist is becoming more and more freed from the routine of botanic examination, so the exhaustive study of the etiology of any germ disease is passing more and more from the physician to the medical bacteriologist who specializes in this direction, and whose training, built on a broad clinical experience, is supplemented by a continuation of the preparatory studies which the ordinary physician is obliged to make. The difference is in degree, however, rather than in kind.

DISCUSSION.

Professor **Remington**—The subject of botany itself, except the coarser structure of plants and bacteriology, has passed from the curriculum of the medical colleges and is now taught as a primary branch in the pharmacy colleges. I think that there is very little probability of the restoration of medical botany to its former place in the medical school; but it is well to know that it is taken up in other schools.

Dr. **Paquin** of St. Louis—The great difficulty in regard to the study of botany by medical men is want of time, but this must be provided for, as bacteriology is going to develop enormously in the near future.

PHARMACEUTIC CHEMISTRY, PHARMACOLOGY AND PHARMACO-PHYSICS THE NATURAL STEPPING-STONES TO SCIENTIFIC MEDICINE.

Presented in the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY ALFRED R. L. DOHME, Ph.D.

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Before entering upon a discussion of the subjects embraced by all the above caption, it might not be out of place to make clear what the exact meaning of the terminology that will come up for consideration is. Some little confusion has arisen recently, because of the double use of the word pharmacology, and the dictionaries do not help us out in the matter. They define pharmacology as the study of drugs both as to their recognition, properties and therapy. In other words, it is a general term for the study of drugs and their therapy, or a combination of pharmacy, the science of compounding drugs, with materia medica, the description of drugs and their medicinal effect. This is in accordance with the derivation of the word, which is made up of the Greek words, *pharmakon* and *logos*, meaning a discourse on or a study of drugs. However, the word has also been used, especially in Germany, to mean the study of the physiologic effect of drugs on the human system. Thus, when acetanilid is taken into the stomach and produces certain results or effects, it is the province of pharmacology to study and explain what organs, tissues, fluids, etc., of the body are affected by the same and in what way. Pharmaceutic chemistry has to do only with the chemistry of drugs, *i. e.*, given a drug, say belladonna root, it is the province of pharmaceutic chemistry to discover entirely what the same contains and in what relative quantities, thus: atropin, hyoscyamin, hyoscin, starch, resins and which, fats and which, malic acid, etc. Pharmacognosy is the study of the various physical properties of drugs which will enable one to recognize them, including their history. It hence embraces their botany, microscopy, histology, the chemistry of their constituents and the history of their use as a drug. Pharmacodynamics is a term that has been employed to express the effect and uses of medicines, being derived from the Greek words *pharmakon*, a drug, and *dynamikos*, the power or effect, and is hence practically the same as therapeutics. In considering the study of the effects of drugs upon the human economy, it appears to me that we have to become acquainted with the following facts in order to get at a scientific knowledge of how drugs act. We should know all the constituents of the drug we desire to use; we should know the physiologic effect of every constituent of the drug we are administering and, then, use only those constituents, or preparations containing only those constituents that produce the effect we desire to produce; and we should know the cause of the effect of each of these constituents. The first embraces the pharmaceutic chemistry of the drug, the second its pharmacology and the third its pharmaco-physics, which last word I have coined, as I believe there exists no word to express the study of the causes of the effects of drugs. It would be well to make clearer, perhaps, the distinction intended to be conveyed by the terms pharmacology and pharmaco-physics, and a concrete example will best serve to do this. Let us take acetanilid, as this will serve our purpose quite well and is besides one of the most generally used drugs. The pharmaceutic chemistry of acetanilid is the study of its formation, properties and decompositions. Its pharmacology is the knowledge resulting from the study of its physiologic effect on all the organs, tissues, fluids, etc., of the body, thus making plain what effect it produces, when we administer it, on the heart, blood pressure, nerve centers, liver, kidneys, mucous membranes, blood, lymphatics, etc. Its pharmaco-physics is the knowledge resulting from the study of the cause of the effects observed in studying its pharmacology, and would represent the study of the physiologic effects of all the groups contained in the acetanilid molecule. Acetanilid is made up of the group of acetic acid or acetyl (CH_3CO) and anilin ($C_6H_5NH_2$), which in turn is made up of the ammonia radical, amid (NH_2), and of benzene (C_6H_6), a hydrocarbon produced by the destructive distillation of coal. The province of pharmaco-physics would be to discover whether the effects of acetanilid, which we observed in studying its pharmacology, were due to the acetyl group, the ammonia group or the benzene group; or, what is more probable, which of the various effects of acetanilid was due to each and all of these constituent radicals of the acetanilid molecule. This can be done very readily by varying the various radicals and observing the failing or modification of this or that effect. Thus, if the red corpuscles are precipitated, producing cyanosis and eventual collapse, is this due to the ammonia radical (NH_2), or the acetyl radical or to the benzene radical, present in the molecule? Further, if the blood pressure is diminished, to which of these radicals is this due, etc.? If this is tabulated and known, for the various drugs of our pharmacopeia, we will reach such a desired and advanced stage in our knowledge of medicines, that we can control the unpleasant and undesirable effects of our remedies entirely and produce and use only such remedies as will produce just the effects we desire and no other effects. This is not only true of synthetic remedies but of all remedies, inorganic as well as organic. No doubt this appears chimeric to many and beyond the limits of probability and also usefulness, because of its apparent complexity, but there can be no doubt at all that it is not only among the probabilities, but that it is the natural evolution of the science of medicine that will take place in the next fifty years. German schools of medicine are entering upon this enormous and as yet untrodden and fertile field of investigation, and we should give it the attention that its importance merits. It is not a matter that can be taught, because it is as yet an unknown or practically unknown science, but it can and should be made the subject of investigation and study, so that we may become acquainted with the facts that it will give us, and enable us to make use of them in administering medicines. How few physicians today know the exact effect of the medicines they prescribe on the various organs, and what is the cause of that effect? They know that jaborandi produces activity of certain glands, resulting in increased secretions thereby, and they know that the pilocarpine in these leaves produce this effect, but do they know what other effects pilocarpine produces on the other organs, say on the blood, liver, kidneys, etc., and do they know what causes pilocarpine to produce this effect? They may say that it is not necessary for them to know this, as the effect is produced just the same and that is all they desire. This is quite true, and in the present state of our knowledge of medicines and their effects it is about all they can know; but would their ability to combat disease and administer medicines more scientifically and effectively not be many times increased if our knowledge of these same medicines and their effects and the cause of the effect, were known to them. They would then know that since, we will say for example, pilocarpine interferes with the functions of the liver it is not advisable to use this drug for a patient who requires a diaphoretic, but at the same time has a diseased liver. We might perhaps have learned by that time that a certain radical in the pilocarpine molecule produced the untoward effect on the liver, but that pilocarpidine, while still an effective diaphoretic, no longer produced this effect on the liver, due to the elimination from its molecule of the undesirable radical present in the pilocarpine molecule. There can be no doubt of one thing, and that is that medicine in its narrow sense, *i. e.*, the science of the administration of drugs, has not advanced at the same rate that the sciences of surgery, bacteriology, pathology or anatomy have during the last half century. In fact, many physicians have grown skeptical as to the value of drugs and think the less of them used, as a rule, the better. The development and future above outlined for the science of medicine in its narrower sense, will, unquestionably, remove all such skepticism and push therapeutics forward as a most necessary and invaluable requisite for the combating of disease. I may be pardoned when I say that scientific medicine, *i. e.*, the scientific administration of drugs, is only in its infancy at present, and that most of our medicines are administered empirically, *i. e.*, are administered not because we know exactly why they are what our particular case in hand calls for, but because experience has taught us that they are effective and will produce certain results. I do not wish to be misunderstood in this connection, and when I say the administration of medicines is largely empirical I do not mean to state or imply anything derogatory, but merely to say that our present knowledge of the administration of medicine does not enable us to do anything better. My purpose in going into this detail as to empiricism vs. science is merely to explain the meaning intended to be conveyed by the term scientific medicine in the title of the paper I am presenting. All physicians will agree that it is desirable to increase our knowledge of pharmacology and pharmaco-physics, for the more they know about the effects of drugs and their cause the better off they will be in successfully combating various diseases. There is one obstacle, however, to success in this direction in this country and which does not exist in Germany, and that is the indifference or unwillingness of hospital and clinics to take up and try, carefully and scientifically, any new preparations that may be offered them for experiment. The necessary thing to be done in this country to make the development and study of pharmacology successful, is the adoption of courses of lectures on these subjects, together with the opening of laboratories for their experimental study and research. In Germany chairs of pharmacology are established at almost every university, and at several of them the work in the lecture room is supplemented by actual experiments and actual investigations and study in the laboratory and clinic. Thus, the laboratories of Professor Schmiedeberg in Strasburg, Baumann in Freiburg, and Drechsel in Leipzig, are headquarters for this work in Germany, and their number is steadily growing. It has not been so many years ago that in order to study the new science of pathology one had to go to Berlin, to Virchow's laboratory, but Virchow has gradually developed other capable teachers and expounders of his theories and methods, and now pathology is a part of the course in medicine in practically every college in this country. So it will be with pharmacology and pharmaco-physics. The pupils of Schmiedeberg, Drechsel and Baumann will organize laboratories and courses, just as their instructors did, and the result will be that every school of medicine will embrace as part of its curriculum lectures and laboratory work on pharmacology, and perhaps also pharmaco-physics. Some schools of medicine have such courses already, as, for instance, Johns Hopkins, Harvard, Pennsylvania, Ann Arbor, etc., and others will unquestionably adopt the same in the near future. When this is brought about, the era for the scientific administration of drugs, *i. e.*, scientific medicine, will set in, and the stepping-stones to reach that stage will be pharmaceutic chemistry, pharmacology and pharmaco-physics.

THE NATURE OF THE LEUCOCYTOSIS PRODUCED BY NUCLEINIC ACID; A PRELIMINARY EXPERIMENTAL STUDY.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at te Forty-eighth Annual Meeting of the American Medical Association, *Philadelphia, Pa., June 1-4, 1897.*

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Within the past two or three years there has come into gradual prominence a system of therapeutics known popularly as nuclein therapy, which is attracting more and more attention and receiving a growing recognition at the hands of the medical profession.

The use of nuclein was first advocated on purely theoretic grounds, it being claimed that by its use the germicidal power of the blood could be increased and hence the resistance to diseases of germ origin heightened. Of late, however, certain writers have denied that nuclein acts as it was supposed to, and in consequence, its use being founded on a false conception of its powers, have claimed that it was not beneficial.

The application of nuclein to the treatment of certain diseases, especially to certain of the infectious processes, seems to be attended with beneficial results, though the observations are as yet too few and too incomplete to be of much value. Such as they are, however, they tend to confirm the views on which its use was first advocated and should be taken for what they are worth.

In order to fully comprehend the point at issue, it will be well to briefly review the various steps that have led to the discovery and use of this interesting substance.

Ever since the announcement of the fact that normal blood plasma of man and animals possessed definite germicidal power, endeavors have been made from time to time to determine the nature of the substance that imparted this property to the blood, in the reasonable hope that with its discovery we would be put in possession of the means to artificially increase this bactericidal property at will, which it is readily conceded would be of considerable importance in the treatment of certain diseases.

As early as 1872, the fact that organisms when injected into the circulation rapidly disappeared was observed by Lewis and Cunningham.[1] Similar facts were recorded from time to time by a number of observers, among whom may be mentioned Traube,[2] Fodor,[3] Wysokowicz,[4] Grohmann,[5] Nuttall[6] and others, and numerous theories, which it would lead us too far to mention or discuss at this time, were advanced to account for the apparent destruction of the invading organisms on the part of the body.

No explanation not open to serious objection was offered until the publication of the work done by Nuttall under Flüge. He claimed that the injected organisms disappeared because the normal plasma was germicidal and destroyed them. He gave positive evidence of this fact.

Following the work done by Nuttall, Nissen,[7] also working under Flüge on the same question, came to the following conclusions among others: 1, that normal blood plasma can easily destroy the cholera germ and Eberth's bacillus; 2, that the addition of small quantities of sterilized bouillon or of normal salt solution would not destroy the germicidal property of the blood; 3, that for a given volume of blood there is a maximum number of bacteria that can be destroyed; 4, that blood rendered uncoagulable by the addition of peptone is still germicidal; 5, that blood the coagulation of which is prevented by the addition of 25 per cent. of magnesium sulphate has its germicidal property diminished; 6, that filtered blood plasma from the horse is germicidal.

While, then, it was clearly proved that normal blood possessed certain properties detrimental to the growth and development of bacterial life, it was not as yet shown to what this property was to be attributed. Among some of the ideas advanced may be mentioned that of Behring,[8] who believed that the germicidal action of the blood of certain animals was due to its great alkalinity.

Metchnikoff[9] attributed the ability of the blood to destroy bacteria to the power of certain of the white cells of the blood, the polymorphonuclear leucocytes, to devour the micro-organism, to their *phagocytic* power, as he termed it. That these cells can and do act in this way at times can not be denied, and nothing is more attractive than to watch one of them surround and engulf a malarial parasite in the blood on the warm stage. That the true germicidal property of the blood does not lie in this action of the leucocyte was shown some time after by Buchner, who killed these cells by freezing and then thawing the blood, when its power to destroy micro-organisms was found to be undiminished. Buchner[10] further came to the conclusion, from a series of experiments that it is not necessary to review here, that the actual germicidal substance in blood was its serum-albuminous constituent.

Vaughan,[11] in a paper read before the medical section of the First Pan-American Medical Congress, in 1893, showed positively that this conclusion of Buchner must be erroneous, since it is known that whatever the substance in the blood is that possesses germicidal properties, it is not affected by peptic digestion, while serum-albumin is readily digested, as is well known.

From that time to the present numerous papers on this most important subject have appeared, and as many attempts have been made to clear up the question by the various theories that have been advanced.

It would only be necessary to mention the names of some of the investigators to show that the greatest activity has prevailed in this particular field of research. Among those who have followed Buchner may be mentioned Pruden,[12] Rovighi,[13] Pekelharing,[14] Hankin,[16] Bitter,[17] Christmas[18] and a score of others, each with his own set of facts and consequent deductions. Suffice it to say that to each one there seemed to be some reasonable objection that rendered it probable that the true nature of the germicidal substance remained in doubt up to a very recent date.

Vaughan, in the paper just cited, makes a careful survey of the literature of the subject, analyzes the work of the most important investigators and comes to the following conclusions:

1. That serum-albumin as described by Buchner is not the germicidal substance in blood serum, since it is readily converted into peptone by peptic digestion, and still the germicidal property of the blood is unaltered. Peptone further is favorable to the growth of bacteria and is used in preparing nutrient media.
2. That the germicidal substance must belong to the proteids, otherwise it would be difficult to explain the fact that a temperature of 55 degrees C. renders blood serum inactive.
3. That the only proteid likely to be present in blood serum and which is not destroyed by peptic digestion is *nuclein.*

He then asks the following questions: 1. Is there a nuclein in the blood? 2. Has this nuclein, if present, any germicidal properties?

Without reviewing Vaughan's work, it is only necessary to say that he succeeded in isolating a substance from the blood which is undoubtedly a nuclein, and that he and a number of others have demonstrated the fact that it has very decided germicidal properties. It is therefore safe to say that we may now consider blood plasma to be germicidal by virtue of the *nuclein* that it contains.

Having then reached this important conclusion let us briefly inquire into the nature of this substance. What is nuclein?

The term nuclein was originally applied to a peculiar phosphorus-containing substance which was isolated from pus. Chittenden,[19] speaking of this says, "it was discovered that this or related substances were widely distributed through nature in both the animal and vegetable kingdoms wherever nucleated cells occurred."

From a physiologic standpoint nucleins may be considered to form the greater part of the chemic substance found in the nuclei of all cells, that substance which shows such a strong affinity for certain coloring agents, and which is sometimes spoken of as chromatin. It is, speaking broadly, "that constituent of the cell by virtue of which the histologic unit grows, develops and reproduces itself." It will be readily seen, therefore, that nuclein must be very widespread and that relatively there will be more of it found in those tissues or structures that are the richest in cellular elements.

Chemically, the nucleins are highly complex proteid bodies, of weak acidity, containing a certain amount of phosphorus. They are insoluble in weak acids and in alcohol, but are soluble in dilute alkalin solutions, the action of the alkali being to liberate free nucleinic acid, or to separate it from the albuminous matter with which it is in combination. Thus viewed a nuclein "is simply a combination of some form of proteid matter with a nucleinic acid" (Chittenden[19]). Further, the nucleinic acid can be prepared from any form of nuclear material, but it is found to be most easily gotten from yeast-cells. It is "characterized by its large percentage of phosphorus, as much as 9 per cent. having been found in some forms" (Chittenden). This acid can again be decomposed by the action of dilute mineral acids, and when so treated gives as cleavage products, various kinds of nucleinic bases, the difference depending on the nature of the tissue or substance from which the nuclein was originally derived. Thus, for example. the nucleinic acid from yeast-cells yields, when treated with a dilute mineral acid, four distinct substances—bases, while that from the thymus gland of calves yields only one base—adenin. These facts are mentioned because, as is well-known, there is some close relation existing between this group of substances, the decomposition products of the nucleins, known as "xanthin bases," and the formation and excretion of uric acid, a question that we will not attempt to discuss at the present time.

Since all nucleins contain phosphorus, and since it seems that the greater the amount of phosphorus the more active is the nuclein, the amount of phosphorus which any given sample of this substance contains may be taken as an index of the amount of nucleinic acid present in the preparation.

The various commercial articles now on the market have been found to vary considerably in the amount of nucleinic acid that they contain. According to a recent report of Professor Chittenden,[19] that manufactured by the firm of Parke, Davis & Co., under the name of "Nuclein Solution from Yeast" contains the most phosphorus, and therefore is the richest in nucleinic acid. It is the preparation used by us in the experiments that form the basis of this communication.

Having seen what nuclein is. let us inquire into the nature of its physiologic actions. The use of this substance as a therapeutic agent is of such recent date, and is based on such a narrow margin of known facts regarding its action, that there is comparatively little known as to its full action on the diseased economy.[20] Löwitt[20] some time ago made the statement that, by subcutaneous injection of nuclein in animals in the ratio of 1 per cent. per kilo. of weight, he quickly produced very dangerous symptoms, such as threatened cardiac and respiratory failure. It is impossible to say what preparation he used, or how it was prepared, but most certainly our observations and those of others have been just the opposite, and we have never seen, either in animals or man, any harmful symptoms whatever even from considerable doses. That harmful results might occur if excessive doses were used may be conceived, but the same holds good for nearly every therapeutic agent, each having its proper dose and indications for its use, and there would be no occasion whatever to use doses of this preparation of such size as to produce even the mildest signs of danger. Certain effects have been noted in the treatment of tuberculosis and other diseases, with this remedy, but it is not the province of this paper to discuss these, which belong more properly to a consideration of the therapeutic uses and effects of nuclein. Whatever the other effects may be, however, there is one result of the administration of nuclein, either by the hypodermic method, or per os, that appears to be quite constant, and on which its therapeutic value is supposed to depend in the treatment of the various forms of bacterial disease. This effect is the *apparent production of a leucocytosis.*

It will be recalled that in the opening paragraph we stated that, could that substance be discovered by virtue of which the blood possessed germicidal properties, it might with reason be hoped that some means could be devised by which this valuable property could be artificially increased at will. Since the germicidal property of normal blood resides in a substance known as nuclein, and since this is derived from the nuclei of certain cells of the blood, the white corpuscles, it is believed that by increasing the number of these cells very materially the germicidal power of the blood plasma may be considerably heightened.

We have just said that one of the constant results of the injection of nuclein, or of its administration per os, was the production of an apparent leucocytosis, meaning by that term an actual increase in the total number of leucocytes per cubic millimeter, circulating in the blood. The word "apparent" is here used advisedly because it is claimed by some writers that the increase is only apparent, not real. It can readily be seen that on the determination of this important point the value of this or of any similar preparation will rest. If the results following the administration of nuclein consist only of a re-arrangement of the leucocytes in the different portions of the circulation and not of an actual increase in the number of the same, we can not hope by its use to augment the germicidal power of the blood. since we can not increase those bodies, the white corpuscles, that produce the germicidal substance.

According to those who hold the view of leucocytosis just mentioned, the effect of an injection of nuclein, or of any substance acting as it does, is to cause a determination of the leucocytes to the peripheral circulation and away from the circulation in the internal vessels. How this is supposed to be accomplished we will see later. On examining a drop of blood drawn from the finger tip, or from the lobe of the ear, as is the usual custom some hours after the administration of nuclein, it is found that there is an increase in the number of leucocytes, chiefly, though not entirely, confined to the polymorphonuclear variety, which fact is explained in the way just mentioned, it being denied that the total number of leucocytes is at all increased. According to this view then, what we have been taking for an increase in the number of cells is in reality nothing more than an affair of distribution, and we would have to alter our definition of leucocytosis accordingly.

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[20] This paper was written before Dr. Vaughan's recent article on the use of nuclein in cases of pulmonary tuberculosis appeared. The authors have themselves used it in a large number of such cases with apparent marked beneficial results. These it is expected will be reported later.

Cabot,[21] in his recent book on the blood, defines leucocytosis as: "An increase in the number of leucocytes in the peripheral blood over the number normal in the individual case, this increase never involving a diminution in the polymorphonuclear varieties, but generally a marked absolute and relative gain over the number previously present." This definition he follows up by the statement that whether or not it be true that a leucocytosis is only an affair of distribution "it is accurate to say that in the drop which we draw (whether also in the internal organs or not) the leucocytes are present in increased numbers per cubic millimeter." This leaves us in doubt as to Cabot's own view, though strongly inclining us to believe that while he has not so expressed it in as many words, he holds the opinion that in leucocytosis there is an actual increase in the number of cellular elements throughout the circulation.

Ziegler,[22] also defines leucocytosis as an increase in the number of white corpuscles circulating in the blood and points out that these may come either from a new production of cells in the cell-forming organs, from a proliferation of the cells in the circulating blood, or further that the increase may under certain circumstances be due simply to the discharge into the circulation, from the lymph glands, of large numbers of ready formed, partly matured cells.

The arguments advanced in support of the view that leucocytosis is but an affair of distribution are worthy of very careful examination. There are two chief ones on which the theory rests. In the first place it is claimed that the apparent increase in the number of cells occurs chiefly in the polymorphonuclear variety which, if we accept Uskow's theory and classification, are the mature elements. If it is true that an actual new formation of cells takes place as the result of the injection of nuclein, the claim is made that we should find the greatest percentage increase in the mononuclear or young elements. In the second place it is claimed that an examination of the blood shows that while there is an apparent increase in the number of cells in the peripheral vessels the central circulation shows a corresponding paucity of cellular elements.

These two arguments, if based on careful experimental evidence, would be very strong indeed and would point to the accuracy of the conclusions drawn. It was partly with a view to clearing up this question that the experiments which form the basis of this paper were undertaken, and we believe that from the results we have obtained, and from those obtained by others, especially by Buchner and Hahn in a different direction, which however bears strongly on the point in question, that we have reason to believe the leucocytosis following the administration of nuclein to be one in which there is an actual increase in the number of white corpuscles in the circulation. To what process this is due we are not able to state, though we are inclined to the view that there is proliferation within the cell-forming organs and probably in the circulation as well.

Before detailing our experiments let us examine more closely the two chief arguments advanced in support of the other view of leucocytosis, that first mentioned.

In examining a drop of blood, drawn, we will say from the finger of a person some hours, or a day or so, after an injection of nuclein, it is readily seen that the white corpuscles are present in increased numbers, and that the largest percentage increase is in the polymorphonuclear variety. This fact can not be disputed, and since, as Ehrlich[23] has pointed out, the blood-cell-forming organs discharge into the circulation only the small mononuclear or young elements, it seems at first difficult to explain the presence of so many of the older mature cells. The question however resolves itself really into one concerning the length of the life-cycle of a leucocyte. How long may it take for a young element to pass through the various stages in its development and become matured? Is it not probable that the mistake has been made in examining the blood too long after the injection of nuclein, so that time enough has elapsed to allow the young elements formed as a result of the injection to mature? If this is the case the first argument advanced loses it weight and becomes in reality an argument in favor of the other view.

In the course of all of our experiments we found that within so short a time as from five to ten minutes after the injection of nuclein there was a noticeable increase in the number of leucocytes in the peripheral as well as in the central circulation, and, moreover, that the greatest percentage increase was not in the mature, but in the young varieties. If it is possible then for an actual reproduction to begin within so short a time as five to ten minutes after an injection, is it not probable that the majority of these elements can pass on to the mature stage after the lapse of a day, or even of some hours? We think it is and that herein lies the explanation of the fact that when a drop of blood from the peripheral circulation is examined some hours after the injection, the increase is seen to be chiefly in the polymorphonuclear forms. The fact, also, that in our experiments we found that the small young elements were the first to be increased in the largest proportion is consistent with the view that the leucocytosis produced by nuclein at least, consists of an actual increase in the total number of white cells, and bears out the statement of Löwitt[20] that following an initial stage in which there seems to be a lowering of the number of corpuscles (which phenomenon we have not attempted to study), there is a development of young mononuclear forms which gradually pass through the developmental stages into mature elements.

Goldschneider and Jacob[24] also, though they disagree with Löwitt in some of his conclusions, support him in the statement that the injection of certain substances produces an increase in the number of leucocytes most noticeable in the mononuclear forms.

Romer[25] likewise takes this view of the process and goes so far as to say that he believes the reproduction to take place within the circulation as well as in the blood-cell-forming glands.

In attempting to explain how it is that the injection of such a substance as nuclein causes a determination of leucocytes to the peripheral circulation and away from the that in the internal vessels, it seems to us that the advocates of this theory disclose its weakness as they do in no other way.

While many writers attempt no explanation others, as Wells,[26] in a recent article states that according to his belief "the key to the whole problem is to be found in the principle known as ch [illegible] more commonly as chemotaxis." According to this author the effect of an injection of nuclein is to exert a chemotactic action, the result of which is the attraction of the polymorphonuclear leucocytes from the central to the peripheral circulation.

We fail to see how such an action could take place, even granting that nuclein possessed chemotactic properties, for is it to be supposed that after being injected subcutaneously the substance will remain in the peripheral circulation? Will it not naturally circulate freely throughout the system? This at least is what one would expect, and doing so it would then exert its chemotactic influence, if it had any, in all portions of the circulation, and the results would be *nil* because the various attractive forces would neutralize one another. In fact, this chemotactic explanation does not seem to us to be any explanation at all.

Aside from all the foregoing facts that seem to us to strongly militate against the idea that leucocytosis is but an affair of distribution there is another fact, well authenticated, that also points conclusively to the incorrectness of this view.

Referring again to a paragraph in the early part of this paper, it was stated that the germicidal property of the blood resided in its nuclein and that the richer in cells a part was, the more its content of nuclein, and by the same reasoning the greater its germicidal power.

Buchner, working on this question, found that fluids rich in cells possessed a greater germicidal power than did the normal blood of the same animal. More recently Hahn,[27] working under Buchner and following the suggestion contained in the above observation, has attempted to increase the germicidal power of the blood plasma by producing an artificial leucocytosis. Hahn found that the blood plasma of animals treated by hypodermic injections of nuclein solution possessed germicidal power considerably greater than the blood of the same animals had possessed before the injections. Had the effect of the injections been to cause a determination of the leucocytes to the peripheral circulation only, and not an increase in the total number of the same it is very difficult to explain Hahn's results which, therefore, seem to us to point very conclusively to the fact that the leucocytosis produced by this substance at least consists of an actual production of new leucocytes, increasing the number of nuclein-producing bodies and in consequence heightening the bactericidal power of the blood.

Among those who are cited by Wells as supporting the view that we believe to be incorrect may be mentioned X. Reeder,[28] who says, "as to the origin of leucocytosis we have on the ground of experimental examinations *no good ground* to believe that it is due to an increased supply of white blood corpuscles from the blood-making organs, still less to an increase of the same in the blood, or to an abnormal collection of wandering cells. It must be considered as more probable that the leucocytosis is based only upon an *insignificant increase* of the entire number of white cells circulating in the blood, in that there occurs an abnormal distribution of the same in the different vessels in favor of the periphery."

A careful examination of this statement of Reeder shows that, while in the first paragraph he states positively that there is *no evidence* of the new formation of white cells *whatever*, he goes on to say in the next that there is an insignificant increase in the total number. He would seem then to admit that a production of new cells could and did take place, even if in small number only, and in so far to contradict himself. If it is admitted that it is possible for a reproduction to take place, why not in considerable numbers as well as in small? The important fact is in admitting that they *can and do reproduce.*

Schulz[29] is also mentioned as an advocate of this view. In one experiment made by this observer, and cited by Wells, he injected into the ear of a rabbit 2 c.c. of bacterial protein and immediately withdrew blood from the other ear, in which he found on counting the leucocytes only 3,300 as against 11,100 before the administration of the protein. As rapidly as possible, counts were made from several internal vessels, the average of which was 21,500. From these figures he draws the conclusion that the decrease and therefore also the subsequent increase, is only apparent, and that at first the leucocytes left the peripheral circulation for the central, and afterward the central for the peripheral. He evidently overlooked the fact, that had he estimated the total number of leucocytes before and after the injection he would have found that in the very short time that it took him to make the experiment there had been an actual increase in the whole number of 1,300 white cells per cubic millimeter, even though the cells at the time of the count were unevenly distributed.

From all the facts that we have cited it would appear that we are justified in looking on the change in the circulation that follows an injection of nuclein as a leucocytosis in which there is an increase in the total number of white corpuscles.

The experiments that we made were all upon medium-sized dogs, and while we will not detail each one we will give the steps pursued and a few of the results which are typical of all, since with very slight variations practically the same results were obtained in all cases. Before putting the dog under ether a count was made of the leucocytes in the peripheral circulation. Ether was then administered and the same was done for the peripheral and central circulations. We made the count of the peripheral circulation before the administration of ether, because we found that the ether alone produced some increase in the number of leucocytes, the amount seeming to depend on the rapidity or slowness with which the animal succumbed to the anesthetic; a greater change was noted in those dogs that struggled the most and required the most ether. After making the counts already mentioned a hypodermic injection of nuclein solution (1 per cent. P. D. & Co.), varying from 25 to 45 minims in the different experiments, was given and counts made from both the peripheral and central circulations every five minutes thereafter up to thirty-five minutes in some cases. Care was taken to allow the animal to bleed but little, and as slight disturbance was produced by the operation as possible.

The leucocytes in the blood withdrawn were stained with a week solution of methyl violet in normal salt solution and the results of the various counts tabulated. In every instance ten counts at least were made and the average taken. The entire field of the blood counter was counted every time. In this way it was hoped to reduce the limit of error as much as possible. The general results of these experiments may be summed up as follows:

1. The administration of ether alone causes an increase in the number of leucocytes over that found in the circulation before its administration. The

amount of the increase seems to depend on the amount of ether used and the time required to anesthetize the animal.

2. Before the administration of nuclein the counts showed that the number of leucocytes in the peripheral and in the central circulation was practically the same, varying only within the limit of error, or slightly over, sometimes one way sometimes the other.

3. Following the administration of nuclein solution there was immediately, that is by the end of five or ten minutes, a noticeable increase in the number of leucocytes *in both the central and peripheral circulation.*

4. At this time the percentage increase was most marked in the young mononuclear forms, which in some instances rose as high as 60 per cent. of the whole within fifteen minutes, while at the same time the proportion of polymorphonuclear elements was proportionately low.

5. The longer after the injection of nuclein the greater was the actual increase and the number seemed to steadily rise *in both the peripheral and central circulation.*

As the title of this paper indicates, it is but a preliminary study, and we recognize the fact that there are a large number of questions, upon which we have not attempted to touch, that are of the greatest interest and importance. One of these questions relates to the condition of the blood a day or two after the injection of nuclein. We believe, from certain facts that we have already stated, and from other observations that we have made, that we will find a gradual increase in the proportion of polymorphonuclear elements beginning an hour or so after the injection and gradually increasing, and that as this rises there will be a falling off in the proportion of mononuclear forms as they gradually mature. Work on this point will be begun in the near future, as well as on some others that have suggested themselves to us.

The following tables taken from our record book give the figures in some of our experiments and the percentages calculated from them. It is from these figures that the conclusions just stated were drawn. A comparison of the following tables shows that the increase in the number of leucocytes begins within a very short time after the injection and steadily rises, and that the greatest percentage increase is in the small mononuclear elements.

Table 1.—Count of the leucocytes in the *peripheral* circulation of a dog before the administration of nuclein and without ether:

Varieties.	Per-centages.	Average total No. of leucocytes per c.mm.
Small mononuclears . . .	10.87	9,200
Large mononuclears . . .	26.07	
Polymorphonuclears . . .	63.06	

Table 2.—Count of the leucocytes in the *peripheral* circulation of a dog under ether and five minutes after an injection of 45 minims of nuclein solution:

Varieties.	Per-centages.	Average total No. of leucocytes per c.mm.
Small mononuclears . . .	42.30	15,600
Large mononuclears . . .	12.82	
Polymorphonuclears . . .	44.87	

Table 3.—Count of the leucocytes in the *peripheral* circulation of a dog under ether and twenty-nine minutes after an injection of 45 minims of nuclein solution:

Varieties.	Per-centages.	Average total No. of leucocytes per c.mm.
Small mononuclears . . .	39.23	20,400
Large mononuclears . . .	18.62	
Polymorphonuclears . . .	40.18	
Eosinophiles.	1.96	

A comparison of the following tables with the foregoing will show that the increase in the number of leucocytes occurred in the central circulation as well as in the peripheral and was not therefore an "affair of distribution."

Table 4.—Count of the leucocytes in the *central* circulation of a dog under ether and before the administration of nuclein solution:

Varieties.	Per-centages.	Average total No. of leucocytes per c.mm.
Small mononuclears . .	15.58	15,400
Large mononuclears . . .	18.18	
Polymorphonuclears . . .	66.23	

Table 5.—Count of the leucocytes in the *central* circulation of a dog under ether and five minutes after an injection of 45 minims of nuclein solution:

Varieties.	Per-centages.	Average total No. of leucocytes per c mm.
Small mononuclears . . .	34.79	18,400
Large mononuclears . . .	19.56	
Polymorphonuclears . . .	44.56	
Eosinophiles.	1.08	

Table 6.—Count of the leucocytes in the *central* circulation of a dog under ether and thirty-five minutes after an injection of 45 minims of nuclein solution:

Varieties.	Per-centages.	Average total No. of leucocytes per c.mm.
Small mononuclears . . .	50.90	22,000
Large mononuclears . . .	14.54	
Polymorphonuclears . . .	33.64	
Eosinophiles.	.91	

By comparing Table 1 with Table 4 and Table 7, which follows, it will be seen that the effect of ether alone is to cause an increase in the total number of leucocytes. There was no count made of the central circulation before the administration of ether, as we did not care to subject the animal to the pain of the operation. The evidence is very clear, however, that there is the same increase in the number of corpuscles in that portion of the vascular system following the anesthetic as there is in the peripheral portion.

Table 7.—Count of the leucocytes in the *peripheral* circulation of a dog after the administration of ether and before the injection of nuclein solution:

Varieties.	Per-centages.	Average total No. of leucocytes per c.mm.
Small mononuclears . . .	8.82	13,600
Large mononuclears . . .	20.50	
Polymorphonuclears . . .	67.64	
Eosinophiles.	2.94	

The figures given in all the preceding tables are taken from the same experiment. This was only one of a large number and each showed practically the same changes, the figures varying, the increase in the number of leucocytes being greater in some and less in others. The number of white corpuscles varies normally in different dogs and each one has its individual ability to react to the stimulation of the nuclein injected, this reaction however being present in every animal experimented with.

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NUCLEIN SOLUTION; A CLINICAL STUDY.

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In the medical service of an institution like the New York Infant Asylum, where a large number of infants and young children are to be cared for, many of whom are received in a very poor condition of health and with a tendency to various hereditary diseases, it is often difficult to know just how to properly treat many of the more or less chronic ailments they are apt to be afflicted with, and I have endeavored to ascertain if some one of the newer remedies would not be of benefit in those cases we used to call "scrofula," and in fact all of the cases in which we meet with enlarged lymphatic glands, and with persistent discharges from the nose and ears, sore gums, skin eruptions, etc. My attention was attracted a few onths ago to the nuclein solution originated by essor Vaughan of Ann Arbor, and I thought perps it would be of benefit in the class of cases above tioned if it should really prove that the administration of the solution promoted leucocytosis, for if it should do this and if the leucocytes are, as they are theoretically supposed to be, the scavengers of the blood, should we not reasonably expect a beneficial effect from its administration in such cases? I have used the improved nuclein solution 5 per cent. per orem, and the results have been so entirely satisfactory that I will continue its use.

To be quite sure that the nuclein solution does promote leucocytosis, I made careful counts of the leucocytes in four cases, which will be described in detail further on. It will be noted, in referring to the table below, that in three of the four cases, there was a satisfactory notable increase of weight during the administration of the nuclein solution. It will also be noted that in Case 1 the number of leucocytes decreased between April 9 and 24, due I think to the insufficient dose of nuclein which was probably not enough to make any real impression on the blood condition and the advance of the disease. From April 9 to 24 in this case I gave only ½ dram three times a day. On the twenty-fourth I increased the dose to 1 dram, and on May 1 to 1½ drams, and found on May 5 that the number of leucocytes per c.mm. had gone up from 6,000 to 22,000. I am, however, at a loss to account for the decrease in the number of leucocytes during the latter part of the treatment of Cases 2 and 4, but whatever may be the cause of this the cases improved very rapidly and in a satisfactory manner. It will be noted from the table that the administration of nuclein solution caused an increase in temperature in all cases. Quite early in my experiments with this preparation I reached the conclusion that until a sufficient dose was given to produce some elevation of temperature, I would not expect any very rapid improvement.

Another thing which attracted my attention was the evidently stimulating properties of nuclein solution, for when I gave it to Case 5 the child was suffering from a suppurating abscess; the amount of the discharge was markedly increased, so much so that I felt somewhat doubtful about the advisability of continuing the treatment, but did so and the results were entirely satisfactory as will be noticed from referring to the record of this case. This effect of temporarily aggravating the suppuration is a very interesting fact and well worth careful consideration, but it should not discourage us from using the remedy, for it has convinced me of the strikingly stimulating effect of nuclein and I might say, aggressive qualities of the leucocytes in endeavoring to rid the body of detrimental germs. In a case of "scrofula," if administered before suppuration commences I feel sure it will prevent it, but after suppuration has actually taken place it will increase it, but at the same time make the final cure all the more complete. I will first report the four cases in which I kept a record of weights, temperatures, increase in dose and the blood-counting.

Case 1.—O. B. Mucopurulent discharge from nose and ears. Gums and the mucous membrane of the mouth in an unhealthy condition and bleed for the slightest irritation. Chronic conjunctivitis. Very irritable. Large head. Protruding abdomen. All of the usual symptoms of rachitis. Began to administer the nuclein solution April 9; ½ dram three times a day before feeding. Temperature normal or not above 99 degrees until May 1, when I increased the dose to 1½ drams. (I began to give 1 dram on April 24, which made little impression.) It will be noted from the table that on May 5 the weight had increased to fifteen pounds and the temperature was averaging 100 degrees, while the number of leucocytes increased from 6,000 to 22,000 per c.mm. In this case it appeared that the temperature would not begin to go up until some days after the dose was increased, that it would stay up for a couple of days and then decrease again. The child began to improve in apppearance by May 5 and on May 19 was well and all of the disagreeable symptoms and complications had disappeared.

Case 2—W. H., a weak, pale and fretful infant, extremely nervous and irritable. Enlarged lymphatic glands, large head and protruding abdomen. Discharge from nose and ears. Began treatment April 9 and it is being continued at this writing (May 22). The case has improved very much in every respect, all discharges have stopped, the formerly enlarged glands are no longer noticeable and I confidently expect a complete restoration to health in a short time.

Case 3.—A. L. Phlegmatic temperament. About same condition as Case 2. Enlarged glands, decayed teeth, discharge from nostrils. All disagreeable symptoms almost entirely disappeared at this time.

Case 4.—C. M. Discharge from nose and ears; enlarged glands, nervous temperament, condition very similar to that of Case 1. This case is now well and the treatment discontinued.

Date.	Dose.	Weight.	Temperature.	Leucocytes.
O. B., male; age, 1 year and 4 months				
April 9	½ʒ	13 lb. 10 oz.	99 to 100 ° F.	9,000 per c.m.
April 24	1 ʒ	13 lb. 13 oz.	99 to 100 ° F.	6,000 per c.m.
May 5	2 ʒ	15 lb.	*100 to 100¼° F.*	22,000 per c.m.
May 19	2 ʒ	15 lb. 3 oz.	100 to 99 ° F.	24,000 per c m.
W. H., male; age, 16 months.				
April 9	½ʒ	14 lb. 13 oz.	Never above 100° F.	14,000 per c m
April 24	1 ʒ	14 lb. 6 oz.		20,000 per c.m
May 5	2 ʒ	14 lb. 10 oz.		30,000 per c.m
May 19	2 ʒ	14 lb. 10 oz.		20,000 per c m

Date.	Dose.	Weight.	Temperature.	Leucocytes.
A. L., male; age, 2 years and 7 months.				
April 9.	½ʒ	17 lb. 10 oz.	100° F. for 4 days	10,000 per c.m.
May 5.	1 ʒ	20 lb. 5 oz.	after the dose	12,000 per c.m.
May 15.	2 ʒ	20 lb. 6 oz.	was increased to	14,000 per c.m.
May 19.	2 ʒ	20 lb. 12 oz.	2 ʒ.	26,000 per c.m.
C. M., male; age, 1 year and 7 months.				
April 9.	½ʒ	14 lb. 15 oz.	Never above 100°F.	8,000 per c.m.
April 24.	1 ʒ	14 lb. 13 oz.		10,000 per c.m.
May 5	2 ʒ	17 lb. 7 oz.		32,000 per c.m.
May 19.	2 ʒ	18 lb. 3 oz.		16,000 per c.m.

I will also report five cases in which the results of the treatment were just as satisfactory but in which I did not take time to make blood counts, as I thought the four cases above given would be sufficient to illustrate the increase of leucocytes due to the admistration of nuclein solution.

Case 5.—E. K., female, aged 3 years. Had bronchopneumonia which was followed by whooping cough; then chronic bronchitis; then there was another attack of bronchopneumonia followed by a foul smelling discharge from the right nostril and right ear. Bleeding gums, restless and irritable. I began the treatment by administering ½ dram of nuclein but soon increased the dose to 1½ drams, which produced only a slight rise in temperature, but the child improved rapidly. For a week after the treatment was begun the discharge from the ear and nostril was largely increased in quantity and the odor of the discharge also appeared to be increased. After the first week the discharge gradually diminished, first in odor and then in quantity. The child became bright and playful and finally the nostril healed and there had been so much loss of tissue that the healing process almost closed the opening. The ear healed also. The lung symptoms disappeared and within five weeks from the beginning of the nuclein treatment the child was apparently perfectly well.

Case 6—N. R., female, aged 2 years and 6 months, listless, emaciated, chronic eczema with boils in various parts of the body. Discharge from left ear. Nuclein, 1 dram, was given three times a day and all of the symptoms, including the eczema disappeared and the child became energetic and playful. I do not attempt to account for the relief of the eczema from the administration of the nuclein, but it certainly disappeared with the other complications after only three weeks' treatment.

Case 7.—A. K , female, aged 10 months. The submaxillary glands were swollen, were large and sensitive to the touch, and it appeared as if they were on the verge of suppuration, but within a few days after the nuclein treatment was begun the glands began to subside and after four weeks' treatment the child was entirely well.

Case 8.—L. H., female, aged 1 year. A typical case of "scrofula." One of the glands was already suppurating when I began the treatment. Immediately after two more glands broke down and there were large quantities of pus thrown off. The suppurative process appeared to be hastened for a time, but within six weeks from the beginning of treatment there was no evidence of the disease remaining.

Case 9.—A. H., female, aged 8 months. Another case of "scrofula." Two glands were discharging. Soon after the administration of nuclein was begun the discharge disappeared and after three weeks' treatment the patient was discharged cured.

I fully appreciate the difficulties involved in the treatment of cases of this character with nuclein solution, but I feel that I can urge upon the profession the importance of the remedy and that it is worth while in the chronic ailments of children of the character described to undertake the treatment, but being careful to caution the parents or guardian of the child that the treatment must be carried on systematically and for some weeks and that the case must be examined from time to time and the dose carefully increased if necessary, and its temperature and weight noted, even if it is not convenient to have a blood count made. Nuclein solution can not be used successfully if it is prescribed offhand and the parents allowed to regulate the treatment without reference to the conditions above named. I am also fully convinced that most clinicians who have prescribed this nuclein solution have given it in too small a dose. I found that even young infants could take, with advantage, as much as two teaspoonsful three times a day, and if a less dose had been given the treatment would not have been successful. I found that young children take the nuclein solution more readily if the the proper dose is mixed with a little sweetened water.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
BY CARL H. VON KLEIN, A.M., M.D.

MILITARY SURGERY UNDER FREDERICK THE GREAT.

(*Continued from page 438.*)

The third in the group was *John Christian Anton Theden* (1714–1797), whose name was often distorted by his contemporaries into Theede, Theeden or Thede. He was born in the Mecklenburg village of Steinbeck, where his father was a farmer, being the eleventh of twenty-three children, as his son-in-law, Mayer, the professor of anatomy, relates. Well versed in arithmetic and writing, he went out to service in his thirteenth year as servant and scribe, but after four years gave up this insufferable occupation to learn the tailor's trade with his brother. But this did not please him either; surgery was next in order. When he had spent three years in a barber shop without learning anything properly, he felt his ambition stimulated by the character of Odysseus, with which he became acquainted through a translation of Homer; he went in 1734 into service in Rostock, and with other barber journeymen listened to an anatomic colleague on "Heister's Manual." His travels led him to Hamburg, Lübeck and Danzig, from which place, in 1737, he entered the Buddenbrok cuirassier regiment as squadron surgeon. Active day and night, he soon won for himself the love of his superiors. As his regimental surgeon, Heise himself, prepared the medicines and had the herbs gathered for that purpose, Theden was often employed in the laboratory, and soon gained a readiness in pharmaceutic work. In a review, King Frederick William desired to make him a salaried surgeon in Berlin, which Heise wished to prevent. In 1740 Theden was ordered to the hospital of Strehlen, where he became acquainted with Schaarschmidt, Holtzendorff and Boness. There he caught the spotted fever and was taken to Breslau, from which place he went, after his recovery, to the Bohemian winter quarters. In 1741, he attended the wounded after the battle of Czaslau, and made the acquaintance of the physicians there, Drs. Siegmund Hahn, father and son, who made an extensive use of cold water and ice in external and internal diseases. Theden learned from them the application of cold water in dangerous inflammations. He was sent to take charge of 7,000 wounded Austrians in the hospital at Striegau, where he contracted dysentery. He then attached himself as battalion surgeon to the Holstein regiment, but soon left it on account of the great danger of his being impressed into the military service, and upon the recommendation of the regimental surgeon traveled as quickly as possible to Berlin. There, in the next two years, he began a regular course of study under the direction of Schaarschmidt, who interested himself in his behalf. He became a salaried surgeon and soon gained the friendship of Schmucker, who gave him admission to his house and to his operations. Theden worked industriously at anatomy, and prepared specimens so beautifully that Vogel in Göttingen gave him 50 thalers for some ophthalmic specimens. In 1748 he entered the Treskow infantry regiment in Stettin as regimental surgeon. During the Seven Years' War he took part in the battles of Prague, Leuthen, Hochkirch and others, and directed various hospitals. King Frederick II. became acquainted with him while he was treating General von Geist, whose upper arm had been shattered; the general died and bequeathed 1,000 thalers to Theden. At the suggestion of Cothenius he was appointed third surgeon-general in 1758. A consultation is said to have called him from Berlin to Schwedt, on account of the injured foot of Duke Eugene of Würtemberg. He climbed into the carriage with the duke's courier, but they had gone scarcely a mile from Berlin when the drunken postilion tipped the carriage over and Theden's left upper arm was broken. Henckel cured him within six weeks by the application of his arquebusade-water. At the end of the war he returned to Berlin and in 1767 became surgeon of the entire artillery corps. The last Silesian war took him again to the field, whereupon he became first surgeon-general in 1786, after Schmucker's death, and when he himself was an old man; he was also made a member of the chief medical college. In the following year "Father Theden," who had served three kings of Prussia, celebrated his fifty year jubilee. The celebration with addresses, memorial medals, banquets and balls lasted three days; in addition the medical faculty in Frankfort bestowed upon him the doctor's degree. One year after Bilguer's death Theden also went to his eternal rest, after sixty years of service as general staff surgeon.

In his youth he was a religious enthusiast. Even in his later years he expressed regret for his careless rly education which left his "heart for a long time llous," and felt, as he frankly confessed, a tendency toward envy which during his life cost him the greatest pains to repress. What was the cause of this envy and of his bad temper? Let us hear and wonder; Theden supposed that in the act of procreation the soul of his father had been ruled by those emotions. This drove him from Hamburg, because his religious principles were not strong enough to withstand the temptations of that city. As a squadron surgeon he took instructions from the Pietists, and soon entered the order of Free Masons. When he was taken with spotted fever he desired to take the sacrament and was so tormented by conscientious scruples that he begged a Magister to convince him of the existence of God. If one considers that Theden had very little general culture, but made a very creditable record for himself, it may perhaps explain his self-complacency and the frequent obtrusion of the first person, which gives his writing an unpleasant flavor. The following are samples of this: "I write not from mercenary motives . . . am too proud to pass as a mere copier . . . do not desire to become famous and am satisfied if I can only be useful . . . am sympathetic by nature, and therefore avoid all operations so long as there is any other remedy at hand . . . am above self-love, thank heaven! and have just as little tendency to boast as to maliciously censure and defame other men. . . ." A quarrel, which his son-in-law Mayer had with his colleague Walter, moved Theden to write to the latter two letters, which Walter's son purposely published with all their orthographic mistakes. He says in them: "I consider myself a suffering Christian, and should it not be possible for you to withdraw this unhappy hatred against me, then I shall even be patient in the issue, for my days are passing, and I should consider it in the place of others an offense to God, inviting my own damnation, if I in repeating the Lord's Prayer should ask forgiveness as I forgave my debtors" (1779). Later he threatened the aged Walter, saying that he could tell His Majesty many things that would not be agreeable to him. When Theden in his eighty-first year published the third volume of his new "Observations," he took "leave for the last time of his dear friends and of his enemies, nevertheless dear to him. The applause and love of the former have made the best part of the happiness of my life. I have only two or three enemies. I will soon go before God in perfect peace, and to all my enemies I extend the wish that they may pass to eternity in due time just as peacefully." Theden was greatly afflicted with illness; besides that already mentioned he suffered in consequence of excessive tobacco smoking and tea drinking (for instance, in Hamburg he was accustomed, morning and afternoon, to drink over two pounds of the "cursed tea-water" with milk, for thirty-two years, with nausea, continual vertigo and severe hypochondria, insomuch that in his youth he often thought he would throw himself into the river. Instead of taking such a cold bath, he resolved to take water in great quantities internally, and was afterward very well. His continuous good health during his last forty years, excepting for a cracking of the skin from which he suffered for ten years, and which he believed he owed to the daily drinking of five to seven quarts of cold water, thereby taking up the lance in favor of the water-doctors, who were at that time bitterly reviled.

Among Theden's innovations his arquebusade-water made a sensation. As Schmucker had kept his eye-wash secret, Theden did likewise with his remedy: "I had sufficient reasons for not divulging this at once." In 1782 the world received notice of an improvement in this remedy, by which, instead of the so-called sorrel-water, vinegar was used in the arquebusade. For the tincture of antimony he used a new preparation which made him an expense of several hundred thalers, as he himself usually prepared most of the medicines which he used as surgeon-general, in order to have them as good as possible. When the Sardinian ambassador to Berlin, the Marquis von Rosignan, had shown him India-rubber, which de la Condamine first described minutely to the Paris academy in 1751, Theden undertook to make surgical instruments from the solvent resina elastica (in naphtha vitrioli or sulphuric acid according to Macquer), which was then very expensive. He made elastic catheters principally, which he in 1777 introduced to A. G. Richter, afterward his friend, by means of a circular, and sold for six thalers apiece, or four for three Louis d'or. He also made breast-pumps out of India-rubber which were very similar to those at present made of shell, upon which a funnel-shaped sucking-bottle was placed which drew out the nipple. In later years he lacked the time to make the instruments himself. Among his other improvements should be especially mentioned a method named for him of enveloping the limbs from the fingers and toes upward for the resorption of exhausted fluids, particularly after unsuccessful bleeding and the aneurysma spurium arising therefrom in old sores, dropsies, varices, contusions, and also for the alleviation of pain in certain operations, as in the opening of a felon. Theden made himself further known through his concave splints of walnut for fractures, his polyp-tweezers and the operation of hydrocele; he declaimed against the great number of complicated and superfluous instruments, and he expressed of Heister the wish that he had used his influence for the reform of useless instruments. He made a mistake in defending so earnestly the tamponade of the arteries instead of the ligature. The field-hospitals owed to him many improvements, especially the introduction of his system of ventilation, which has already been described in chapter four.

At an advanced age after having joined in every campaign for thirty-four years, Theden began to write. He began in 1771 with the first part of his "New Notes and Experiences for the Enrichment of Surgical Science," but acknowledged later, just as Schmucker had done, that on account of pressing duties which only permitted him to write at night, this book was too hastily prepared and not sufficiently elucidated. "While I was never a writer and usually feared to allow the few things of mine to appear, . . . nevertheless this book brought me more honor than I myself could hope for, in proportion to my experience, scientific education and culture." In this volume are chapters on the envelopment of the extremities, arquebusade-water, tamponade of the arteries, douche for ankylosis, gunshot wounds, cold applications in strangulated hernia, superfluous instruments, among which in most cases Theden counted scissors, which were said to cause a bruised wound and therefore more inflammation and pain than the bistoury, etc. The second volume appeared in 1782 and contained articles on hyrdocele, trepanation, exfoliation of the bones, aneurysms, concussions, tincture of antimony, various fractures, etc. In the third volume (1795) were essays on sublimate, intermittent fever, wounds of the joints, the opening of the bladder, the results of drinking cold water, electricity, castration, treatment of gunshot wounds, etc. In this he published for the first time the decoction for syphilis given him by the Saxon general-staff physician Zittmann (†1757). In 1774 the "Instructions for under-surgeons in the army" already mentioned appeared.

The other Prussian military physicians were of less importance than these three surgeon-generals. *Voitus* (1745–1787), the son of a schoolmaster, had through zealous diligence raised himself from poverty. At the close of the Seven Years' War he went to Berlin as company surgeon, where he shared with some poor artisans a little room which scarcely allowed him to stand upright, and subsisted almost entirely on herrings and potatoes. Schmucker accepted him as a pensioner, then promoted him to regimental surgeon. Frederick II. sent him to France in order to learn new operations, especially that of the rectal fistula. In Paris he also studied obstetrics. In 1779, after Henckel's death, he became professor of surgery in the Colleg. Med. Chir., chief surgeon in the Charité, and later third surgeon-general. Except two addresses on the acquirements and qualifications of a good surgeon, he published nothing, but was a popular teacher and obstetrician. His successor as professor, surgeon in the Charité and surgeon-general was *Mursinna* (1744–1823). The son of a cloth-maker, and at first destined for that trade, he entered a barber shop in his 13th year and served in Prussian and Russian field-hospitals till Theden made him hospital surgeon. When he saw the institutions of Berlin he vowed "not to rest until he himself became a professor." After peace was restored the want of money drove him again to the barber shop until he was made a company surgeon, and in 1887 was promoted to be third surgeon-general. When he had taken part in the war from 1790 to 1807, but was mustered out at the disbanding of the army, he devoted himself to the profession of teaching, having previously been appointed first professor of surgery in the Collegium Medico-Chirurgicum, and chief surgeon and first obstetrician in the Charité. In his "Medico-Chirurgical Observations," (2 Vols. 1782; "New Observations" 1796), which followed works on dysentery and obstetrics, one meets things which allow Mursinna's veracity to appear somewhat questionable. For example, he asserts, among other things, that within forty years he performed 908 extractions of cataract. *Gorcke* (1750-1822) was a man of pre-eminent administrative ability; he likewise began as a company surgeon and became, after Theden's death, general-staff physician and chief of the military medical department of Prussia. Extensive travels had made him familiar with the medical writings, hospital management and educational institutions at home and abroad, the advantages of which he sought to bestow upon his fatherland. During the Rhine campaign he introduced movable field-hospitals, improved the service in them and founded the Pépinière. Upon his suggestion in 1795 were first introduced into the Prussian hospitals, ambulances which rested upon springs, after he had bought such a one in Rinteln, which the English army had left behind them on their departure from Holland, at a cost of 250 thalers apiece. Twelve such wagons were built at Potsdam after this pattern (each of which would carry six severely wounded men lying down and a number of slightly wounded who could sit up). In the year 1806 he had the hospitals under his direction, gave the company surgeons an increase of salary, appointed general physicians to the army-corps, founded a medical staff and secured a definite military rank for military physicians. It was also due to him that the first physician of a field-hospital became at the same time director of it. Upon his recommendation in the year 1811, a medico-surgical academy for the army was erected in place of the Collegium Medico-Chirurgicum abolished in 1809 at the founding of the Berlin University. *One of his chief services was* to have the system of the distribution of patients formulated and established. These various improvements were tested during the war for freedom, where chiefly his name and his personality served the necessary medical force. He was the regenerator of the Prussian sanitary system of the army.

Among the other regimental surgeons there were a few who were urged by Bilguer and Schmucker to literary work, although as a rule nothing more than a simple record of cases without any scientific value was produced from that source. Bilguer's "Surgical Observations". and Schmucker's "Miscellaneous Essays," as well as the periodicals of Loder, Hufeland, Mursinna and Arnemann comprised these productions. One of the most talented of the regimental surgeons was *Jasser*, whose name is remembered in our own time through a sulphur salve for scabies. To be sure he was not the originator of this, for as early as the year 1667 a Prussian court physician Balthasar Timaeus à Guldenklee ("Cas. Med." Leipsic, p. 277) had used such a salve for scabies; but it had been forgotten. Jasser received the ointment in 1778 during the war from his landlady whose dead husband had cured many soldiers with it, and he treated 260 cases of scabies with it; Schmucker and Theden followed his method. Besides this he was the first in Germany to perform a trepanation of the pr. mastoideus, and he published an account of the treatment of a liver wound, in which he had successfully bound up a piece fallen forward and strangulated; likewise an injury of the larynx and esophagus. His colleague *Ollenroth* described a successful tapping of the breast with inhalations of warm vapor, a pericardial wound and a second lithotomy upon the same patient; he also invented out of sixty-one smooth tin balls and a sponge an instrument still in existence, for extracting foreign bodies from the esophagus. He recommended the mixture of cold water and milk in nephritis, cold application in strangulated hernia, etc. *Seeliger* recounts the healing of a shattered arm which hung by only a small strip containing the nerves and arteries. *Jung* cured a hand cut almost entirely in twain. *Morgenstern* published an account of a case of inflammation of the arm with thrombosis of the arteries. *Rudiger* told of a luxation of the spinal column and a gunshot injury of the neck. *Buddeus* wrote of the uses of amputation in exhaustion. *Horn* recommended cold applications in wounds of the joints, and objected strenuously to the bleeding of exhausted soldiers. *Cramer* cured an aneurysm by compression, while he laid a long compress upon the course of the arteries and enveloped the entire arm. These observations are all in Schmucker's "Miscellaneous Essays." The medico-surgical writings of *Hemmann* are said to have been declared fabrications by the author upon his death bed.

The medical writers in the army were extraordinarily rare, because too few educated physicians were in the field; therefore very little is known of the diseases in the Seven Years' War. *Baldinger* was a noted exception, who had taken part in this war and wrote on the "Diseases of an Army" (1765). He was later professor of medicine in Jena, Göttingen and Marburg. More of a scholar than practitioner was Professor *Ackermann* in Altdorf, who published a "Manual of the Medical Science of War" (2 Vols. 1795), and another on "Medical and Surgical Science in Armies" (2 Vols. 1797).

We now turn to *Austria* and at first find there the same crude conditions as those in Prussia. There, also, the under-physicians were wholly ignorant. Escaped from the barber shop they knew nothing of surgery, nothing of internal medicine, and could do scarcely more than nurses. One may glance at the primitive directions which van Swieten, who indeed had never been in the field, soon after the beginning of the Seven Years' War, laid down in a manual on "The Treatment of Diseases Prevalent in the Army," in order to gain an idea of the low plane of education of the military physicians. In this work is explained the absurdity in Austria (just as in Prussia) of the bleeding, without discrimination, of wearied soldiers upon the march. This custom was so general that even the officers in the spring and fall ordered bleeding and purgatives for the whole company. Thus more soldiers perished by the lancet than by the lance! Naturally, no good surgeon would serve in Austria for a monthly salary of from six to ten guilders. Indeed, they forbade the boxing of ears in the army, cashiered every officer and reduced the under-officers, and sentenced them to run the gauntlet six times through three hundred men, if they kicked a soldier or struck him. But about the same time (1769) they gave the staff-officer the right to address the regimental surgeon as "*Er*," and in the review, when everyone was allotted his rank, placed him behind the last cadet. For the want of good surgeons Maria Theresa had French surgeons brought, but they were for the most part unskilled, ignorant of the language and customs of the country, and did more harm than good in the army. The religious intolerance brought it about that all the protestant field physicians were taken out of the army, in the beginning of the Seven Years' War, if they would not be converted. Joseph II. had first to convince himself of the misery of the wounded soldiers and the small number of capable surgeons, in order to institute a thorough-going reform by the founding of Joseph's Academy. He said at the end of his life, that "whatever could be devised for the cure of sick and wounded men, or for their relief and maintenance, had never been neglected by him, and every man had been precious to him." He gave his staff and regimental surgeons, who had to be doctors, permission to treat civilians externally and internally, and he gave the under-surgeons the rights of their burgher colleagues; he increased the salaries in order to immediately abolish the abuse of the field surgeons accepting presents for visiting the recruits, and he pensioned the widows of field surgeons.

When Prussia in 1787 came forward with a new regulation, the Austrian emperor within a year thereafter had the sanitary system of the army reorganized by Brambilla. First of all, the Austrian military physician was to present himself in his uniform. At first he wore that of the regiment in which he served; in that way many annoyances arose, so that they devised a special dress. The coat was white and dark blue mixed, lined with red sleeves faced with black velvet, the waistcoat and breeches of red cloth. At each side of his face hung a single curl; behind, the hair was plaited with a black ribbon. Buttons, sword, and tassel on the black hat were gilded; the amount of gold increased with the rank until the surgeon-general was quite overloaded with it. This so-called proto-surgeon, at the same time court counsellor and court surgeon to the Emperor, director of Joseph's Academy, and inspector-general of all the military hospitals, was war counsellor *only at the court*; in the field, however, he was subordinate to the commanding general of the army. Under him were the professors of the Academy, then successively, the staff, regimental, battalion and under-surgeon, which last had the rank of a sergeant. While on the one hand Joseph II. sought to elevate their station, and commanded the regimental surgeons to address their subordinates as "*Sie*, because they were scientific men," he forbade them to write complimentary letters to their superiors at New Years and other festivals, yet on the other hand restricted them. For example, *no one could publish a scientific work without having* first submitted it to the proto-surgeon and received his permission. It is asserted that in the nineties, the Austrian field-physicians were threatened with arrest if they did not treat the patients according to the Brown system. Their salaries were as follows:

	In Peace.	In War.
Proto surgeon . . .	3,000 guilders.	Besides the salary, rations for six horses and four bread rations with the field quota.
Staff-surgeon . . .	600 guilders and free quarters.	1,200 guilders, rations for four horses and four bread rations.
Regimental surgeon	600 guilders.	. . . .
Battalion surgeon . .	240 guilders.	. . . .
Under-surgeon .	168 guilders and quarters.	180 guilders.

The pensions for staff-surgeons amounted to 400 guilders; for battalion surgeons 100 guilders; if a regimental surgeon wished to marry he must give security to the amount of 1500 guilders. When vacancies occurred the commander had the right to make suggestions to the proto-surgeon. While the soldiers were treated gratuitously, the higher officers had to pay if they became sick through debauchery and intemperate living.

On the breaking out of war the proto-surgeon appointed the staff-surgeons to the army and to the hospitals; he himself remained with the main army, together with two commanding staff-surgeons for the the right and left wings. Each company received its under-surgeons. The army corps were provided with instruments and medicine chests out of the magazine in Joseph's Academy. Each regiment received two chests, which were packed upon mules or horses; they also received sufficient bandaging material and instruments, which were carried in the knapsacks. During a battle the proto-surgeon was stationed in the rear with the staff-surgeons, where a flag indicated the place for bandaging. The transient hospitals were located in the adjacent villages. All the military physicians were expressly ordered to "care for the wounded officers first and then for the other men, friend or foe, with the same zeal." The shattered limbs were placed in splints, or if these were lacking, they were wrapped with the shirts of the wounded. The staff-surgeon was to take care that limbs were not amputated unnecessarily. It appeared to be the custom, especially among the Austrians, when wounded, to wish for an amputation of their limbs in order to obtain a pension. Accordingly, in the hospital at Streigau, in 1745, Theden was obliged to make an extraordinarily large number of amputations at the solicitation of the imprisoned Austrian generals. Those who were severely wounded were transported to the chief hospital in wagons, with a physician accompanying them. For this purpose churches, castles, large buildings or barracks were appropriated. The wounded among our own men were separated from those of the enemy, and those needing medical treatment from those needing surgical attendance. The chief hospital was under the supervision of staff-surgeons, of whom each one looked after four hundred patients, bandaged the worst cases twice a day with his own hands, performed the important operations and reported every two months to the proto-surgeon. From 100 to 150 sick or wounded were allotted to each over-surgeon with four under-surgeons; but these were changed every one or two months from the inner to the outer stations. If they did not behave themselves the staff-surgeon had the right to put them under arrest for a few days. Soldiers, for the most part those who were awkward in drill or very disagreeable to their comrades, served as attendants. Under strict diet the food was divided into one-fourth, one-half, three-fourths and full portions. The strict diet consisted of a meat soup, sometimes made stronger by the yolk of an egg, and was given several times a day, and also at night to the severe cases. A full portion for a convalescent consisted of soup, five ounces of boiled beef without bones, vegetables, bread, and a pint of wine or beer. Experience in the Seven Years' War had taught that in consequence of the narrow quarters and bad ventilation, typhoid fever and scurvy wrought almost as great havoc in the royal army as did the bullets of the enemy. They insisted strenuously therefore on fresh air in the hospitals, and even went to the extreme of having three air-passages in the wards; an upper one for the fresh air, a middle and lower one to carry off the foul air. The beds, of which each patient had his own, were provided with a black tablet and number, and placed far enough apart that a table would fit between them. Instead of a chimney, openings were made in the windows, and Theden's ventilators were used in the wards, while fumigation was discountenanced. In summer, in good weather, the doors and windows remained open the whole day; in winter they were closed, but fresh air was admitted through the ventilators, morning and evening, after the bandaging had been done. Tobacco smoking in the wards was strictly forbidden.

Among the Austrian military physicians scarcely one deserves to be mentioned. Aside from Brambilla and a few professors in Joseph's Academy, who have already been mentioned, there is left to introduce only the field staff-physician Louvrier, who with Mursinna wrote a prize essay of that academy on "The Indications of Trepanning" (1800) and re-introduced the inunction cure for syphilis.

There is little to relate of the rest of Germany. Scientific aspirations were felt in Hanover earlier than in other states, for there King George I. of England, for the sake of advancing surgery, provided a course of instruction for his German troops. It was conducted by the court field-physician Wolf, court and general-staff surgeon J. E. Wreden, and general hospital surgeon Kannengiesser, and served to unite the Hanoverian regimental surgeons, of whom some had studied anatomy and surgery in Paris at the expense of the state; it also moved them in 1721 to undertake a yearly publication of their most important observations. *Wreden* published this collection in 1722-23, as "Collect. chir." *Evers* later came to the front among the Hanoverians; he had studied in Berlin and after the Seven Years' War had lived in Paris and Rouen, where he had dwelled with le Cat several months in order to learn lithotomy. He devised a bandage for the cure of the severed extensors of the finger and also for the transverse fracture of the patella, and described a cure of fistula of the anus without operation. (Neue vollst. Bemerk. und Erfahr. 1787; and several papers in Richter's Bibliothek.) It has already been mentioned that a Collegium Med. Chir. for the better training of army surgeons in *Saxony* was erected in Dresden under Pitschel (1748). In *Wurtemberg*, Duke Charles added a medical faculty to his military academy (Carlsschule) when he removed it to Stuttgart in 1775. Among the seven students who first reported to that school was Schiller. Toilets were made, dinner eaten, prayers said, lectures heard, and retiring at night, all were done by order. At dinner the students filed off in two columns, the nobles to the right and the commoners to the left, into the dining room. They fronted about to the table and upon a signal all folded their hands in prayer. That nothing could be accomplished by this drumstick discipline needs no demonstration. *Bavaria,* in the year 1802, first inaugerated a reform in its army sanitation, and from that time on no one was promoted to regimental surgeon who had not graduated from the gymnasium and studied the whole of surgery so as to combine in himself physician and surgeon.

(*To be continued.*)

SOCIETY PROCEEDINGS.

American Association of Obstetricians and Gynecologists.

Proceedings of the Tenth Annual Meeting, held at Niagara Falls, N. Y., Aug. 17-20, 1897.

(*Concluded from page 441.*)

SECOND DAY—MORNING SESSION.

POST-CLIMACTERIC CONDITIONS THAT SIMULATE ADVANCED UTERINE CANCER.

A paper on this subject was read by Dr. M. ROSENWASSER of Cleveland, Ohio. The writer commends the teaching that irregular hemorrhages and sero-sanguineous discharges, whether occurring during the parturient stage or long after the menopause, are good and sufficient reasons to suspect malignancy. We carefully watch for early symptoms and by their detection occasionally succeed in removing the disease while it is still local. On the other hand, we sometimes are caught off our guard when confronted by post-climacteric cases presenting all the classic characteristics of advanced malignant disease. Without the same circumspection exercised in the early stages we thoughtlessly pronounce the case beyond remedy or hope, specifying even the extreme possibility of life. The text-books are deficient in not sounding a note of warning against possible errors in the late stages. The so-called classic symptoms may be due to other (not malignant) conditions of the genital tract. Owing to effacement of the vaginal portion of the cervix in old age the differential diagnosis is in most cases limited to corporeal diseases of the uterus. Before the diagnosis of corporeal cancer can be made other diseases must be excluded.

The conditions which are likely to simulate advanced cancer are the following: 1. Senile vaginitis. 2. Foreign bodies in the vagina. 3. Gangrenous fibroids. 4. Atrophic, senile or post-climacteric endometritis. 5. Post climacteric pyometra.

Of these conditions the last is especially liable to lead to errors. The writer gave the details of a case of pyometra occurring recently in his own experience and submitted abstracts of five more or less similar instances found scattered in the literature of the past seven years. In all these cases either a positive or provisional diagnosis of corporeal cancer had been made.

In conclusion, the author called attention to the singular fact that in the presence of the essential conditions—age, low vitality, cicatricial tissue, adhesions, chronic inflammation and irritating discharges—cases of transformation into malignant disease are either unknown or exceedingly rare.

(The afternoon was devoted to sight-seeing.)

EVENING SESSION.

Dr. RICHARD DOUGLAS of Nashville, Tenn., followed with a contribution on

CERTAIN CYSTS OF THE ABDOMINAL WALL,

in which he confined himself to a consideration of abnormalities of the urachus, and reported an interesting case of urachal cyst which occurred in a woman 36 years of age, married eleven years and sterile.

CONSERVATION OF THE OVARY.

A paper on this subject was read by Dr. B. SHERWOOD-DUNN of Los Angeles, Cal. The author said that Brown Sequard believed and taught as a principle of physiology that every gland, whether *or not* provided with excretive ducts, gives to the blood a certain useful principle, the absence of which is felt and made apparent after their extirpation, or the destruction or modification of their functional activity by disease. The recent publication of researches made by Mond and Chrobak of Vienna, Jayle and Lissac of Paris, Mainzer of Berlin and Muret of Lauzanne, had given definite form to certain ideas that the speaker had conceived upon this subject, born of a series of observations taken in his hospital service in Paris of a variety of troubles and functional disturbances which more or less constantly follow as a result of double oöphorectomy. These various troubles and functional derangements, which are constant although variable in degree in women who have had the menopause anticipated by castration, form to his mind one of the strongest arguments in support of the glandular theory.

From observations made upon 100 cases operated upon in Broca and St. Louis Hospitals in Paris he found that where the woman had prematurely lost both ovaries 78 per cent. subsequently suffered a notable loss of memory; 60 per cent. were troubled with flashes of heat and vertigo; 50 per cent. confessed to a change in their character, having become more irritable, less patient, and some of them so changed as to give way to violent and irresponsible fits of temper; 42 per cent. suffered more or less from mental depression and 10 per cent. were so depressed as to verge upon melancholia. In 75 per cent. there was a diminution in sexual desire and some of these claimed they experienced no sexual pleasure; 13 per cent. were not relieved of the pain from which they suffered; 35 per cent. increased in weight and some became abnormally fat. Some complained of a diminution in the power of vision; 12 per cent. noted a change in the tone of their voice to a heavier, more masculine quality. Some 15 per cent. suffered from irregular attacks of minor skin affection; 25 per cent. had severe headaches, as a rule increased in intensity at the menstrual period. Equally as many complained of nightmare, more or less constant, while about 5 per cent. suffered from insomnia. In a few cases there existed a sexual hyperexcitability not present prior to the castration. He particularly noted a few cases presenting gastric reflexes where without any premonitory symptoms or apparent cause the stomach would reject food or refuse to prepare it for intestinal digestion and the consequent distress following the fermentation compelled the patient to seek relief. It should be noted that usually these troubles were more marked in women under 30 or 33 years of age.

He had been favorably disposed to the hypothesis advanced by Brown-Sequard for some time and any skepticism that he may have entertained of the theory of ovarian secretion and its usefulness and necessity to the equipoise of the whole system has been completely dissipated by the results of experiments made with ovarian substance, or ovarin, in patients who have lost both ovaries or were suffering from troubles which in a greater or less measure were due to a diseased condition of the ovary. In the observations of the authorities mentioned use was made of: 1. The ovary in its natural state. 2. The desiccated and powdered organ. 3. Glycerin extract of the ovary. 4. Liquid ovarin. The first form presents two objections, viz., difficulty of obtaining the fresh organ and greater difficulty in getting the patient to take it. The second form of powder has been the one most favored by all and has given as good results as the administration of the hashed fresh ovary or of the glycerin extract or the hypodermic injection of liquid ovarin prepared after the method of Brown-Sequard and preserved in sealed tubes. The essayist has so far used only the powder and the tablets, the latter in only one case, which did not respond as quickly as the others and he soon changed to the powder. But he would not say that one is better than the other as he had not given the tablets a fair trial, neither could he expect such good fortune as that the good effects observed in his three cases will continue in those that follow. The author closed with the report of three interesting cases.

SOME OBSERVATIONS UPON VENTRAL FIXATION.

By Dr. HERMAN E. HAYD of Buffalo.

In this paper it was stated that ventral fixation, or suspension of the uterus, coupled with the various plastic operations upon the cervix and vagina is the only means surgically or anatomically which will fix and support for future comfort and well-being an extremely prolapsed uterus. However, because a uterus sometimes offers a serious impediment to delivery by interfering with the proper dilatation of the organ is no reason why the operation should be relegated to oblivion. *Per contra,* it should be employed to relieve that large class of suffering women who have passed beyond the child-bearing period and who most frequently are the victims of extreme procidentia uteri. In his last six cases of ventral fixation he sewed the uterus to the abdominal wall with chromocized catgut (No. 3) and did not even scarify the peritoneal covering of the uterus. He held the organ by thin sutures, which took in simply the peritoneum and the connective tissue over it; but in one case where the organ was very heavy and the woman short and stout he hitched on to the rectal fascia and muscles. He has invariably sewed the anterior surface of the uterus, feeling more satisfied with the position assumed under these circumstances than where the sutures catch the superior and posterior surface as is advocated in ventral suspension. In the cases he has operated on and those he has examined after operation of ventral suspension he has found the organ in a too anteflected position and it may be the cause of some future annoyance. He has discarded silk and all unabsorbable ligature materials, believing that catgut can be sterilized and rendered absolutely safe and is perfectly manageable.

Dr. James F. W. Ross of Toronto delivered the President's Address. He selected for his subject

SURGERY AND FACTS.

He said the work of the Association was confined between the diaphragm, the perineum and the abdominal walls and that the members had met to cultivate and promote a knowledge of whatever relates to abdominal surgery, obstetrics and gynecology. Attention was drawn to some unsettled questions, the first being peritonitis. Are we able to do more to save the lives of patients suffering from this disease in its acute form than we were ten years ago? Are we not but little better off with all our antiseptic and aseptic washes, gauze and tube drains and purgatives? He was satisfied that surgery could carry us no further when battling with this disease. The question of operating upon the appendix and the diagnosis and treatment of ectopic gestation had been fairly well settled. The method of dealing with the pedicle in ovariotomy had been settled, except for the fact that some operators preferred silk, while others were assured of the safety of catgut. Operations upon the gall bladder and gall ducts had been performed many times during the past ten years and they were now well recognized as proper surgical procedures. The operations of nephrectomy and nephrotomy were looked upon as everyday procedures justified by the consensus of surgical opinion. Abdominal hysterectomy was an operation that had been much improved and simplified, some operators being still wedded to the clamp, while others preferred some of the other methods. The advisability of oöphorectomy for some fibroids could not be doubted. There were two operations performed that Dr. Ross thought are of doubtful value, viz., the fastening of the kidney to the side and the fastening of a uterus anywhere. He considers that 'these operations have been recklessly performed and unnecessarily done.' Another class of operations to which more thought must be given were those for intra abdominal and intrapelvic cancer. When peritoneal cancer has been diagnosticated, surely exploratory operation is uncalled for. Operations for other forms of cancer are of questionable utility. Take, for instance, resection of a cancerous intestine, gastroenterostomy for pyloric cancer and removal of the uterus for uterine cancer. Gastro-enterostomy and resection of the intestine are poor makeshifts. For carcinoma uteri vaginal hysterectomy is the only operation that should be contemplated, but at best it prolongs life for but a short time.

Dr. C. C. Frederick of Buffalo, N. Y., read a paper entitled

WHICH IS THE PREFERABLE OPERATIVE METHOD OF HOLDING THE UTERUS IN POSITION?

'All retroversions do not produce symptoms, but a certain proportion are accompanied by hypertrophy of the uterus, endometritis, leucorrhea, pain, backache, menorrhagia, metrorrhagia or general malaise. Constitutional treatment fails to relieve a large proportion of them without restoration of the uterus to a normal position and a cure of the accompanying hypertrophy and endometritis by reposition. The large factors in the continuance of the ill effect of retroversion are torsion of vessels, infection of the endometrium and defective drainage of the uterine cavity. Retroversion is a first stage of prolapse, and ought for that reason alone to be replaced and held in position. Sterility is one frequent result of retroversion. Results of treatment are good by operation or by holding the uterus in position by a pessary, if possible, together with general tonic treatment, Weir Mitchell rest treatment, etc. A large proportion of cases are cured and eventually get strong and well again. Ventrofixation has been discontinued by the writer in women liable to bear children. He uses it only to hold up the uterus in operation for prolapse and in those cases where he has removed both tubes and desires to hold the uterus in position, time being an element in the operation. The writer has seen no ill results during labor and knows of none occurring in his own cases, although several have borne children. He has seen no recurrence of retroversion, even in those who have borne children. His preference is given to the Alexander operation or some of its modifications in cases of women who have borne children and there are no adhesions or diseases of the adnexa. Women who have never been pregnant are liable to have poorly developed round ligaments, liable to tear away from the anchoring sutures. In these he opens the abdomen and shortens the round ligaments by one of the methods devised by Mann, Dudley or Wylie. He gives Mann's method the preference. Several of the patients have borne children both after the internal and external shortening of the round ligaments, with good results. The writer now uses unabsorbable ligatures or sutures, always using plain catgut or chromicized catgut when a suture is used for a long period. He never has used any of the vaginal methods of fixation, not being pleased with them.

The uterus will now appear as far forward in either of the methods of shortening the round ligaments as it is in normal anteversion, but the pressure upon the posterior surface of the uterus will force the body into extreme anteversion, and in a few months will appear perfectly normal in position.

THIRD DAY—MORNING SESSION.

THE TECHNIQUE OF THE DRY METHOD

was the title of a paper by Dr. Edwin Walker of Evansville, Ind., in which he said that by the dry method is meant a technique in which no water or other fluid is used. This does not apply to the preparation before the operation. After the first stroke of the knife until the wound is closed, not a drop of water is used. The writer has employed it exclusively for several years with good results. The technique is as follows: Nurses are instructed to use every precaution to prevent soiling the hands in septic cases and to thoroughly disinfect the hands after any suspicion of contamination. Every instrument used is sterilized before it is put away. The hands are scrubbed thoroughly with a brush, with liquid soap (equal parts of green soap, glycerin and alcohol), and repeatedly rinsed in sterile water. They are then wiped off with alcohol, dipped for two minutes in bichlorid solution, 1 to 1000, and then washed off with salt solution. The field of operation is similarly prepared, except that the scrubbing is repeated daily for two or three days before the operation, and a soap poultice used at night. The instruments are boiled in soda solution for five to ten minutes, wrapped in towels or placed in metal boxes, which are opened only at the time of operation. Plain gauze is used for every purpose except packing the uterus, and in rare instances where drainage is used iodoform gauze is preferred. The silk ligatures are wrapped on spools and placed in glass boxes, and the silkworm gut and silver wire in long glass tubes and all sterilized by steam, as are the dressings. The plain catgut is boiled in alcohol and the chromicized is prepared after Edebohl's method. After the patient is placed on the table the dressing, which consists usually of plain gauze, is removed from the field of operation, and sterilized towels adjusted as usual. The instruments are unwrapped, and everything is in readiness. The sponges are used dry and thrown away when soiled. The flat sponges in the abdomen are also used dry, and are provided with a cord which is clamped with a pincette. The latter is left outside, so that the sponge can not be forgotten and left in the abdomen. The author has not had extensive experience in puerperal sepsis or general septic peritonitis, but would be inclined to use it in both these conditions, for it has proven satisfactory in sepsis following abortions and localized collections of pus in the abdomen.

SURGICAL SHOCK AND HEMORRHAGE, WITH REFERENCE TO PREVENTION AND TREATMENT.

This paper was read by Dr. Walter B. Chase of Brooklyn, N. Y., in which the author presented the following summary:

1. The treatment of shock should be preventive and curative, and to a large degree the indications for the former define the lines of treatment in the latter.

2. The proper exhibition of preventive measures includes a careful study of the functional activity and organic status of all important organs, and such treatment by hygienic, dietetic and therapeutic measures as will elevate the standard of bodily and mental health to a degree in which the maximum power of resistance may be produced and maintained.

3. Special emphasis should be given to lithemic and uremic excretion, and to the condition of the circulatory and nervous systems.

4. Knowledge as to inherited power of resistance to, and recovery from, serious disease and accidents, are of the highest value in determining the course of procedure and in estimating the chances for recovery after capital operations.

5. A supply of facilities and drugs for meeting all emergencies should be in constant readiness, with exact knowledge for the indications, dosage, physiologic and therapeutic effect of special heart tonics and stimulants, including strychnia, digitalis, nitroglycerin, etc.

6. Limit the time of an operation to the shortest space compatible with thorough work and proper technique.

7. Save the patient from the shock of fear to the utmost, and in selected cases proceed to operation without informing the patient of your purpose.

8. In shock with hemorrhage supply the volume of venous and arterial loss by direct transfusion of normal salt solution into the patient's veins.

9. Bear in mind the influence position has on the circulation under both shock and hemorrhage, especially in anemic conditions of the cerebrospinal nerve-centers and the heart.

Dr. W. H. Wenning of Cincinnati, Ohio, read a paper on

PLACENTA PREVIA WITH SPECIAL REFERENCE TO TREATMENT.

The following is a summary of the treatment laid down by the author in the order of time of the accident, amount of hemorrhage, and condition of the patient:

a. Before labor.—1. Hemorrhage slight, rest, expectant treatment. 2. Hemorrhage moderate; tampon vagina. 3. Hemorrhage profuse; also try tampon and induce labor.

b. In the beginning of labor.—1. Hemorrhage moderate; Braxton Hicks' method, provided the obstetrician has skilled assistance at hand, otherwise tampon the cervix with the cervical bag, until *c, labor is well in progress*, then rupture membranes and deliver by podalic version, or if hemorrhage is arrested by the descending head, deliver by forceps or permit spontaneous expulsion, if pains are good.

At any stage, when hemorrhage is excessive or can not otherwise be arrested, manual dilatation, followed by *accouchement forcé.*

The tampon is *indicated:* 1. In hemorrhage toward the end of pregnancy. 2. In the beginning of labor when the os is closed. 3. In moderate dilatation of the cervix—then use cervical tampon. *Contra-indicated:* 1. When dilatation is complete or nearly so. 2. When it fails to arrest hemorrhage even when dilatation is not far advanced.

Rupture of the membranes is *indicated:* 1. When the os is well dilated and either spontaneous labor or artificial delivery may occur. 2. When by this method hemorrhage is better controlled than by other means. 3. When in the absence of labor pains it will be followed by immediate pressure of the presenting part. *Contraindicated:* 1. When os is undilated and pains good. 2. In faulty presentation of the fetus unless it can be followed immediately by version.

Version is *indicated:* 1. When the os will admit two fingers and combined version can be readily made—Braxton Hicks' method. 2. When the os is well dilated or dilatable and hemorrhage is profuse, direct or internal version. 3. In desperate cases, *accouchement forcé. Contraindicated:* 1. When with a moderately dilated os combined version can not be skilfully made (the cervical tampon). 2. When with a well dilated os after rupture of the membranes the head immediately engages in the cervix.

In all cases strict supervision from the onset of labor to the end of delivery.

A paper entitled

COMPLETE HYSTERECTOMY AFTER INJURY DURING PARTURITION AND CÆSAREAN SECTION WITH REPORT OF CASES

was read by Dr. Joseph H. Branham of Baltimore.

The first patient was 24 years of age, female, married, and had been pregnant for the third time. As the pelvic contracture was so marked there was no hope of a living child being born naturally; the child was delivered by Cæsarean section. The patient lost considerable blood per vaginam after the operation and rapidly developed symptoms of septic infection. She died two days and a half after the operation. The question arose as to whether Cæsarean section or symphysiotomy was the better procedure. The essayist thinks the latter would have given the best chances for recovery, but as infection had already taken place, in all probability the final result would have been the same, and even craniotomy under the circumstances would likely have proved fatal.

The second case was one of rupture of the uterus. The mortality of this condition was said to be 80 per cent. The accident may occur at any time from the third month of gestation until the termination of pregancy. The causes and prominent symptoms of rupture of the uterus were detailed. *Treatment:*—When symptoms of uterine rupture occur, delivery should be completed as rapidly as possible by the use of whatever means may best bring about the results. The child nearly always dies in a few minutes, so that only the mother should be considered. If the child has escaped into the abdominal cavity immediate laparotomy is indicated. After the child had been delivered two methods of procedure are recommended by authority. One is the closing of the tear by packing with iodoform wicking and drainage of the parts with gauze. The other, which in complete ruptures is often more popular, is to do a laparotomy, cleansing the peritoneal cavity. In suitable cases close the tear by the Sänger method. If the tears are very extensive and there is a strong probability of uterine infection, a Porro operation or complete hysterectomy is the best method. The preventive method consists in the early relief of difficult labor by suitable operative interference, instituted before the uterus has become very thin and damaged by long continued pressure between the presenting part and the bones of the pelvis.

Dr. X. O. Werder of Pittsburg, read a paper on

TONIC AND SPASMODIC INTESTINAL CONTRACTIONS WITH REPORT OF CASES,

in which he reviewed five cases, one by Dr. Murphy, two by Dr. Long, and two of his own, reported by Dr. Long at the Richmond, Va., meeting of the Association, and adds some additional cases of a similar condition that he has observed subsequently. He referred to cases reported by L. Heidenhain and applied the term enterospasm, dividing the cases according to their nature and severity into spasmodic and tonic or tetanic forms. He considers that they are perversions of normal peristalsis due to a reflex chemical irritation exerted at the seat of contraction (either on the mucous or serous surfaces of the bowel) or elsewhere in the alimentary canal or abdomen, and shows that they assume surgical importance when, in the spasmodic varieties they simulate neoplasms as in three cases of that variety reported; or when they cause obstruction to the fecal current, becoming true cases of dynamic ileus, as in the five cases above referred to. Regarding the accuracy of diagnosis in these cases there can be but little doubt. Dr. Long's cases had undoubted symptoms of intestinal obstruction that varied in intensity over quite a long period. Operation revealed firm contractions of bowel. Careful search failed to show any other cause for the symptoms. Dr. Murphy's case previously treated for several attacks of lead colic, operated on for intestinal obstruction of several days duration, nothing was found but firm contraction of bowel. It relaxed after exposure to air. Three hours later spontaneous bowel movements occurred. Dr. Werder's first case gave history of previous attacks following ingestion of articles of diet made of milk. Simple salpingo-oophorectomy for simple sarcoma. Clean case. Excellent condition for first six days. Onset of attack sudden and followed ingestion of egg-nogg by an hour or so. Symptoms of partial intestinal obstruction that later became complete, plus depressing defects of some toxic agents, were noted. Especial attention was called to two rational but misleading symptoms, namely, the occasional expulsion of gas for first three days (that is till patient was in collapse two days before death), and an abdomen that was soft, flat, and not tense or tender. Violent peristalsis persisted till death. Autopsy four hours later showed peritoneum everywhere glistening, normal. Pedicle covered by normal endothelium. No adhesion; no exudate; nothing abnormal could be found except firm contraction of lower 55 cm. of ileum and whole large intestine, and sacculation of section of bowel next above it. Cause of contraction attributed, as a probability, to tyro-toxicon absorption; death of patient, to intensified absorption of tyrotoxicon and other toxins forcibly retained in bowel. His second case followed vaginal hysterectomy for small fibroid. Symptoms of obstruction began earlier and were more pronounced than in the preceding case. Peristalsis persisted till death at the end of the fourth day. Autopsy two hours later showed sigmoid and ileum adherent to vaginal vault for an extent of three inches. All peritoneum visible from above was normal in appearance. No exudate. Bowel extending from seat of adhesion of ileum to valve, and from adhesion of sigmoid to anus, firmly contracted. Sacculated bowel above. Plastic lymph at seat of adhesions and at the parts exposed to vaginal gauze and clamps. Two c.c. of fluid found there. No pus visible to naked eye. No microscopic examination. Cause of contraction, chemical and mechanical irritation applied to serous surface; cause of death, possibility of mild sepsis combined with absorption of toxin from intestinal canal.

Of the spasmodic variety, the first case showed a sausage-shaped mass, three inches long and one inch thick at pylorus, with limited mobility, and mapped out at each examination by several careful observers—not present when under ether and abdomen cleansed. Abdomen opened, pylorus and duodenum delivered; looked and felt normal. On manipulation they contracted firmly and were as hard as a finger, but only to relax in two or three minutes. This was repeated several times in full view of all present. In second case, contraction found accidentally when doing a supensio-uteri. In third and fourth cases consulted for presence of tumor. Found firm contractions of bowel, near umbilicus, that resembled a neoplasm. They relaxed and contracted again several times during an examination that lasted fifteen or twenty minutes, always reappearing at the same place. Condition recognized and operation advised against. These patients were all neurotic and complained of quivering and commotion at seat of trouble, as well as of dyspepsia and obstinate constipation.

DYNAMIC ILEUS FOLLOWING OPERATIONS INVOLVING THE ABDOMINAL CAVITY, WITH REMARKS ON ADYNAMIC ILEUS.

This paper was read by Dr. **Frederick Blume** of Allegheny, Pa. The author said that considerable progress in the diagnosis and treatment of ileus following abdominal section was made when Olshausen in 1887 directed attention to an article read before the Berlin Obstetrical and Gynecological Society, to the form of intestinal obstruction which had not yet been recognized, viz., a paralysis of the gut not depending on septic peritonitis. The symptoms in these cases are increased, pulse rate normal, slightly elevated, or, in some cases, subnormal temperature and vomiting. Two or three days after the performance of the operation, or even later, symptoms of collapse manifest themselves, the pulse becomes rapid and feeble, the abdomen more and more distended and retching and vomiting more frequent. Neither gas nor feces are expelled from the rectum. Death ensues between the fourth and tenth day, and is the result of general systemic intoxication from absorption of the decomposed intestinal contents.

In a recent article Engström reviews the literature of the subject, and concludes that paralysis of the intestines can and does occur after operation involving the abdominal cavity without infection having taken place at the time of operation. Eventration and prolonged manipulation of the bowel are the most potent etiologic factors, causing irritation of the nerves of the mesentery and gut wall, and leading to changes in the circulation. From his own experience Engström is able to confirm the statement of other observers that a paresis of the intestinal wall can be produced by the administration of strong saline purgatives, and it appears to be by no means improbable that, as a consequence of their use, a weakened condition of the gut walls is produced prior to the operation. He looks upon the increased susceptibility of the nervous system, often so marked in patients about to undergo a surgical operation, as a predisposing etiologic factor.

The author said that the differential diagnosis between postoperative intestinal obstruction and dynamic ileus is practically impossible, but that in either case the only chance for the patient is afforded by early operative interference. The surgeon, however, must distinguish these forms of ileus and a very obstinate form of constipation so often met with and so difficult to overcome, after operations in the abdominal cavity. The occurrence of fecal vomiting is not always a pathognomonic sign of ileus, as this vomiting sometimes occurs in other conditions and when there exists no indication for surgical interference.

Dr. **Albert Goldspohn** of Chicago contributed a paper on

THE FATE OF OVARIES IN CONNECTION WITH RETROVERSION AND RETROFLEXION OF THE UTERUS.

He drew the following conclusions: 1, In all cases of retroversion and retroflexion of the uterus a knowledge of the ovaries as to their location, mobility and general physical condition should comprise an essential part in the diagnosis, as determining largely the nature and urgency of the treatment. 2. The welfare of ovaries, in general, demands such a degree of anterior inclination of the longitudinal axis of the uterus as will enable intra-abdominal pressure to bear upon the posterior surface of the organ, and thereby to act in unison with its other supports to retain it and its adnexa in normal position and function. 3. Inasmuch as in the female pelvis, as well as elsewhere in the human body, the natural and considerable abilities of healthy tissues to defend themselves against microbic invasion (infection) are lowered or annulled in direct proportion to any degree of mechanical embarrassment of the venous circulation in the tissues or organs, it behooves gynecologists especially to be alert in recognizing and correcting all material anomalies in place or posture of the female generative organs or in securing to them their normal freedom.

Dr. **Walter B. Dorsett** of St. Louis, Mo., read a paper entitled

THE ADMINISTRATION OF PHOSPHATE OF STRYCHNIA DURING GESTATION.

The following observations have been made by him in the use of this drug during the gestation of weak and debilitated patients: A good appetite and good assimilation are obtained in the general weakness and debility of the anemic. Constipation is relieved, the patient is built up and placed in a good condition to pass through the ordeal of labor. The uterus contracts promptly after the third stage of labor, and the use of ergot is entirely dispensed with. If he finds it necessary to use the forceps, the patient is given a hypodermic injection of 1-30 grain sulphate or phosphate of strychnia as soon as the anesthetic is commenced, but no ergot is ever used. After the continuous use of the phosphate of strychnia, the uterus contracts promptly after the second stage of labor, and in many cases the application of Crede's method of expression of the placenta is not needed to bring it away, and no postpartum hemorrhages have occurred. The frequently observed chilliness or rigors, which in the majority of cases follow labor, has been noticed in but few cases. He has used strychnia for some time in his abdominal surgery, for the purpose of preventing shock and to control the pulse in the operations, and in this way was led to its use in obstetrics. As phosphorus and strychnia are remedies used in the treatment of rachitis with good results, would it not be the remedy during the gestation of the rachitic fetus?

Third Day—Afternoon Session.

This session was largely devoted to the exhibition of pathologic specimens, with histories and photographs of the same. Specimens were presented and the histories of cases related by Drs. Vander Veer, Dorsett, Macdonald, Ross, McMurtry, Smith, Hughes and others.

Fourth Day—Morning Session.

Dr. **Geo. S. Peck** of Youngstown, Ohio, read a paper in which he reported

FIFTY-TWO CASES ILLUSTRATING HIS PERSONAL EXPERIENCE WITH THE MEDICAL AND SURGICAL TREATMENT OF APPENDICITIS.

He said there were four cardinal symptoms which will almost invariably insure a correct diagnosis, if they occur in the order given. 1. Sudden severe pain in the abdomen, generally of a colicky nature, located in any part or extending over the entire abdomen. 2. Always nausea and frequently vomiting. 3. Increased temperature. 4. Localized tenderness in the right iliac region. Some patients will have diarrhea, while others may be constipated. He had never failed to make a correct diagnosis when the four cardinal symptoms were present.

Treatment.—Surgeons differ in their methods of operating. Some advise in the acute suppurative form simple incision and evacuation of pus. If the appendix can not be easily found, it should be left, drained and packed, and then in the interval between attacks the appendix should be removed, always provided one can get the consent of the patient, which the speaker has found to be difficult. A few surgeons advise the liberation of all adhesions and the removal of the appendix in all cases of acute suppurative appendicitis and have reported good results. He believes it is the duty of every surgeon to make a complete operation in the vast majority of cases, and thinks that the time is not far distant when surgeons will advise the breaking up of all adhesions, the removal of every diseased appendix, and the closing of the incision as is now done in the operation for pyosalpinx, as advised by Morris, Price and McMurtry. In his last three cases he has followed this method and the results have been far beyond his expectations. Two of the cases were discharged in three, and one in four weeks.

Dr. **Lewis S. McMurtry** of Louisville, Ky., followed with a paper entitled

THE OPERATION ITSELF IN APPENDICITIS.

He considered the subject under the following headings: 1. The incision. 2. Dealing with adhesions and with abscesses. 3. Removal of the appendix. 4. Drainage and isolation of the peritoneum by gauze.

Concerning the incision three important considerations must be observed: 1. To obtain easy access to the caput coli with sufficient working space. 2. To secure all natural advantages to facilitate drainage. 3. To do the least damage possible to the parietal structures incised in order that firm union may be secured and hernia thereby prevented. The early operations for appendicitis were mostly in extreme cases, wherein suppuration had obtained, and consisted in cutting down into an abscess and evacuating and draining the same. For this purpose the vertical incision was adopted and is yet practiced by many surgeons. This incision does not, however, give as easy access to the appendix and to the outer and posterior areas adjacent thereto, which are so frequently involved, as does the oblique incision. A method of dividing the abdominal wall by a combination of incision and blunt dissection has been described by McBurney and commended by many writers on the surgery of the appendix. This incision was described at length.

Dealing with adhesions and abscesses. In dealing with adhesions and abscesses the same general rules of surgical treatment should be observed in appendicitis as in similar conditions affecting other organs enclosed within the peritoneum. Whenever practicable, adhesions should be separated, abscesses emptied, disintegrated structures composing foci of infection removed, and cleansing and drainage secured by measures of assured efficiency.

Removal of the appendix.—In his early operations he ligated the appendix with the meso-appendix, using fine sterilized silk, cut away the appendix and applied pure carbolic acid to the stump. Later he adopted the modern method of transfixing the meso appendix at its base, cutting it away, stripping back a cuff of peritoneum from the appendix down to its junction with the cecum, ligating the appendix with fine silk and cutting it away, sterilizing the stump, invaginating the stump into the cecum and covering with peritoneum by careful stitching after the Lembert method. Nothing in the progress of healing or in ultimate results indicated any advantage of the latter method over the former simple ligature, excision and cauterization.

Finally, Dr. McMurtry discussed drainage and isolation of the peritoneum by gauze.

Dr. THOMAS J. MAXWELL of Keokuk, Iowa, contributed a paper on "Senile Irritable Uterus." In three cases he was unable to relieve this condition by tentative treatment, and finally resorted to hysterectomy with complete success in all of them.

The election of officers resulted as follows:

President, Dr. Charles A. L. Reed of Cincinnati, Ohio; *Vice-Presidents*, Dr. Richard Douglas, Nashville, Tenn. and Dr. Walter B. Dorsett, St. Louis, Mo. *Secretary*, Dr. Wm. Warren Potter of Buffalo, N. Y. *Treasurer*, Dr. X. O. Werder of Pittsburg, Pa. Place of meeting, Pittsburg, Pa., September 20, 21 and 22, 1898.

After introducing and adopting resolutions of thanks for courtesies extended, the Association adjourned.

SELECTIONS.

Centrilobular and Pericellular Cirrhosis.—Dr. J. E. Adami, in the *Montreal Medical Journal*, concludes a long article on cirrhosis with remarks regarding these two interesting phases of hepatic disease. The centrilobular form apparently only develops as a consequence of chronic heart or lung disease associated with passive congestion of the liver and the condition of nutmeg-liver. Passive congestion in general may lead to fibroid overgrowth originating around the veins, and it is around the central intralobular branches of the hepatic vein that such fibroid overgrowth may at times be recognized. While sundry French observers would ascribe one form of hypertrophic cirrhosis to this central development of fibrous tissue, it is difficult to agree with them. The liver of passive congestion may be larger than normal but congestion is not hypertrophy, and associated with any degree of centrilobular cirrhosis there is marked hypertrophy of the liver cells, while the amount of connective tissue laid down is relatively slight as compared with what may be developed in perilobular cirrhosis. It is unfortunate that this term, hypertrophy, has been introduced at all in connection with cirrhosis. This form also is incapable of being recognized clinically; it may be suspected in long-continued obstructive disease. It is in every respect one of the minor forms. Regarding pericellular or replacement cirrhosis, I would say, that while I am inclined to think that in portal cirrhosis there is primarily an overgrowth of connective tissue around the medium-sized branches of the portal veins and recognize a similar deposit occurring around the bile ducts, arteries and branches of the hepatic veins, there is another highly important deposition or development of new connective tissue in the liver which yet remains to be discussed, one which has up to the present received too little attention, although from to time high authorities such as Kelsch and Wannebrouck, Hamilton, Beale and Grandmaison have more or less called attention to it. Where isolated cells of a tissue or collections of cells atrophy and die there is in general an attempt to replace them, if not by cells of a similar nature, then by connective tissue, or, failing this, by fluid, (as in some cyst formations). A replacement fibrosis of this nature may be localized, as after scattered necroses through the liver substance. Such fibrosis very possibly explains in part the cirrhosis occurring in malaria, and in those infectious and septic diseases in which sporadic necroses of the liver are becoming more frequently recognized. Or on the other hand, it may be more generalized, affecting the periphery of the lobule or in some cases the whole lobule. In the Pictou cattle disease this could be seen in its various stages. Pictou cattle disease is a chronic infectious disease of cattle in Nova Scotia characterized especially by extensive cirrhosis of the liver. In early cases, as first pointed out by Dr. Wyatt Johnston, the liver cells show various evidences of degeneration, and this stage is followed by atrophy so extensive that in advanced cases all the cells of some lobules may become unrecognizable, their place being taken by a delicate connective tissue. In other regions, short columns of the atrophied cells may be isolated and surrounded by similar connective tissue, while, as in biliary cirrhosis, there may be very numerous imperfectly formed bile canals, examples of which have been termed "reversionary" degeneration of the liver cells. Along with this there is in general singularly little small-celled infiltration. The process is essentially one of hypertrophy of the liver cells by toxic agency followed by replacement fibrosis. It is interesting to note that in all cases where this pericellular cirrhosis is well marked the liver tends to be enlarged—hypertrophic—or if not enlarged is not found hobnailed. There appears to be a difference in the way in which the new connective tissue is laid down. Whereas in ordinary portal cirrhosis there is a frankly inflammatory infiltration of small round cells, followed by connective tissue growth, the new tissue is typically cicatricial, *i. e.*, with full development it contracts very markedly, and so produces the hobnailed condition. In such cases the atrophy of the liver cells is secondary and is in the main due to the presence of the fibrous bands. In the cases of extensive replacement cirrhosis above referred to, there is curiously little small-celled infiltration; a loose transparent connective tissue develops which evidently is not nearly so prone to contract. Degeneration and atrophy of the liver cells may be brought about in four ways: 1. By pressure. 2. By toxic substances reaching the cells by the circulation. 3. By toxic substances reaching them along the bile capillaries. 4. By arrest of function resulting from obstruction of the bile ducts. To the first of these we have already referred; the contraction causing the atrophy does away with the opportunity for a replacement fibrosis. About the third possible way we know little. It is unlikely that toxins should diffuse up the bile canals in a direction contrary to the flow of bile. With regard to bacteria penetrating the liver along the bile ducts and producing toxins we are in doubt. We know from the researches of Welch, Flexner and others, that pathogenic microbes are not infrequent in the gall bladder, and in the last two cases of hobnailed liver coming to the postmortem room of the Royal Victoria Hospital we were not a little surprised to gain cultures of the B. coli communis (the most common form to be found in the gall bladder) from the liver juice when other glandular organs did not show this form. But on the whole it is for the present to be regarded as unlikely that degeneration of the liver cells and cirrhosis are induced to any considerable extent by toxic agencies passing up the bile duct and capillaries. It would seem more probable that obstructed and perverted action of the liver cells by closure of the bile ducts, leads to their degeneration.

The Great Lessons Taught by Bacteriology.—Dr. Sims Woodhead, pathologist at the laboratory of the Royal College of Physicians, London, in a recent lecture reported in the London *Lancet*, seeks to correct certain false notions that have arisen regarding the life work of the bacteria. The tendency has been to accept them as the ultimate causes of certain forms of deadly disease and as promoting the evolution of putrefactive products; whereas, as a matter of fact, they are instrumental in keeping the world sweet and clean for its inhabitants and in maintaining a constant circulation of organic matter from the dead condition to the living and from the living to the dead. It is interesting to reflect that without the aid of bacteria the human race would be unable to continue its existence, the animal and vegetable world would long since have perished from sheer inanition or starvation, and the work of the world as a great laboratory would have come to a standstill. Bacteria, as is being found out every day, may be engineered for man's good, so long as they are kept under intelligent control, and once their habits are understood they prove to be the most perfect servants that can be obtained. The lecturer proceeded to trace the history of bacteria and their discovery, and the developments up to the present time which have followed upon a close and exact study of their behavior. The functions of bacteria in the great natural processes in their bearing upon sanitation were then dwelt upon; and finally, the recent developments in regard to the wonderful ability of certain species of bacteria to appropriate the nitrogen in the air, through the medium of the soil, for the maintenance and the sustenance of leguminous plants, formed not the least interesting section of the lecture. It was remarked that so well defined were the results of the researches in this direction, that cultivations of these organisms are now made for sale and kept in closed bottles for distribution to all parts of the world. There, when mixed with water and thrown over the soil, they immediately begin to do their work, and taking nitrogen from the air, which lends valuable assistance to that from the soil, they enable the plants, and especially those requiring large quantities of nitrogen for their full growth and development, to grow both more rapidly and more luxuriantly than they could do if unaided by this supplementary store. The relation of bacteria to disease was next touched upon, and the beneficial effects of fresh air and light accounted for by observations on the inhibitory action of these agencies upon such organisms. Dr. Woodhead concluded his lecture with the following words: "As yet no one can say that we have reached even a resting stage, and it behooves all those who desire to see advances made in the treatment and prevention of disease—whether in the department of protection and cure, with which medicine is specially concerned, or in the preventive department, with which civil engineers have to deal—to continue to follow closely every new fact and every fresh theory arising out of new observations, in order that bacteria and the forces with which they are endowed may be made our well disciplined servants, instead of being allowed to waste their energies as our uncontrolled and uncontrollable masters."

The Practitioner's Economies in Time and Effort.—The physician who hopes to accomplish much, who has the ambition to do something more than routine medical work, who wishes to keep abreast of the times, must learn not only to seize the day but the hour and minute of leisure. The secret of accomplishing much consists in having convenient arrangements for utilizing the scraps of time between professional engagements and in being able to make light of drudgery. Convenience means the performance of many things; inconvenience, the neglect of necessary tasks. The average man will examine urine if his utensils are in or next to his office and if he has a sink into which to throw waste. If he must go up or down stairs for his examinations or to empty bottles, or if he must push aside writing materials to make room for his test tubes, he will avoid analysis of urine as much as possible and will fail in diagnosis in occasional cases. In writing, a typewriter will be found easier than a pen or pencil. Hour for hour, more can be written and with less fatigue in spite of the greater amount accomplished. A roomy and well arranged desk is a great time-saver. Have a drawer for each line of work that you happen to be engaged in, one for business, one for science, one for correspondence; set aside a space for every important undertaking that will occupy spare moments for more than a few days; in short, have your notes or letters, or whatever your material may be, so that you can pick them up and lay them aside at a moment's notice. Personal comfort is a great factor in increasing one's capacity for work; perhaps it should even be placed before convenient arrangement of materials. Spare your eyes, use a good lamp instead of gas and make sure of plenty of daylight, not too glaring. Place your furniture so that the light will not be in front of you. All things considered, your private office ought to be the best room in the house, for its purpose. Keep warm, avoid drafts, don't stifle for lack of ventilation in summer. If only one room in your house fulfils these demands, take it for the office. You can put up with imperfect hygiene in the parlor or even in the dining room, where you will spend only a small part of your time. Have an easy chair, well cushioned, and preferably one that you can adapt to the height of your desk. In general, make your office as pleasant, as convenient, as comfortable as possible. Use your brain to the best advantage and not too long on any one task. If your professional work for one day has been mostly in the open air, rest yourself by reading or writing, or chemic or microscopic study. If most of your patients have been office cases, and the day is pleasant, refresh yourself by attending to the numerous errands that are always in order. Tax your memory as little as possible with unnecessary details. Keep one of the memorandum blanks which are sent you as an advertisement early in the year, and whenever an engagement is made, jot it down under the proper date. As you pay your life insurance premium, or attend a meeting or deliver a lecture, or discharge any other recurring obligation, enter the next in your list. It will take but a moment to consult your memoranda each morning, and you will be free to forget engagements till the proper time and need not worry about the possibility of mistakes.—*American Therapist.*

PRACTICAL NOTES.

Objections to Use of Picric Acid.—Dr. Waldo (*Lancet*), commending upon the growing use of picric acid in eczema, thinks that "it may cause much prostration, and in fact all the symptoms of carboluria, with very dark urine. The unpleasant symptoms developed certainly resembled the action of carbolic acid."

Thread Worms.—Some of our exchanges recommend the formula of the *Journal de Médecine de Paris*: Three-fourths of a grain of santonin and one and a half grains of calomel by the mouth every day before breakfast for three days; also every evening for the same number of days insert within the sphincter a modicum of mercurial ointment one part and glycerite of starch, two parts.

Diabetes Among Locomotive Engineers.—The *Medical Press and Circular* refers to the increase of cases in this disease and especially to its marked mortality among the class mentioned. The causes cited are the jarring, the mental strain and the changes of temperature. "There is much yet concerning the pathology and etiology of diabetes which is obscure;" so concludes the article.

Tuberculin Test for Infants.—G. A. Alfaro of Buenos Ayres, urges the more general use of the tuberculin test in diagnosing the affections of infants and young children. It is absolutely harmless at the minimal dose and at intervals of a week or more, while the benefit derived from it is very great, as he demonstrates by several observations in the *Anales del Circulo Med. Argentino.*

The Meningeal Symptoms in Typhoid Fever, according to Dr. Kuehnau (*Berliner klin. Wochenschrift*) are due to a metastasis of the typhoid bacillus, as proven in a case where its presence was manifest in the mesenteric gland, spleen and exudation over the convexity as well as at the base of the brain. Death occurred on the thirty sixth day during profound coma. The ulcers were nearly all in process of healing although the bacilli were still present in Peyer's patches. An examination of the blood during life revealed colonies [illegible] the [illegible], showing the cause of distribution.

Sulphonal in the Night Sweats of Phthisis.—Combamale and Descheemaker (*Revue de Therapeutique Medico-chirurgicale*), except in the very advanced stage of tuberculosis when effect is merely negative, give from fifteen to thirty grains of sulphonal each night for the night sweats.

The Carasquillas Treatment of Leprosy.—The International Executive Commission of the Pan-American Medical Congress is advised, through Dr. I. M. Calnek of San José member for Costa Rica, that the government of that country some time since commissioned Dr. Elias Rofas of San José to go to Bogota, Republic of Colombia, and study the treatment of leprosy according to the method of Dr. Carasquillas. After careful study of the disease itself, of the treatment and its results Dr. Rofas returned to San José and reported favorably to his government. The treatment has been applied in one case of tubercular leprosy in Costa Rica and the patient has improved.

An Iron and Quinin Tonic Without the Tannate of Iron Precipitate.—G. Patein has a study of Martial medication in chlorosis (*Nouv. Remèdes*, July 24), endorsing it in general, given with moderation and as indicated. He rejects a number of the preparations in vogue but approves of protochlorid of iron (pills containing 0.10 gram ferric chlorid), and also of iodin of iron, especially for struma and lymphatic conditions. He has found that glycerin prevents the formation of tannate of iron and gives the formula of a tonic as follows: Tartrate-ferrico-potassic, 10 grams; extract of quinin, 10 grams; glycerin, 20 grams; aq. dest., 10 grams; Madeira wine q. s. to make 1 liter. He considers mineral waters a good supplement to increase the amount of iron taken with the food.

The Causation of Puerperal Eclampsia.—The nephritis which coexists with eclampsia is mainly secondary and analogous to nephritis of scarlatina. The liver deals more rapidly with the nitrogenous products of metabolism than with the non-nitrogenous moiety. The authors suggest that in pregnancy the increased work thrown on to the liver may result in hepatic inadequacy and that there may be a "liver of pregnancy" just as there is a kidney of pregnancy. The products of metabolism in both fetus and mother are carried to the maternal liver where they normally undergo katabolic changes to urea and bile salts; but in cases of hepatic inadequacy these products accumulate and eclampsia results. Strumpf found acetone in the urine of all eclamptic patients, whose breath smell of it. The relation of acetone to metabolism is so important that the urine of pregnant women should be systematically examined for it.—*American Journal of Obstetrics*.

A Case of Gonorrhea in a Girl of Twenty-six Months old.—Dr. Alfred Hinde of Chicago, reports the following: Under my charge at present is a girl of two and one-half years of age who was referred to me because of an obstinate catarrhal conjunctivitis of each eye. In appearance there was nothing unusual in the eye disease, but on questioning the mother the fact developed that the child had had a vulvar discharge for four months. On examination this was found to be profuse and purulent. Slides were taken of the eye and vulvar discharges, stained and examined, and in the eye slides the ordinary microbes were alone found; but in the vulvar slides a large number of gonococci were present in each one. A leucorrheal discharge in the mother was found to contain a few gonococci, and the father was said to have contracted a typical gonorrhea one year ago which had resulted in a marital separation at that time.

Radical Cure of Prostatism.—R. Macias attributes the troubles known as prostatism to exuberant growth of the gland compressing the urethra, or extending into the bladder with more or less irregularity in the size of the canal left for the passage of the urine. He treats the former condition by inserting the largest catheter possible without injury, guiding it with the index finger in the rectum, and then incising down to it with a bistoury. An Otis urethrotome is introduced and the incision made as indicated. The forefinger is then inserted and the condition of the bladder explored. If nothing is found there the operation consists merely in scraping off with the finger nail, the protruding growths of foci, of suppuration, concluding with the use of small curettes. This is usually all that is needed in all but senile cases. When the exuberance rises into the bladder he incises and removes the tumor with the electrocautery inserting the wire with a sharply curved needle on a handle, cutting the growth into quarters and pediculising each quarter for its final extirpation with the wire introduced with a straight blunt needle at the base close to the cervix. The *Revista de Anat. Pat. y Clin.* July 1, contains a full, illustrated description of the process and instruments as presented at the Second Pan-Amer. Congress.

Avulsion of the Uterus and Adnexa; Recovery.—The following case of avulsion of the uterus is reported by Dr. E. Hickson Smith, in the London *Lancet*. The recital is substantially thus: The patient gave birth to a child while on her hands and knees on the floor. The midwife some two hours afterward, having separated the child, etc., found a lump protruding which she mistook for the head of another child and pulled upon it for three quarters of an hour until she had dragged it away. Dr. Smith on arrival found an inverted uterus, which he turned back again. This proved to be the whole of the uterus and cervix with its peritoneal covering and one broad ligament with fallopian tube, but minus the ovary. The broad ligament of the other side was congenitally absent. On inserting the finger into the vagina, it moved freely about among the intestines, and the absence of the uterus and cervix was distinctly apparent. Hemorrhage was slight. To avoid prolapse of the bowels and general peritonitis, recourse was had to decubitus, an antiseptic plug, morphia and a strictly milk diet. The peritoneum closed up and the top of the vagina cicatrized over, the patient being able to go about in three weeks. Three months later a professional call found her in her usual health and the vagina a *cul-de sac*.

Eucain Hydrochlorid in Rhinolaryngology.—Zwillinger in *Pesther Medico-chirurgische Presse* states his preference for the above over cocain, although the latter yields an intenser and more permanent anesthetic effect. His experience with eucain in rhinologic work has been only such as is obtained by painting the mucous membrane with a solution of the drug. That eucain has less disturbing effects than cocain has been the general report, but that it is not wholly free from by-effects is seen from the following: Eucain itself, however, possesses unpleasant by-effects which may limit its employment for affections of the nose and throat, but to what extent it is impossible to say. These by-effects consist in a burning sensation, which even in very dilute solutions occurs at the place of application. In nearly every case patients make more or less mention of the irritation which is accompanied by copious water secretion from the nasal cavity. The hyperemia caused by eucain, slight as it is, may also limit its use in some special cases; but on the other hand, the fact that it produces no ischemia increases the value of the preparation in the therapy of other nasal diseases. As regards the permanency of the solution, eucain possesses a great advantage, as it keeps well, and can be sterilized with boiling, without decomposition. The conclusions to which he has arrived are as follows: 1. The 2, 5, and especially the 10 per cent. aqueous solutions of eucain, produce such a degree of anesthesia when applied to the mucous membrane of the nose, throat or larynx that local operations can be carried out without the slightest pain. 2. The quantity which suffices to anesthetize the mucous membrane is completely innocuous. 3. The employment of eucain in diseases of the nose or throat is only limited by the slight irritation caused by the solution upon the mucous membrane, and also by a slight hyperemia which it causes.

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SATURDAY, SEPTEMBER 4, 1897.

THE ARMY EMERGENCY RATION.

The emergency ration established by G. O. 49, Hd. Qrs. of the Army, A. G. O., Washington, D.C., Dec. 5, 1896, has recently been subjected to a practical test in the field, the results of which have been reported as entirely satisfactory. This is to be appreciated the more because we have in vivid remembrance the disastrous results of a test made in the Department of the Colorado of an emergency ration suggested by the officers of that department. The test of the War Department ration was made by troops from Fort Sill, Oklahoma Territory because on account of the absence of settlers, on the Indian reservation, a command could march for the required number of days without having to camp or to pass within twenty or more miles of any settlement where the troops might obtain any article of food unknown to their officers. Deputy Surgeon-General SMART was ordered from his station in Washington, D. C. to accompany the command and to report on the condition of the men before, during and after the march. The report of the commanding officer of the troops has already been published in the military journals and from it has been learned the successful issue of the expedition. This is of the highest importance from the military point of view, because it demonstrates the ability of a cavalry or infantry command to cut loose from transportation for ten days and marching by by-ways or even by compass to seize an unguarded position or make an unexpected attack on the enemy. But we are not concerned at the present time with the military results. Dr. SMART's report to the war department has been rendered but will probably not appear in print until the publication of the annual report of the surgeon general of the army in September next. We have learned, however, some of the conclusions reached by him as the result of his observations.

The expeditionary command consisting of two officers and forty-four men engaged in active field service on the emergency ration, while a control experiment in the form of one officer and nine men on full field rations made similar marches on parallel lines but beyond communicating distance. The question at issue was: Would the limited emergency diet satisfy the men, many of them young and untried soldiers, and enable them at the end of ten days of active field work to meet an enemy or be available for a continuance of active field service? The record shows that the command lost in weight an average of 2.935 pounds per man, but part of this loss was due to the change of conditions from garrison life to active field service, for the men of the control experiment, with as much as they desired to eat, lost an average of 1.35 pounds per man; but the loss of weight of the emergency command was not associated with any loss of strength, for the dynamometric pull was twenty-four pounds greater per man at the end than at the beginning of the experiment. In fact Dr. SMART is reported as having said that the command returned to Fort Sill in better training and athletic condition than when it started out from that post, "and as I am confident that I myself could have started out that day and repeated the ten days' experiment I am confident that every soldier in the troop could have done so."

The emergency ration was intended to constitute a maximum diet for hard labor. It consists of those articles of food supply with which the soldier is familiar, as emergencies are not the times to make any material or experimental changes in his diet. The limit to be carried on the person or horse was announced as five days' rations, because emergencies would seldom last longer than that period; and, therefore, during the majority of emergencies the soldier would have the benefit of the most generous diet; but should an emergency require it the five days' rations were expected to be economized and to last for any number of days not exceeding ten. It was conceived that if an emergency lasting ten days should occur it would be one of extreme gravity and of such a character as to call for self-sacrifice on the part of the troops. When thus made to last for ten days the men were reduced to live on what is called subsistence diet. a diet sufficient for the repair of the waste incidental to the carrying on of the vital processes but leaving all work productive of external results to be effected at the expense of the tissues of the individual. When used in this way the daily allowance per man consists of ounces of hard bread, 5 of bacon and 2 of pea meal with coffee, saccharin, salt, pepper and tobacco. This is equivalent to protein 2.128 ounces, fat 3.809 ounces and carbohydrates 6.93 ounces, a total of 12 867 ounces per day, furnishing 147 grains of nitrogen, 3,159 grains of carbon and an energy equal to 2,055 calories. The daily newspapers speak learnedly of chemic and concentrated foods, thirty pounds of which will suffice to sustain a man for a year. There is before us at the present writing an editorial in a city daily to this effect in connection with the journey to the Klondike mines. The information concerning these chemic foods is derived from the advertisements of food manufacturers; but these have no basis in physiologic science.

On the limited ration above stated, Dr. Smart found, by the daily use of the scales, that young men lost more of their weight than older men, that short men lost more than tall men, but that heavy men lost proportionately more than the lighter weights. He holds, however, that the manner in which the men utilized their ration of bacon had much to do with loss of weight. Some fried it to a crisp, tilting the melted fat into the fire and thereby losing more than two-thirds of its value. Others fried their hard bread, previously softened in water, in the melted grease and thus saved some of the hydrocarbon. Others, again, chopped their bacon into dice and boiled it in their pea soup, thus utilizing the whole of it. As to the frying of the softened hard bread in the melted fat, Dr. Smart remarks: "I am aware that this practice is denounced by most authorities on dietetics, but I have yet to discover in a very extended experience any harmful effects from this method of cooking, either among healthy young soldiers or hardy old soldiers." It would seem that when the system is on short allowance it is ready to utilize food supplies however presented.

On this diet which, although less in weight than the subsistence diet of the physiologists, has a higher energy from its larger proportion of fat, some of the men gained in weight. It is evident, therefore, that the subsistence diet of the physiologists is overestimated; that men can live and work and be strong on a much smaller quantity of food than is usually considered necessary, and that, in fact, the amount of food generally used is far in excess of that required by the necessities of the human system.

This experimental march reported by Dr. Smart has also a financial aspect which is of considerable importance and which requires only to be mentioned to be appreciated. The two officers and forty-four men of the emergency ration command lived an active life on a ration, tobacco included, which cost only about 9 cents per man per day.

Let us have a Department of Public Health!

THE FATE OF THE IDIOT.

There are in the United States about 95,000 beings hopelessly idiotic. Their existence and care is a problem perplexing alike to the sociologist, the political economist and the physician. It is beyond question that the simple endurance and perpetuation of this load of useless misery that has been habitualized by our modern civilization might and should be settled in a somewhat different way. Of what use to humanity, to civilization or to science, is it to go on as we are at present going? There is no truth so well established by history and by general biologic science as that the evolutionary process has been brought to its present position by a plan utterly different from that which we have adopted with our idiots. It is also plainly, painfully clear that the economic moral is no less striking and manifest. For every three or four of these wrecks kept alive by our sentimentalism one laborer's life must be continually sacrificed.

May we safely, do we wisely, reverse the universal biologic law as we are doing? Are we wiser than the cosmic process—call it God, or evolution, or what we please—and what if any are our real reasons, our unconscious motives, and what compensations may then be for our apparently illogic method? The writer has long pondered these problems, weighed the obscure and halting answers that have been hesitatingly advanced, has sought to give due allowance to the full importance of the religious and emotional, the psychologic aspects, and the possible baneful results of the obviously suggested natural method of riddance; as a result he can reach no other conclusion than that our duty to the future, to humanity, to the profession, and to the idiot himself is that, under law and publicity, and by a properly appointed commission the hopeless idiot should be put to death; and for these reasons:

1. In the consciousness of each one of us we are well aware that were we that being every dictate of kindness, every desire of our sane-minds, would demand that those in charge of us should not curse us with a continuance of life. We recognize that to us it would be cruelty, not kindness, to thus condemn us to such a hideous travesty of human existence. The psychologic argument is clearly pronounced.

2. Every parent of an idiot-child acquiesces, nothing more, in the present arrangement, but in his heart of hearts—the hopelessness being admitted—he wishes that his child should not thus be doomed by the mere unconscious vegetative processes of the body, and by a false sentimentalism upon our part, to a loathsome *reductio ad absurdum* of parenthood The genealogic argument is quite as definite as the rational.

3. It is unjust to the present-day laborers to compel them by thousands to give their life-work to nourish and house and care for these things whilst the poor and would-be self-helping, the slum-children, the unlucky,

the unsuccessful, are dying about them because of the lack of the care given to and wasted upon the idiot. The economic lesson is as plain as the two preceding ones.

4. It is unjust to these unfortunates struggling for healthy and useful life and with every promise of hope in them, to give our superfluities to the ungrateful, unconscious, hopeless idiot. The ethics of the matter are likewise plain.

5. The religious feeling must take the same position. The soul of the idiot is certainly gaining no experience in its sad plight that can be of use to it in the future. Keeping it here only postpones a desirable beginning of education and progress.

6. It is unprofessional to do otherwise. This may at first seem strange and untrue, but it is really not so. Our duty of course is to cure disease—aye, but not to perpetuate it! At least it may be said, to ease and soften the end of disease in inevitable death. Ah, yes, but note the essence of the distinction: We are not to professionally establish a system for perpetuating the disease, doing nothing either for cure or for oncoming death. In our last sad offices euthanasia is a duty of our art when it is forced to renounce all possibility of help. Let it, then, be so here.

The whole argument turns upon the incurability of the disease, the utter hopelessness of any return to normal-mindedness. For all that makes life valuable the permanent idiot is already dead, because mere life of the body with worse than death of the mind, adds the horror of death-in-life, a fearful caricature of genuine life, not good either to the sane or to the insane sufferers who endure and support it.

In insanity there is hope, or possibility, however *remote, of recovery. In incurable bodily disease there* is the mind above it useful either to self or the world in some remote way. In every other type or example of disease there is a like element to give pause to other motives. And at least and at last everywhere else there is some possible lesson to be gained psychologically or pathologically by the scientific-minded student. But in the idiot it is not so, or but most rarely so. What lessons have we derived or are we seeking to learn from a scientific study of these cases? And we may foresee none except perhaps it come from human vivisection, which we neither desire nor will a righteous public sentiment permit.

We suspect that the real crux of the difficulty, the final bar in the half-conscious parts of the public mind preventing the admission of the cogency of the foregoing and other arguments not enumerated, lies in the fear of the psychologic purity of its own motives and character. Civilized humanity half feels that it can not trust its own religion and ethics which like a thin lava-cooled stratum lies over the volcanic brutality of fire, and the pent-up untamed fury of elemental barbarism beneath. The public consciousness distrusts itself, and fears if it should give away in this one evidently advisable procedure, the mountain itself would burst forth and again would come the antique savage pitilessness for the weak and the reign of brute force such as we see in Africa and in the animal world.

But the fear may be brushed aside. Surely civilization and law are more firmly based than that in our human life. We must trust ourselves and the future more than this, otherwise all progress is stopped, and we must settle down to an iron rule of routine and precedent. BAGEHOT's "cake of custom" is much better baked than our fear would imply. And, too, humanity is ruled to some degree by reason and kindly motives, not by determinism and mechanics alone. If we assent to the death of the hopelessly idiotic, we need not, and certainly shall not, proceed to the slaughter of the sick, weak, insane, etc., etc. The method of civilization is discrimination, and there is no doubt we have learned to discriminate in other things, why not then in this? In law, because we pronounce the death-penalty upon the cold-blooded murderer, do we therefore punish in the same way the kleptomaniac or the drunkard?

It goes without saying that the proposal thus to dispose of these poor creatures must be safeguarded with every preventive of abuse and error. The decision may be vetoed by a parent, and only advised by a commission of scientific men from the legal and medical professions, chosen by the highest executive officers, and carried out with every wise precaution dictated by humanity and religious feeling. But it must come about that all such considerations having been duly weighed and all proper precautions having *been established, the proper "medical treatment" of a* hopeless case of idiocy will be finally recognized as a lethal dose of some anesthetic.

THE OCULAR MANIFESTATIONS OF INTRA-CRANIAL TUMOR.

There can certainly be no difference of opinion with regard to the utility of ophthalmic examinations as an aid in the study of diseases of the nervous system. While not invariably conclusive, the information gained by this means often decides the diagnosis *and not rarely determines the treatment to be employed.* That the findings are not always unequivocal while lessening somewhat does not wholly neutralize their usefulness. So-called pathognomonic or infallible signs or symptoms are to be viewed with suspicion.

The views of competent authorities as to the significance of optic neuritis in relation to intracranial neoplasms have been widely divergent, some insisting that the phenomenon is of the greatest diagnostic and localizing value, while others have contended with equal positiveness that it is entirely unreliable in these directions. With a view to shedding additional light on this important question MARTIN (*Lancet*, July 10, 1897, p. 81) undertook an analysis of 600 cases of intracranial tumor derived from various sources.

As a result of this study it was found that in 513 cases in which the sex was stated, 353 (68.8 per cent.), occurred in males and 160 (31.2 per cent.), in females. The distribution of the new growths was as follows; cerebellum, 138; motor area, 120; frontal area, 61; pons and medulla, 45; parieto-occipital area, 37; basal ganglia, 36; centrum ovale, 30; temporosphenoidal area and multiple, each 28; pituitary, 26; general, 19; corpora quadrigemina, 15; corpus callosum, 13; crura, 5. The nature of the growths was as follows: Sarcoma, 126; glioma, 82; tuberculous, 72; cystic, 44; gumma, 36; gliosarcoma, 30; hydatids, 21; carcinoma, 11; other varieties, 179. A study of the chief situation of the headache in the cases in which this symptom was noted confirms the prevailing idea that this is of no significance in determining the position of the tumor. The number of cases in which tumors of the motor area and of the corpus callosum were unattended with headache is considered noteworthy, as well as the frequency of occipital headache in association with cerebellar tumor and of frontal headache in association with tumors of all kinds.

The results of the analysis as regards the frequency of optic neuritis are in accord with generally accepted statements. This manifestation is noted with such frequency in connection with tumors of the corpora quadrigemina that its absence may be considered sufficient to exclude this condition. Optic neuritis was found in all of five cases of tumor of the crura, but the number of cases is too small to justify definite conclusions. Tumors of the cerebellum and of the parieto-occipital area were attended each with optic neuritis in 89 per cent., of cases; optic atrophy was more common after the former than after the latter. Optic neuritis was comparatively uncommon in association with tumor of the corpus callosum and of the pons and medulla. It was commonly absent early in the course of tumors of the pons. According to the percentage, the order of frequency with which optic neuritis manifested itself in association with intracranial tumor was as follows: Corpora quadrigemina, crura, cerebellum, parieto-occipital area, frontal-area, general, basal ganglia, multiple, pons and medulla, temporo-sphenoidal, centrum ovale, pituitary, motor area, corpus callosum. According to the percentage of cases in which optic neuritis appeared late, or was absent, or unilateral, the order of frequency was as follows: Cerebellum, corpora quadrigemina, parieto-occipital, basal ganglia, frontal area, pituitary, crura, general, centrum ovale, multiple, temporo-sphenoidal, motor area, pons and medulla, corpus callosum.

Only fifty-five cases could be collected in which the optic neuritis was unilateral or more marked on one side than on the other and of these the disturbance was more marked on the side of the lesion in thirty-nine and more marked on the opposite side in sixteen.

A study of the relation between the nature of the tumor and the development of optic neuritis showed the latter to be absent as follows: Tuberculous, 36 per cent.; gliosarcoma, 27 per cent.; sarcoma, 25 per cent.; gumma, 22 per cent.; glioma, cystic and carcinoma, each 18 per cent.; hydatid, 14 per cent.

Only thirty cases could be studied with regard to the relation between intracranial tumors and strabismus. Internal strabismus was found on the same side as the tumor in 23 cases and on the opposite side in four; and external strabismus on the same side in two and on the opposite side in one.

The general results of this painstaking and careful study are summarized as follows: 1. Of all cases of intracranial tumor 68.8 per cent., occur among males; 2. The most common form of intracranial growth is sarcoma; gliomata and tuberculous tumors are of about equal frequency, but less common than sarcomata. 3. Headache is more likely to be absent in connection with tumors of the motor area and of the corpus callosum than in connection with tumors situated elsewhere. 4. The tumor is generally situated on the side on which internal strabismus is noted.

Only limited localizing value is conceded at present to optic neuritis; but the hope is expressed that improved methods of examination now in course of adoption will give it greater value in the future. When a difference in the degree of optic neuritis in each eye exists it is more than twice as probable that the tumor is on the side on which the neuritis is the more marked. It should further be borne in mind: 1. That optic neuritis is constantly present in association with tumors of the corpora quadrigemina. 2. That it is present in 89 per cent. of cases of cerebellar tumor and of tumor of the posterior part of the cerebrum. 3. That it is absent in nearly two-thirds of the cases of tumor of the pons and medulla and of the corpus callosum. 4. That it is least frequently met with in cases of tuberculous tumor and is most common in cases of glioma and cystic tumor.

X-RAY INJURIES.

The extended use of the X-rays in surgical diagnosis has also developed certain inconveniences that attend their use, and the facts reported have received a very large amount of attention from the medical profession and the public. In popular estimation the occasional evil effects have been somewhat exaggerated, possibly in some cases to the embarrassment of physicians who desired to utilize this valuable diagnostic means. Among physicians themselves there has been some difference of opinion, and views that are without scientific basis are sometimes expressed as to the nature and the mode of action of these rays. There is so much that is unknown in regard to them, and the room for speculation is so ample, that it is no wonder that this should be so, any more than that the most extravagant tales of their powers should be credited by the general public.

Dr. N. Stone Scott, consulting surgeon to the City Hospital, Cleveland, contributes to the *American X-Ray Journal* for August a discussion and review of all the reported instances of injuries from this cause that he has been able to collect, with the special purpose of proving or disproving the assertions of some who have held that the deeper seated organs could be thus affected. In order to do this and to obtain all the information possible as to these injuries and the best means to avoid them, he sent out circulars to all the leading operators with these rays, asking for particulars of X-ray injuries, including the kind of apparatus, length of spark, number of exposures, distance of the platinum from the part exposed, and the character of the injuries themselves. The answers received, in his opinion, cover some twenty thousand applications, and include thirty-one cases of injury, which are tabulated together with those he was able to obtain in the literature. In all he reports sixty-nine instances, including twenty-four collected by Dr. Gilchrist of Johns Hopkins Hospital, whose views as to the production of periostitis he wishes especially to combat.

The general result of his study is that the X-rays undoubtedly do produce a dermatitis under certain conditions, chief among which are the distance of the platinum terminal from the skin and the length of the application. In two cases dermatitis or depilation was produced when the platinum was eighteen inches from the body, and in one of these the dermatitis followed three not very long applications aggregating less than an hour and a half. In three others burning pains followed a single application of less than half an hour with the platinum terminal ranging from ten to twenty inches distance. It would appear, therefore, that while in most cases the skin is affected only by long continued or close applications, or both together, there are some cases where, through idiosyncrasy, short and distant ones will have the same result. Dr. Scott's dictum that the most susceptible would probably not be affected by an hour's exposure if the terminal is ten inches away, is hardly supported by his tables.

In six of the tabulated cases, deeper structures than the skin are described as being affected, all of which he discredits to the extent of doubting the agency of the X-rays. In one of these, however, the case of cystitis reported by Dr. Lynn Thomas in the *British Medical Journal* in March of this year, he admits that they may possibly have aggravated the irritation caused by the calculus and thus furnished the last straw that brought on the trouble. In two out of three cases of possible induction of periostitis he thinks a *post hoc* deduction was made, and that the disorder was merely a coincidence, not an effect. In regard to Dr. Gilchrist's case, he analyzes it and attempts to show that it has been misinterpreted and that the skiagraphic evidences depended upon for the diagnosis were due to unequal exposures. He has produced the same appearances in perfectly normal hands by shading the thinner parts during part of the exposure, and he claims that the same result can be due to the thickened skin. As an X-ray expert, Dr. Scott's opinion is worthy of consideration, and as regards this special case he offers some valid arguments against the conclusions that have been deduced from it. It would not seem impossible, however, when we take account of the depth to which the dermal structures are often implicated, the subsequent deep and obstinate ulcerations sometimes reaching the bone, etc., that underlying parts might also be sometimes involved. A tibial periostitis would certainly seem a possibility, and there are other localities almost equally liable. The objection to the other cases, that there have been many hundreds of examinations without the production of similar injuries, only proves their rarity, and is not an argument against their occasional occurrence. His paper is not conclusive as regards this involvement of deeper structures, which is still to be considered an open question.

Dr. Scott briefly reviews the theories that have been advanced to account for these lesions, and makes no pretense of adopting any one of them. Electricians and not physicians are the ones to solve this question and he only concludes that if they are not produced by these rays themselves, it must be by something that accompanies them as any substance permeable by them is no protection. The natural deduction from this, which he does not make, would be that the skin itself is not necessarily a protection to the underlying parts.

The practical conclusion from his study is that to prevent X-ray lesions, the exposures should be short, not exceeding one hour for a distance of ten inches from the terminal and should not be repeated until a sufficient time has elapsed to show that no bad effects are likely to be produced. If repeated short exposures are made, the slightest bad symptom should cause their discontinuance. To this might be added the more general and comprehensive requirement to make the distance as great and the time as short for each application as is possible for the purpose required. We have as yet had hardly more than eighteen months experience with the X-rays, and know too little of their nature and the possible modifications of their action by idiosyncrasies, etc., to formulate any positive rules for safety in their use. Dr. Scott's paper, notwithstanding a certain bias that it displays, is on the whole a valuable contribution.

MEDICINE AND LETTERS.

The *Lancet* quotes Dr. Osler as having said of the late Dr. Oliver Wendell Holmes, that he was the best example that has yet been afforded by history of the successful combination of the physician and the man of letters. The combination is rare for many reasons, some of which lie on the surface while others are more remote. The career of a medical practitioner is an arduous one, and except in a few favored cases leaves little leisure for the successful prosecution of literary pursuits. On the other hand, for the attainment of any high degree of literary excellence ample time for reading, study, thought, and in a general way for self-culture is usually indispensable. Again, the physician is immersed in studies and duties which do not lend themselves very readily to literary expression, and he is prevented by professional etiquette and by good taste from making free use of the incidents of ordinary life as pabulum for authorship. Where gifts for practice and gifts for literature have co-existed in the same individual, the tendency has always been for one or the other to swallow up all the individual's energies and to brook no rivalry. Readers of Hippocrates and Galen will probably agree that if these distinguished men had not elected to be great physicians, they would have been great writers, and a similar feeling comes over us now and again when purusing the lectures of Sir Thomas Watson. Much commoner has been the phenomenon of the born poet, essayist, or novelist taking to medicine by some untoward accident, failing miserably, and then later discovering his true *métier*. Such was the case of Goldsmith, of Smollett, and of Keats. Of high excellence in medicine and literature the following examples occur to us, viz., Sir Thomas Browne, Arbuthnot, Oliver Wendell Holmes and John Brown. A true born poet, a born essayist, a brilliant and kindly wit, Oliver Wendell Holmes deserves to live long in the memory and affection of mankind.

Though Dr. Holmes finally all but abandoned medicine for literature, his professional training and experiences continued to color notably his literary productions. In the natural felicitous use of medical terms and ideas, free from every trace of pedantry, he has no rival. What can be more delightful than the following passage which we select almost at random: "Saddle-leather is in some respects even preferable to sole-leather. The principal objection to it is of a financial character. But you may be sure that Bacon and Sydenham did not recommend it for nothing. One's hepar, or in vulgar language liver, a ponderous organ weighing three or four pounds, goes up and down like the dash of a churn in the midst of the other vital arrangements at every step of a trotting horse. The brains also are shaken up like coppers in a money-box. Riding is good for those that are born with a silver mounted bridle in their hand, and can ride as much and as often as they like without thinking all the time they hear that steady grinding sound as the horse's jaws triturate with calm lateral movement the bank-bills and promises to pay upon which it is notorious that the profligate animal in question feeds day and night."

"Oliver Wendell Holmes is the best known instance which the century affords that medicine and letters are not necessarily opposed, and that there is no inherent antagonism between the qualities which constitute a wise physician and an efficient anatomist and those of the poet, humorist and sage. We rejoice that it is so. In these days of all-absorbing science the claims of literature recede, perhaps rightly, but it will only be for a season. Literature is perennially interesting, perennially fruitful. We trust the members of our profession will always be its lovers and not rarely its successful cultivators."

THE BRITISH MEDICAL ASSOCIATION.

The meeting of the British Medical Association at Montreal, which began August 31 and continued until Friday, September 3, was a notable event for our Canadian *confrères*. The selection of the place of meeting of this body and of the British Association for the Advancement of Science in Canada this, the Queen's Jubilee year, is in a measure possibly an indication of the new imperialism that it is the present English policy to establish, and will undoubtedly have an influence to draw Canadian and British medical and scientific men more closely together. Science, however, does not recognize strict national boundaries, and the program as published contains a very large proportion of papers from invited guests from this side of the line—enough, it would almost appear, to make the occasion an international one for the Anglo-Saxon race in America and Great Britain. It is well that this is so, not that we have any desire to encroach upon the privileges of our Canadian brethren, but because there should come nothing but good from the closer association of medical men of the same race, however separated politically. It is to be hoped that the meeting has been such a success in every respect that it will be repeated at some not very distant year.

CORRESPONDENCE.

LETTER FROM SWITZERLAND.

On Asiatic Plague and Cholera Centers.

Eschenz, Canton Thurgau, Switzerland, Aug. 12, 1897.

To the Editor:—One phase—and by no means the least important—of the vexatious Oriental question is how best to meet the threatened invasion both of Europe and America by the allied forces of the two great Asiatic powers, *Plague* and *Cholera*.

"All is fair in love and war," thought Solomon, when reflecting on his own origin, and espionage is an honest trade, provided one avoids being caught, for knowledge of the enemy's habitat and home life is of paramount value whether warring against pestiferous microbes, the Saracens or other powers of darkness; hence I have thought that a few brief sketches of the principal strongholds and recruiting camps of plague and cholera by a spy in the service of Hygeia might interest the readers of the JOURNAL, who are fellow soldiers, serving with me in the same army, though detailed to other lines of duty.

Before proceeding, however, I wish to ask: Are we forever, in this perpetual struggle against foreign pestilence, to merely remain on the defensive, with pharisaic self-consciousness of superior cleanliness and quarantine blunderbusses pointed eastward? This policy is in perfect harmony with our manner of protecting our Christian brethren in the land of the dawn against the cruelties of Muslim fanaticism with palaver and resolutions of mild disapproval; but is it wise? Is it humane? Why not attack the enemy's armies on their own soil, sterilize their breeding grounds and root out the whole brood, thus once and forever putting an end to this costly warfare.?

During the month of Zil-Hijjah, which this year corresponds with our May, vast hordes of bacteria of various denominations assembled at their annual rendezvous, Mecca, where while planning the ensuing year's campaign, they indulge in unrestrained riot and feasting. Their doings are never reported and their victims are never counted; vultures and other carrion-eaters constituting the only efficient health board. Perhaps the greater number of pilgrims arrive by over-land routes, whereby no barrier to entering the Holy City is encountered. Those from India and the Persian Gulf region come by sea, and these, if the ship carry more than one hundred pilgrims, must undergo quarantine inspection at Kamaran, while those from the north, Egypt and Northern Africa are inspected at Tor. But who knows anything of Turkish quarantine knows it is only a sham, a piratical black-mailing device, and bold indeed must he be who would seriously attempt to hinder a pilgrim from being at Mount Arafat on the 9th, the eve of the Feast of the Sacrifice, when each pilgrim must with his own hand slaughter a sheep. Imagine the effect of such wholesale carnage and an hundred thousand or more putrefying carcasses? True enough, man and beast gorge themselves with mutton, but the blood and entrails alone will poison the air for miles around before consumed by Araby's scavengers. Until the sanitation of Mecca shall be backed up by European military there is no betterment to be hoped for. An utter disregard for human life marks Muslim rule, and nothing is be expected from the Turk—except promises.

Leaving Mecca, then, with a caravan of surviving pilgrims and a firm resolve not to return while Turkish dominion continues to sway the destinies of mankind, we traverse the desert eastward into Mesopotamia, strewing the wayside with corpses as we journey on. Probably one-half of those who set out on a pilgrimage to Mecca never return.

Mesopotamia is a favorite resort for both plague and cholera —indeed Davidson says in his "Geographical Pathology" (page 281) that from 1856 down to 1885 the former was never absent from the country, but from investigations which I made while United States Consul at Bagdad, I believe this to be an exaggeration. The severest epidemic of this century occurred in 1831, when about one hundred thousand persons, or two-thirds of the whole population, succumbed. The horror of the situation was increased by the flood, which the city walls and embankments were unable to keep out; and 7,000 houses fell in one night, burying the inhabitants under the crumbled brick walls and other debris. The last epidemic occurred in 1871, and held on in various localities for considerable time. It is not likely that Mesopotamia will escape this year—indeed the pestilence may be raging now and the outside world be none the wiser; for whether a high or low mortality is to be reported and what name is to be given the disease causing it, is determined by the governor and health inspector in council, or even at times dictated from Constantinople.

The Persian funeral caravans are a source of great danger as well as revenue to this region. Probably no less than eight thousand corpses pass annually through Bagdad to their final resting place at either Kathmein, Kerbelah or Nedjef, holy cities, of which the first named is close to Bagdad and the two others some distance beyond the Euphrates. This traffic had, to the financial detriment of mosques, mullahs and merchants, been forbidden for some three or four years, when in the spring of 1894 the prohibition was withdrawn, and during the next six months more than twelve thousand defunct immigrants, many of whom had been dead from two to three years, arrived, each caravan bringing an hundred or more, and as the coffins were quite open in the seams and leaky, the odor was perceptible for several miles to leeward. The carpet and rug trade which had been languishing now began to revive, each caravan bringing a goodly supply to barter for other commodities. The choicest of these rugs are very old and have been kept in the daily living rooms of the natives for a couple of generations, exposed to disease germs of all kinds, before they are sent by the funeral caravans to Bagdad, whence they are exported chiefly to the United States to adorn the parlors of our aristocracy; while *en route* they serve as couch for the muleteers, many of whom sicken and die. How many billions of living tubercle bacilli or diphtheria bacilli, not to speak of plague bacilli and other imps, may not lie concealed in the meshes of such a rug! Let the quarantine authorities take due notice thereof and govern themselves accordingly.

Mesopotamia, below Mosul (Nineveh), is a low flat country partly desert, partly swamp land, intersected by numerous half-filled-up remains of ancient canals, monuments of agricultural industry in former and happier days, when according to Herodotus it was the most fertile region on earth, wheat yielding a two to three hundred fold harvest. It is subject to frequent inundations followed by pandemics of malignant miasmatic fevers. In the spring of 1894 the Tigris rose twenty-six feet and bursting through its banks in numerous places the desert for miles around was soon converted into a huge inland sea, many places from twelve to fourteen feet deep, with only here and there an island marking the site of buried cities, but for which, looking from the walls of Bagdad, there was a clear horizon all around. This lasted about six weeks, and as the waters subsided a luxuriant vegetation sprang up soon again to dry and wither, except in the lowest spots where stagnant water at a temperature of 90 degrees or thereabouts, and rapid decomposition of both animal and vegetable matter gave off noxious vapors for some weeks longer. As it was reported that the fellahs (tillers of the soil) along the river bank were dying in great numbers, and usually after only twenty-four to thirty six hours' illness, I resolved on finding out the cause which, however, I already suspected, and armed with four ounces of quinin and two ounces each of calomel and Dover's powder I started down the river. The first hut I entered seemed deserted but for a couple of asses, a few sheep and a dozen of chickens in the filthy mud-walled enclosure, besides a million flies disporting around a dirty rag heap, kicking into which several sallow sickly-looking Arab heads popped out. On inquiry if they were sick the answer was in the affirmative. I then told them that I was a physician who had come to cure them, when they set up a terrible wail, lamenting their poverty and assuring me they had no money with which to pay me for my medicines. Evidently they took me for a highway robber or tax collector, which here amounts to about the same thing. But when I told them I would cure them "for Allah's sake" and did not want their money there was great rejoicing. I made each one swallow forty grains of quinin and twenty grains each of calomel and Dover's powder; and thus I went from **hovel** to hovel as long as my supply of drugs lasted. The their ment confirmed my diagnosis, congestive chill; for all got well in a couple of days, while others continued dying.

It is generally held here that great inundations are the precursors of the plague, but this is not always so. The Bedouin notion of the etiology of plague is this, that it is caused by eating the flesh in a more or less putrid state of deceased camels. That there may be a grain of truth in this the history of the epidemic of 1871 would seem to confirm, though it may of course be merely a coincidence that it broke out first in an Arab camp where such food had been consumed. What probably helps to spread pestilential diseases are the grave robberies, the clothes in which the corpse was buried being afterward worn by the robber or even sold in the bazar. For this and other reasons many bury their dead, even during epidemics, under the house in the cellar or sardab, where in summer the family also on account of the heat pass the day.

Bagdad viewed from a distance is a painter's dream, but from within a sanitarian's nightmare. A labyrinth of narrow crooked streets, concave from side to side, so that when it rains they are merely canals of soft slimy mud, into the middle of which one is constantly gliding while trying to move along by jumping from right bank to left, or again jostled up against the walls by the waterworks, donkeys with goat-skin sacks on their backs; again during the dry season one is being stifled and choked with dust composed of desiccated and finely powdered human and asinine ordure mixed with a goodly number of tubercle bacilli, as one cautiously steps along to avoid freshly deposited human excrements. Now enter with me a bazar where food (meat, bread, fruits and confectionary) is exposed for sale, beside children with purulent ophthalmia, and hungry, emaciated, vagrant dogs, reposing on ash heaps from the baker's oven, their bodies one mass of sores from snout to tip of tail (excellent material for a skin clinic), and too indolent or weak to even dispute with the crows the right to the sheep entrails, fish heads and other offal lying around all covered with flies (except during the hot season when most insects perish) that are alternately feasting on the pus exuding from between the children's eyelids, the living but denuded flesh of the dogs and the dainties we are to enjoy for dinner.

I will here remark, while thinking of it, that during the summer when there are no flies there is little or no ophthalmia; but in October when the flies revive an epidemic of sore eyes breaks out, especially among the children. Against this, I was with the utmost care and cleanliness unable to protect even my own child.

But continue with me the exploration we have begun. Let us enter a private dwelling of the opulent class, where, as the massive gate swings open, we find ourselves in a spacious court with orange trees and palms, on the branches of which thousands of birds give vent to their feelings in joyful song, while above in apartments furnished with barbaric splendor and iron-barred windows, recline on softly-cushioned divans, gorgeously attired women—often literally bedecked from head to toe with gold, diamonds, rubies and pearls—smoking the nargileh or hubble bubble, and prattling. But take a look into the kitchen (on the ground floor), where in a corner is a heap of rubbish, egg shells, bones, etc., and beneath a capacious pit, into which the slops are emptied through a hole in the floor; or inspect the privy, a hole in the floor (no privy seat) communicating with a cellar beneath, near which, and separated only by a thin brick wall, is the well that furnishes water for dish-washing, etc., and the sardab or underground cave in which the family spend the hot summer days; all of which, slop pit, privy pit, well and sardab, are each spring when the river is high filled with water, that percolates through the porous soil and, to the great joy of the people, takes along with it when receding the year's accumulation of filth—truly, a land where dirt and diamonds dwell peaceably together. Again come with me to the river bank and watch the water carriers scooping up the thirst-assuaging fluid (muddy and with a slightly brackish or saltpeter taste in spring; greenish, slimy, ammonaical in autumn) in some shallow, stagnant or eddying nook where fecal and urinary contamination is greatest, and stranded carcasses of camels, horses, sheep, buffaloes, dogs and cats perfume the surroundings, and may be you will call for whisky straight with your dinner. But our inspection is not ended till we have passed a night on the housetop, Bagdad's summer bed-chamber, with no roof but heaven's vault, no walls but the horizon, where fanned by the north wind, we recruit our daily strength in peaceful slumber, and as you gaze on the cloudless and richly illuminated expanse above, more brilliant here than anywhere else in the world, you will also understand old Father Abraham's astonishment when it was announced to him that his progeny should become as numerous as the stars and you will also understand why the Chaldeans took so readily to astronomy.

During the summer months no rain falls and the air is so dry that ink dries on the pen between the inkstand and the paper; when writing I found it necessary to dip the pen for every word and twice for a long one. The prevailing winds are from the northwest and though fiery hot imparting a sensation as if one were holding the face before the open door of a furnace, they are yet refreshing; but southwest winds are very disagreeable, one can hardly breathe, the air seems lacking oxygen and they are also known as the "sickly winds," the "breath of demons." The mean annual temperature ranges from 74 to 76 degrees, the highest observed in the shade being 128 degrees and the lowest 31 degrees. I have once seen it 116 degrees on the roof of my house at 2 o'clock in the morning. The temperature of the Tigris water in summer keeps also between 80 and 90 degrees. The following temperature table gives a fair average for dwelling houses on the river bank, where, however, it is considerably cooler in the summer than in the city further back:

Month.	Mean.	Max.	Min.	During ten years.	
				Max. Mean.	Min Mean.
January	54	68	32	59	50
February	57	74	36	60	53
March.	63	86	45	68	60
April	72	90	50	75	68
May	82	102	64	86	73
June	90	114	73	91	86
July	94	118	78	96	91
August	93	122	75	97	86
September	89	108	70	90	87
October.	80	97	50	83	77
November	66	84	37	71	62
December.	56	74	31	60	52
	75 5				

Mild winters are usually followed by comparatively cool summers and *vice versa.*

Along the Persian Gulf the mean annual temperature is higher (from 80 to 84 degrees at Bushire and Muscat), but the range rather less, the temperature rarely falling below 60 degrees or rising above 108 degrees; but on account of the humidity of the atmosphere the heat is much more oppressive. In my next I shall treat of prevailing diseases of Mesopotamia and also of the sanitary administration, especially during the cholera epidemic of 1893. JOHN C. SUNDBERG, M.D.

Health at School.

NEW ORLEANS, LA., Aug. 11, 1897.

To the Editor:—May I trouble you to give me a detailed statement in regard to Dr. Clement Dukes' "Health at School," referred to in the excellent editorial on swimming which appeared in the last JOURNAL? I should like to know where and by whom the work is published, the size and price. If you could refer me to other works bearing on the direction of physical training in schools I should be much obliged, as I have undertaken to do work of that kind and wish to prepare myself for it. Hoping that this may not entail too much labor I am, with best wishes for yourself and the JOURNAL,

Very truly yours, H. B. G., M.D.

ANSWER:—See small work on "Swimming" by Martin Corbett (All-England series), London, 1890; also volume on "Swimming" in Badminton Library, by Sinclair and Henry, published by Longmans, Green & Co., a book of 452 pages with bibliography, London, 1893. Dr. Lagrange's work on "Physiology of Bodily Exercise." Appleton's International Scientific Series, 1890, has much useful information. "Physical Culture a Necessity," (*Vide* JOURNAL, Vol. xvii, page 513, Oct. 3, 1891.) See also Badminton's *Magazine of Sports and Pastimes*, Longmans, Green & Co., London.

The Diazo-reaction Test.

MINNEAPOLIS, MINN., Aug. 6, 1897.

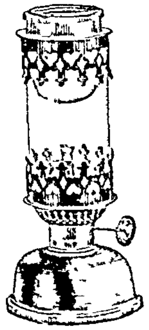
To the Editor:—Will you please inform me in what number of the JOURNAL, if any, I can find an accurate description of the method of making the "diazo-reaction" test in diagnosis of typhoid. If none has been published will you not have space for it? Very truly yours, F. A. KNIGHTS, M.D.

ANSWER:—*Vide* "The Diagnostic Value of Ehrlich's Diazo reaction," by Charles L. Greene, M.D., University of Minnesota, JOURNAL, Vol. xxii, p. 356, Feb. 24, 1894.

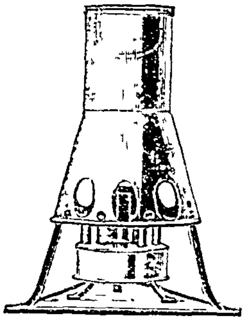
NEW INSTRUMENTS.

A NEW DISINFECTING AND DEODORIZING LAMP, AND A NEW FORMALIN DISINFECTOR.

We present illustrations of a new disinfecting and deodorizing lamp for household use, and a new formalin disinfector. In this disinfector the formalin is employed as pastils (Paraform) instead of the formerly used fluid form. The pastils are vaporized and the formalin given off in its gaseous form, *i.e.*, its most active form, as it thus penetrates everywhere in the room and the most resistant pathogenic forms are entirely destroyed. Other advantages are the even distribution of the gaseous formalin, the cheapness and simplicity of the apparatus and the fact that it does not injure fabrics, etc., thus making it unnecessary to remove furniture, ornaments, etc., from the room to be disinfected. To disinfect a medium sized room from 100 to 150 pastils are vaporized.



Deodorizing Lamp.



Formalin Disinfector.

The disinfecting and deodorizing lamp is constructed on the same principle as the formalin disinfector, but is smaller. The light need not be extinguished as the lamp burns out with perfect safety. Pathogenic organisms of moderate resisting powers may be effectually destroyed by the use of this lamp, foul odors removed and a preservative influence lasting two or three days given rooms containing food tending to decomposition. Alcohol or wood alcohol is used in both to vaporize the pastils, 2 ounces lasting from two to four hours in the lamp, according to the flame, while in the disinfector the reservoir is filled three-quarters full of alcohol, or one-half full if wood alcohol is used. These are supplied by Schering & Glatz, New York.

PUBLIC HEALTH.

Yellow Fever in Cuba.—A report from Havana, via Key West, Fla., dated August 21, states that the Marquis de Ahumada has been very ill but is now improving. Gen. Muncader, chief-of-staff for Capt.-Gen. Weyler, is also ill with the fever and for these reasons the latter officer has remained in Havana. The sanitary condition of affairs is supposed to be more alarming than the vague rumors admit.

Health of San Francisco.—The report of the Health Department shows 470 deaths for July, 1897, and 443 births, in an estimated population of 360,000. This makes the death rate for July 1.30 per thousand and 15.60 per annum. The principal causes of the July mortality were: Phthisis pulmonalis, 70; heart disease, 69; cancer, 36; violence, 33, and pneumonia 28 cases.

A Suspected Case of Yellow Fever.—According to the press reports the steamship *Finance* from Colon arrived at the port of New York August 21, and brought in a seaman who was taken ill three days before. The patient was removed to the Swinburne Island Hospital, and the second cabin passengers and the crew were transferred to Hoffman Island. The vessel was disinfected and allowed to proceed to her pier, where the cabin passengers were landed.

Destruction of Cargo of Grain by Mexican Board of Health.—The sale on shore of the cargo of grain on the American ship *Frank Rood*, stranded near Vera Cruz, was forbidden by the local health authorities, as the grain had been slightly wet. To prevent sickness from the decaying mass, the sea was allowed to wash it away, and the owners were paid $100 indemnity by authority of the National Board of Health.—*Boletin del Consejo S. de Salubridad*, June.

The Daily Water Supply of New York is 225,000,000 gallons. The new system is to add 65,000,000 gallons through the Fifth Avenue mains, and 20,000,000 by the others. The new aqueduct system is capable of producing 400,000,000 gallons should they ever be needed. New Yorkers seem to gloat over the assertion that the pumping costs Chicago four cents per thousand gallons, while the cost to New York for the same volume is only two and a half cents. Happy is Chicago to be mentioned in the same breath.

Joyful News for School Children.—In Marpman's bacteriologic institute at Leipzig, the ink bacillus has been discovered and duly named. Out of fifty-seven different kinds of school inks examined, most of them made with nutgalls, the greater number contained bacteria. School inks colored with an anilin dye, even though the bottle had only just been opened, contained the micro organisms already mentioned, and the number of bacilli was the greater the longer the ink had been exposed to the air. From such an anilin ink, which had been in an open inkstand for three months, a specific bacillus was isolated and mice were inoculated with it. After four days they died of blood-poisoning.

The Most Populous Block in New York according to the Federation of Churches and Christian Workers is on the West Side, and is bounded by Amsterdam and West End Avenues and 61st and 62d Streets. The population count is 3,580. Squalor reigns supreme. Irish, Germans, Italians and Austrians furnish the material for racial wars. The Hebrew is the only absentee and the Austrian butchers constitute the only placid element. The "head of the family" wages averages $12.50 per week. Three tiny, narrow rooms are the most a family can expect, and for these a rent of $10 to $12. The 3,580 people live in 2,639 rooms, the kitchen always the "living room," and less than twelve hundred of these have an outside window. The tenements are all patterned alike, one long row of dull red brick structures that, sav [illegible] d stoop, as well be factories. The block has an environment all its own. Despite the crowding of the region, many lots to the north along West End Avenue are vacant, the rocks that in places are miniature cliffs have not been blasted away, and there are still some remnants of "Shantytown" overlooking the railroad track. Heaps of lumber and rods of sewer pipe extend in every direction. Strange to say these dwellers upon the steep hill care but little for the partition bath tubs of ingenius owners, not as much perhaps as for the marble palaces on Fifth Avenue. A proposed North River bridge may disperse the tramps from the railroad and New York may yet have an opportunity to weep for those sanitary sins, which to her seem the most precious.

Health in New York.—The report of the State Board of Health for July shows a mortality of 11,235, greater than that of June by 2,200, but 1,400 less than that of July, 1896. Compared with June, 1897, deaths were as follows: From diarrheal diseases, 1,900 more; from diseases of the digestive organs, 300 more; from accidents and violence, 200 more; indefinite causes, 200 more. Diphtheria decreased by 100 in mortality; scarlet fever and measles somewhat; and respiratory diseases by 250, while typhoid fever moderately increased. The death rate from all causes was 20.50 against 16.75 in June, 45.5 per cent. of the deaths occurring under five years of age, against 31.5 per cent. last month.

The Percentage of Diseased Cows in the City Limits of New York is put down at 16.3. The board has supervision limits over 2,700 cows. The milk from 550 of these is consumed by the owners, and the rest sold. Of these cows 1,139 were examined by experts and 186 were condemned as diseased, after being subjected to the tuberculin test. The official diagnosis was confirmed in each case at the autopsy. The tuberculin used in the tests was produced by Koch's method at the board's laboratories. President Wilson says that he is satisfied, faom the work of the officers having supervision of the city's milk supply, that milk will continue tainted to a greater or less degree until the authorities of Connecticut, New Jersey, Pennsylvania and Massachusetts adopt as rigid laws as are enforced by the New York Health Board. He meekly intimates to taxpayers that more ample appropriations would be gratefully received.

Alcohol at Rouen.—The liquor dealers sell more to families at home than across the counter. To study better this frightful state of affairs, Dr. Brunon took service as a waiter in one of the liquor shops, which number fifty to each one hundred houses in town. He relates that it is a frequent practice for a family to order a liter of alcohol, which it was his duty to deliver early in the morning. A large soup tureen was filled with slices of bread, boiling coffee poured over them, and the soup seasoned with half the alcohol. This is the morning meal for the whole family, including the children. If there are more than four in the family, the entire liter is emptied into the soup. They are not hungry afterward during the day, but the thirst is inextinguishable till evening. There are 4,600,000 liters of alcohol consumed annually by a population of 112,352 (census of 1891).—*Gaz. Méd. de Liège*, July 22.

Oysters.—"A recent official medical report, published in the London *Lancet*, quotes with approval the words of Prof. Conn that the public health is placed in jeopardy when oyster dealers, for the sake of producing plumpness, place oysters in the mouths of fresh-water creeks in close proximity to sewers."—*New York Med. Record*. There should be a law prohibiting this practice, but such a law would necessarily be enforced with difficulty. Dr. Klein has made some very interesting examinations of oysters, concerning the possibilities of infection from sewage, to which the London *Lancet* of December 5, devotes considerable attention. While these examinations may prove impurity and hazard, it is difficult to state the precise nature of the specific hazard. It is unfortunately true that the typhoid bacillus has been found by Dr. Klein in one instance. Another very interesting paper on "Oyster Culture and Disease," is to be found in the *Brit. Med. Jour.* of Nov. 20, 1896. The investigations of Dr. Cartwright Wood, concerning typhoid fever germs in oysters, while they confirm the opinion of Dr. Klein that shell-fish can carry infection after exposure in polluted salt water, do not consider the possibilities of infection arising in the oyster after it has been removed from salt water. The oyster is undoubtedly capable of absorbing poisons, not only through the medium of water, but also by means of exposures to foul air. We are well aware how rapidly milk absorbs odors, whether of a poisonous nature or not, and this property oysters also possess. A putrid infection is readily induced in structures so favorable for infection as the oyster or clam. Atmosphere loaded with disease germs imparts a contaminating influence to jellies, vegetables, meat, and bread, as well as to milk, fish and oysters. A wholesome storeroom is the suggestion, not the rule.

The Sanitary Regulation of the Sleeping Car.—The Louisiana State Board of Health has recently investigated the subject of the sanitary defect in our sleeping-car systems, and the following resolutions have been adopted: Be it

Resolved, That every sleeping-car entering the city shall, on its arrival, be thoroughly cleaned and disinfected, under the surveillance of our sanitary inspectors, as follows: 1. The towels, bed clothes, etc., to be submitted to a vigorous disinfection by ebullition in water for an hour, or sterilized in an autoclave or steam oven. 2. The closets and cuspidors (these should be of china-ware, not metallic) to be washed out with antiseptic liquids and always provided with a supply of such solution. 3. The car proper to be disinfected by means of formalin. This agent positively kills or destroys the germs of tuberculosis, diphtheria and smallpox in a few minutes. It causes no appreciable injury to the woodwork, upholstery and carpets. The method of applying it is very simple. It can be applied in the form of fumes or by a special apparatus. It applies to mattresses and pillows and cushions, as it possesses most penetrating properties. The disinfecting process can be carried out quickly and at little expense."

The subject of car sanitation is one that appeals to the large majority of our population on account of its possibilities in regard to transmission of contagious diseases. That such diseases may be transmitted in this manner is admitted by all sanitarians, and the danger of contracting diphtheria, syphilis, eruptive fevers, etc., from lack of cleanliness in sleeping-coaches, is not a remote possibility, but an actual reality. The transmission of tubercular disease in this manner has been disputed, but there is no doubt but that in certain depressed conditions of the system, when the ordinary forces with which nature surrounds us to guard against the encroachment of infectious diseases have been weakened, that the inhalation of dust containing tubercular matter is wrought with serious danger. The subject of the sanitary regulation of sleeping-coaches is one of the utmost importance, and these regulations should be made universal. The adoption of proper resolutions by the Louisiana State Board of Health is of importance not only locally, but it may be the entering wedge for the establishment of similar laws in other parts of the United States. If such laws existed in New York, Ohio, Pennsylvania and Illinois as well as in Louisiana, it would be a fairly satisfactory guarantee that travel east of the Mississippi had been deprived of its worst sanitary dangers. Such a movement would soon be followed by similar regulations by other States, so that finally traveling in the United States could be undertaken without the danger of contracting diseases to which we are now exposed by the unsanitary condition of the sleeping-car.

Report of a Study-travel to the Tuberculous Establishments of Germany and Switzerland.—Edv. Kaurin (Director), Molde, Norway, who has been nominated for the directorship of the first popular hospital for tuberculosis in Norway, used last autumn a traveling stipend to visit the tuberculous establishment of Falkenstein, the best known of Germany, and whose director is the Privy Councilor Dettweiler. He gives a detailed description of this institution, which is situated most picturesquely in the mountains of the Taunus, 400 meters above the sea level. The establishment is very comfortably appointed, and is in every respect a model institution, having spacious rooms for the patients and several pavilions in the beautiful park surrounding it. At a short distance is the popular sanitarium of Ruppertshain, a very well organized place which was started about a year ago, and which is much frequented by patients of small means; they enjoy the best attendance for from two marks fifty pfennigs to five marks a day. The usual duration of the treatment is three months. In the two houses the treatment is hygieno-dietetic, Dettweiler's method according to Brehmer, which is based principally on the dwelling of the patients in the open air, in the winter as well as the summer, in large rooms open on one side, and on the hardening of the skin and a very abundant nourishment. Few medicaments are employed and on the whole there is only a symptomatic treatment. Results are quite satisfactory and there are 24 per cent. of cures. The author emphasizes the fact, which is proved by the statistics of the towns of Falkenstein and Görbersdorf, that there is no reason to fear that such establishments may transmit the contagion to the inhabitants of the surrounding country. The contrary seems to be proved, as the frequency of tuberculosis diminishes in the regions, the establishments in question acting outside as educators with regard to measures to be taken against infection. In Switzerland the author visited Heiligenschwendig near Thoun, which is the first in date of the popular sanatoriums of Switzerland. It is situated in the Canton of Berne, 1,100 meters above the level of the sea. This establishment has not been long in activity and is calculated to receive about fifty patients, but they have now begun to enlarge it so there will be room for 120 patients. The author also describes the Baselian therapeutic establishment at Davos, which was not yet finished. It is a sanatorium founded by the city of Basel for its impecunious sick. There is also the well-known sanatorium of Dr. Turban, and the Kurhaus of Davos. He mentions pensions, established in Davos, for young people with the beginning of phthisis or a tubercular disposition; they can there, under the eye of a physician, go through a whole course of study, all the time taking good care of their health. He also speaks in detail of the climate of Davos. The sojourn in this locality seems to be contraindicated only for high graded anemia and neurasthenia or pronounced cardiac weakness. The author then passes to the detailed description of the institutions existing at Görbersdorf, that is, the old establishment of Brehmer, the sanatorium of Dr. Römpler, the establishment of Dr. Weicker and his hospital for impecunious tuberculous patients. He shows what importance this school of Görbersdorf attaches to life in the open air, in large well-protected parks with numerous avenues, whose slopes are various. In the environs of Berlin the author visited the popular sanatoriums of Grabow, Malchow and Blankenfeldt. In the first of these localities the tuberculous are installed in huts *à la* Döckert, which have been put at the disposition of the establishment by the Red Cross, and built in a large pine wood. The two other establishments are built in the irrigation fields of the city of Berlin; their situation is in consequence not excessively advantageous, but they were not originally meant for receiving tuberculous patients. Both, however, considering the short time of their activity, have furnished good results of the hygieno-dietetic method there applied. Everywhere in Germany and Switzerland people were most earnestly interested in the question of tuberculosis. The struggle against this disease is engaged in, in both countries, with uncommon ardor and a final victory is confidently hoped for.—*N. Mag. f. Laeger.*, No. 2, 1897.

The National Conference of State Boards of Health was held at Nashville, Tenn., August 18 and 19 and the following questions discussed:

"Should the tuberculous insane be isolated from inmates in our asylums, and accommodations provided for them in separate and detached buildings?" "What municipal ordinances shall Boards of Health advise for restriction of tuberculosis?" "What attitude are the State Boards of Health prepared to take regarding the new law for general inspection of dairy cattle, and what are the details of any practical scheme for inspecting herds supplying public milk, dairy produce, for dealing with animals which react to the tuberculosis test?" "To what extent should State Boards of Health be expected to furnish a diagnosis of contagious diseases within their jurisdiction?" "How far should mandatory measures go in dealing with measles, whooping-cough, leprosy and tuberculosis?" "Relations of National and State Quarantine?" "Should Boards of Health tolerate the feeding of hogs with offal from slaughter houses or meat from knacker's yards?" "Should the county jails and prisons of the different States be placed under the sanitary supervision of their respective State Boards of Health, which shall have them inspected regularly at stated intervals by a health officer appointed by them or under their control?"

In June a conference of baggage agents, health officers and funeral directors was held at Cleveland, Ohio. A committee representing this conference made a report "recommending changes and amendments in the present methods of embalming, disinfecting and transporting of dead bodies." We give a synopsis of the regulations recommended in this report, which with a few amendments was adopted:

1. The transportation of bodies dead of smallpox, Asiatic cholera, yellow fever, typhoid fever or bubonic plague is absolutely prohibited.
2. The bodies of those who have died of diphtheria, scarlet fever, glanders, anthrax or leprosy, to be accepted for transportation only when prepared for shipment by being thoroughly disinfected by arterial and cavity injection, disinfecting and stopping of all orifices with absorbent cotton and washing the body with disinfectant.
3. Bodies of those dead of typhoid, puerperal fevers, erysipelas, syphilis or other dangerous, communicable diseases may be prepared for shipment by filling cavities with improved disinfectant, washing the exterior of the body and stopping all orifices with absorbent cotton. In cases of contagious, infectious or communicable diseases the body must not be accompanied by persons or articles which have been exposed to the infection.

The Secretary was instructed to report this action to the executive officers of each State and Provincial Board of Health and request such action as they saw fit. Dr. Benjamin Lee of Pennsylvania, was chosen president; Dr. Formento of New Orleans, vice-president; Dr. Hurty of Indiana, secretary; Dr. Pelletere of Quebec, treasurer. The meeting for 1898 will be held at Detroit, Mich.

Alleged Unwholesome Meat in Germany.—According to the *Consular Reports* of February, a report to the United States Government from Cologne sets forth that the Germans are not satisfied with the kind of examination to which meat products for export are subjected before they leave our shores. The agitation appears to be conducted in the interest of the German agriculturalist. At a recent meeting of the agricultural association of the district of Cologne the subject of adulterating German sausages with American diseased beef was discussed. According to the Cologne *Gazette*, one speaker, in discussing this question, drew special attention to the fact that beef was examined for maggots in Germany but not so in America. Since, in the former country (Germany), sausages were more adulterated with American beef that was infested with maggots than with potato meal, the law in force in Germany against dishonest competition should also be applied in the case of sausages, which would require the marking of the goods as to whether they were of German or foreign origin and had been officially examined or not. Another spea[illegible]r remarked that it made an immense differ[illegible] we[illegible] the German people whether home or fo[illegible] therefore deemed it necessary that [illegible] d in the preparation of sausage be given. A chemist present, in speaking on the same subject, said that American beef was not so profusely infested with maggots but that it came to Germany prepared with borax in an astonishing manner. On the exterior of the meat there was a complete crust of borax and the meat was actually pickled with borax. If sausages contained meat prepared in this way and were offered for sale it was clearly a fraud in the sale of foodstuffs. But this importation had only commenced with them as well as the discovery of its harmful effects.

SOCIETY NEWS.

The American Academy of Railway Surgeons will meet in Chicago Oct. 6, 7 and 8, 1897.

The Eighth Italian Congress of Internal Medicine is to be held at Naples in October. De Renzi and Marchiafava will present the subject of "Leukemia and Pseudoleukemia;" Cardarelli and Silva, "Cardiac Neuroses"; Fenoglio and Massalongo, "Chronic Arthropathy," while Devoto and Ferrannino will review the year's progress.

The Seventh Morwegian Medical Congress was held at Trondhjelm, August 3 to 5. Among the communications of more than local interest, we note that addresses were delivered by P. Aaser, president of the Norwegian Medical Association on "The Position of the Physician in regard to Life Insurance Companies;" "Psychiatric Diagnosis in Theory and Practice," H. Dedichen; "Medical Secrecy," Foerden; "Retention of Urine," K. Jervell; and "Heredity," E. Storen. Professor Laache is the official delegate from Norway to the Congress at Moscow.

Third Italian Medical Congress, Novi, June, (Ligurian). Prof. E. Maragliano delivered an address on the "Cure of Nephritis," which he bases on the principle of regulating the proportions between the nitrogen introduced and the nitrogen eliminated. This therapeutic indication is sufficient to cure acute cases and prolong life in chronic. He concluded with an urgent appeal to all physicians to follow the new scientific paths and seek to discover disease in its latent and early stages instead of waiting until it is so difficult to control. G. Ingianni reported the results of experimental research in suture of the vas deferens on dogs, inserting absorbable substances to facilitate the suture and hold the walls of the canals apart. In all his experiments, the two stumps united perfectly, but the canal remained impervious, which is contrary to the general assumption. E. Terrile of Genoa, described the pathogenesis and therapeutics of tuberculous polyserositis which he ascribes to toxins in the blood in the course of a latent or manifest tuberculous infection. The two cases he described were cured with Maragliano's serum. Prof. C. Poli of Genoa, referring to the operative cure of endocranial complications of purulent otitis media, described several cases in which the operation gave issue to pus from the lateral sinus, although no previous symptom had indicated this complication. As this represents the first stage of endocranial diffusion, he urges the necessity of being on the lookout for it and of investigating the condition of the ducts of the sinus in resection of the mastoid. Prof. L. Levi reported the fine results obtained by the use of endovenous injections of corrosive sublimate in the cure of the localizations of the gonorrheal virus in the articulations. The fever disappeared at once and also the pains in the joints. It is the first time that this treatment has been attempted. He concluded by calling attention to the serious complications of gonorrhea, which is too often neglected as of little consequence. Prof. L. M. Bossi suggested among other new obstetric regulations that the sanitary authority should be informed at once whenever abnormal conditions were found on combined vaginal examination, at the puerperium. Bajardi presented an improved tracheotome, which enables the operation to be performed in two parts, and without assistance or hemorrhage. It is a three-quarters curve and is introduced into the trachea guided by a hook previously inserted. L. Macaggi presented a female catheter, with a double flow, to secure permanent antiseptic irrigation in cases of vesico-vaginal fistula, which he considers of great importance. It is held in place by the sphincter. Prof. E. Sacchi reported favorable results in operations on the deferens, for prostatism in eighteen cases. L. Devoto stated that iron alone is not sufficient to cure chlorotic anemia, but that equal stress must be laid upon repose, suppression of liquids, use of mixed alimentation,-disinfection of the stomach and intestines, and administration of sulphur with the iron medication. S. Personali mentioned that erythromelalgia does not represent, in all cases, a distinct disease, an autonomous neurosis, but that it often coincides with the repullulation of syphilitic symptoms, and is therefore a significant symptom. Sacchi presented a patient whose larynx had been extirpated *in toto* twenty months before, and replaced with an artificial organ. He can speak correctly and be understood even at a distance. Deamicis described a case of incoercible vomiting in pregnancy finally controled by chloronarcosis. Gasparini asserted that ulcerations of the nasal or oral mucosa are the cause of clonic facial spasms, and when they are cured, especially with anodic electrolysis, the spasms cease. The fine results obtained in infantile myxedema with thyroid extracts were confirmed again, and various deformity apparatuses for the jaws, etc., were exhibited, Giuria signaling the importance of applying such an apparatus at once before cicatrization has produced deformity. Prof. Morselli proposed a modification of the Sanitary Code to place foreign physicians practicing in Italy, especially in the Riviera, on the same footing as Italian physicians practicing in foreign countries, and not allow them so many privileges as at present. E. Roncagliolo proclaimed the efficacy of guaiac *per via epidermica* in the cure of erysipelas of the face. It has been in use for three years at the Genoa clinic, and has been found effective in arresting the disease in its early stages, and curing it when more advanced. The complications are rare. He believes that the guaiac neutralizes the toxic substances in the circulation by its direct or indirect action on the cellular protoplasm. —*Gaz. degli Osp. e delle Clin.*, July 18.

NECROLOGY.

M. A. Muniz, M.D., Lima, Peru, aged 36 years, Professor Med. Physics and Hygiene; Superintendent of National Insane Asylum, and Chairman of the National Board of Health. *La Cronica Medica*, June 30, is devoted to a review of his brief, brilliant career, and his indefatigable labors in general for the progress and enlightenment of his country. His articles on "Leprosy" and the "Demographic Statistics of Peru" won him membership in the French Société d'Hygiène. Those who attended the First Pan-American Congress at Washington may remember his interesting address on the Incas and his collection of Inca skulls.

Dewitt C. Hough, M.D., Jefferson, 1847, of Rahway, N. J., died August 25, aged 70 years.——George R. Kauffman, M.D., Bellevue Hospital Medical College, New York, 1867, Chambersburg, Pa., August 13, aged 56 years.——George Y. Lehr, M.D., Jefferson Medical College, 1863, Philadelphia, Pa., August 18, from carcinoma of the stomach, recurrent after an operation one year previous. He was born in Gratz, Dauphin Co., Pa., 1847.——D. F. Burner, M.D., Woodstock, Va., August 23.——J. B. Clark, M.D., Economy, Ind., August 21, aged 45 years.——J. R. Hipple, M.D., Waldo, Ohio, August 18, aged 70 years.——E. C. Putnam, M.D., Alma, Neb., August 9, aged 44 years.——Wm. H. Slevin, M.D., Toledo, Ohio, August 18, aged 30 years.——Dr. R. de B. Martins Pereira, Professor in the Lisbon School of Medicine.——Dr. Victor Mayer, Professor of Chemistry in the University of Heidelberg, author of a "Manual of Organic Chemistry" and of many important contributions to organic chemistry, aged 48.——Dr. Benjamin Clémenceau, father of the political leader of that name, aged 87. ——Dr. C. J. Ask, Professor of Surgery in the Swedish University of Lund.——Dr. Joseph Kovács, Professor of Surgery in the University of Buda-Pesth, aged 65.——Dr. Cesareo Magdalena, Assistant Professor in the Madrid Bacteriological Institute.——Dr. B. F. Sherman, Dean of the Medical Society of the State of New York, of which he was President in 1884, aged 80.——Dr. F. H. James, a notable connoisseur and collector, and one of the best authorities on numismatics in the United States, aged 72.——Dr. T. Bogomoloff, Professor of Medical Chemistry in the University of Charkoff, aged 55.——Dr. Kremnitz, Physician to the Crown Prince of Roumania.

MISCELLANY.

A Roentgen Ray Institute in Berlin has been established under the supervision of Professor Grunmach, chiefly for diagnostic purposes.

A Scientific Latin-American Congress has been organized by the Societa Cientifica Argentina to celebrate its twenty-fifth anniversary. It will be held at Buenos Ayres, April 10 to 13, 1898, and is to be international. The medical sciences are to form an important section.

Correction.—In "The 'Schott Treatment' of Cardiac Diseases," by Dr. Camac (*vide* JOURNAL, August 28) the amount of sodium bicarbonate in bath No. 6 (p. 412) should be two pounds instead of one, which made an excess of HCl, injurious to the patient and the tub. In the discussion following the reading of the paper, the remarks of Dr. Smith of New York should be accorded to Dr. J. J. Morrissey of New York.

The Gold Harben Medal presented to Dr. v. Pettenkofer of Munich, the famous German hygienist, by the British Institute for Public Health, was first awarded in 1895, when it was presented to Sir J. Simon, at the time at the head of the English sanitary service.

Back Number Wanted.—The issue of the JOURNAL for July 3, 1897 has been entirely exhausted and in order to supply the demand for copies made by those desiring to fill their sets for binding, the JOURNAL will pay 10 cents a copy for the return of this number.

Fauvelle Prize Awarded to Prof. Ramon y Cajal of Madrid.—The Anthropologic Society of Paris has bestowed this prize of 1,200 francs in recognition of the valuable researches of Prof. Ramon y-Cajal in the physiology of the nervous system. He had not contributed any special work to the society.—*Arch. de la Policlinica*, June.

New Sign of Early Tabes.—In a patient with tabes it is often possible to flex the leg at the hip without bending the knee until the toe almost touches the ear, without producing the sense of painful tension in the popliteal space so speedily felt by one in health. This is not only an interesting feature of advanced cases, but is a valuable early diagnostic sign.—*Health*, August 14.

Toxin in the Urine of Cancer Subjects.—Castelli has found in the urine of patients with cancer and cachexia a toxic element of extreme virulence. Injected into animals it produces the clinical picture of the characteristics of the blood in cancer, determining a hematolytic or inhibitory effect on the hematopoiesis.—*Archivos de la Policlinica.*

Surgery of the Stomach.—Carle and Fantini conclude from the results of eighty-four operations on the stomach, that many of the so-called neuroses of the stomach rest upon anatomic foundations, and that a simple operation to remove the cause would relieve them. They found in every case that excessive hypersecretion of hydrochloric acid ceased as soon as the obstacle that was causing stagnation was removed.—*Gaz. d. Osp. e d. Clin.*, July 1.

Sero-therapy and Surgical Tuberculosis.—D. Dasara has been very successful with Maragliano's serum supplementing surgical intervention in a case of tuberculosis of the bones and joints, described in the *Gaz. de Osp. e d. Clin.*, 34. Similarly favorable results are reported by Beccaria (in No. 78) in cases of cervical and submaxillary adenitis accompanied by kerato-conjunctivitis, with tuberculous antecedents.

Wound into the Spleen.—The deep wound in the upper lateral left hypochondrium was made with a shoemaker's knife and extended into the spleen. The hemorrhage was diffuse, characteristic and alarming, but was controlled and the wound healed by first intention in a very brief time. Treatment: Antiseptic irrigation and tampon of gauze tightly packed into the wound, with compressing bandage; the incision in the skin enlarged to allow of closer packing.—*Cronica Medica*, June 15.

Hypertrophied Prostate Thirty-five Days After Double Castration.—The connective tissue was found hypertrophied to such an extent that the gland tissue was either completely atrophied or transformed into small cysts. The prostate was as large as a mandarin, hard, with a few soft spots when patient was first seen. Irrigation of the bladder was ordered for the accompanying vesical catarrh, and bilateral castration performed. The wound healed well, but the patient sank and died in thirty-five days. In such a case castration would obviously fail to relieve.—*Cbl. f. Chir.*, July 24, from *B. de la Soc. Anat. de Paris.*

Many Americans Attend.—Many members of the AMERICAN MEDICAL ASSOCIATION were present at the meeting of the British Medical Association at Montreal. Among the Americans present were the following: H. O. Marcy and F. W. Coles, Boston; Henry D. Holton, Vermont; T. D. Crothers, Conn.; W. W. Keen, J. B. Roberts and Edward Jackson, Philadelphia; S. C. Busey, F. B. Loring, Z. T. Sowers and D. Morgan, Washington, D. C.; Howard A. Kelly, Wm. Osler and R. W. Johnson, Baltimore, Md.; T. W. Miller, J. H. Hollister, E. F. Ingals, N. S. Davis, Jr., J. N. Hyde, R. D. MacArthur, W. E. Quine, A. R. Reynolds, D. A. K. Steele, F. Henrotin, John B. Hamilton, and others, Chicago; Frank P. Foster, G. F. Shrady, J. R. Goffe, R. W. Wilcox, A. R. Robinson, G. H. Fox, L. E. Holt, W. B. Noyes, A. Jacobi, F. S. Dennis, J. H. Fruitnight and S. J. Meltzer, New York City; P. S. Conner, Joseph Ransohoff and J. T. Whittaker, Cincinnati.

New German Law on Inebriety.—In the new code, the sixth paragraph, which will come into operation in Germany in 1900, enacts compulsory treatment of habitual drunkards. Among the persons liable to be interdicted, the interdiction involving being placed under a curator, who will be empowered to place the individual anywhere for treatment until discharged from curatorship by the court, inebriates are specifically mentioned. The exact description is, "he who, in consequence of inebriety, can not provide for his affairs, or brings himself or his family into the danger of need, or endangers the safety of others." This measure was first advocated in 1863, at a meeting at Hanover, presided over by Judge Naumann of Hameln.—*British Medical Journal*, August 7.

Prescription Defined.—According to the *Century* Dictionary and other recognized authorities, the word "prescription" is defined to mean "in medicine, a statement usually written of the medicine or remedies to be used by a patient and the manner of using them." So says the appellate court of Indiana in the case of Caldwell v. State, where it holds that the following writing: "B. W. Tilford, druggist, Martinsville, Ind., R. Spt. frumenti, qt. 1. For medical use. Date, Nov. 10, 1895. B. W. Tilford, M.D.," is not a prescription within the meaning of a statute prohibiting the sale of liquor on Sunday, except on a prescription therefor. It criticises the foregoing, and holds it defective as a prescription, for not being addressed to anyone, in not containing the name of the patient to whom the liquor was to be sold, nor the manner of its use. It further intimates that a prescription might be sufficient to inform the druggist of the goods desired, and in that sense, according to the United States Dispensatory, and not be sufficient to comply with the requirements of such a statute as that stated.

Censures Disclosures.—According to the record in the case of Loudoun v. Eighth Ave. Ry. Co., the appellate division of the supreme court of New York says, it would appear that there had been a disclosure by one of the medical witnesses for the defense of facts which he had obtained as the physician of the plaintiff. This, it continues, was done regularly and [illegible] ically, was a flagrant violation of the duty which he owed to his patient, and a contempt of the law which prohibits such disclosures. Under these circumstances, the court declares, the counsel was justified in calling the attention of the jury to the fact of this violation of law, of this failure of appreciation of the duties of a professional man to his patient, and of the flagrant abuse of the position which he occupied. It adds that it can not be said that any too severe language was used in criticising the conduct of a physician who would thus betray his patient. This physician had been guilty of the grossest violation of his duty, and was open to the severest criticism and condemnation.

"Sometimes" Evidence Inadmissible.—The appellate division of the supreme court of New York reversed a judgment for the plaintiff, and ordered a new trial, in the personal injury case of Blate v. Third Avenue Railroad Company, on account of a physician having been permitted to testify as to what "sometimes" happens as the consequence of a certain condition of things. It was not even an opinion of the physician as to the future condition of the plaintiff, or what would likely, or even possibly, happen to him as the result of the injury, that was elicited. But he was called to testify as to what sometimes results from such a condition as the plaintiff was found to be in, and that testimony was allowed to go to the jury under a complaint which alleged the permanency of the injury, and where the jury were instructed to allow damages for the injury that would follow from the condition in the future. This, the court holds, was error by which it was reasonably certain the jury were influenced to the disadvantage of the defendant, their verdict against the latter being quite large.

The Wire Saw.—Professor del Greco has been using L. Gigli's wire saw in his clinic for three years, and has gradually extended its use from simple resections of the ribs, until it includes all bone sections except those of the skull, and he proclaims its advantages in unqualified terms. It fits around the bones, and saws them accurately and delicately in any shape desired, never leaving a scrap unsawed, while it is yet strong enough for the hardest bones. It saws the soft parts also as evenly as a knife, and can thus be used alone for amputations, etc.; but its value is best shown in operations on the foot, which can be performed with extreme rapidity, with the foot in any desired position, and in any direction; the cut is as smooth and even as if soft parts and bones had both been cut with a knife at one stroke. It is also extremely effective in obstetric work. The inventor claims that it should take its place along with the elementary instruments, knife, scissors, needle, etc., in every surgeon's case. Bardenheuer recently mentioned its advantages in resection of the os ilei. It is made by Hartel of Breslau, on an entirely new principle, from a steel wire serrated on all sides, and can saw in any direction.—*Cbl. f. Chir.*, July 24.

Ballottement of the Bladder as a Test for Calculi.—W. M. Glagolew describes in *Wratsch* (Nos. 17 and 18), a method invented by him to assist in the diagnosis of vesical calculi, which is simple, absolutely harmless and effective, especially for children. The patient in the dorsal position, knees flexed, the physician on the right side introduces his right forefinger per rectum as far as the bladder, the volar side up and bends it rapidly several times as if beckoning with the two lower phalanges, hitting each time the floor of the bladder. If there is a non-encysted stone in the bladder it will be flung up by this motion and be felt when it falls down against the finger again. The bladder should not contain more than 150 c.c. of urine; the pelvis should be raised if more convenient; the investigation can not be continued long at a time as the sphincter ani constricts the finger and deadens the sensibility; the finger must work gently at first not to push the stone away from the median line. It should be tossed up as perpendicularly as possible to render its fall more distinct. The patient himself sometimes feels the rise and fall of the stone. There is no contra indication to the use of this test except tendency to hemorrhage.—*St. Petersb. med. Woch.*, July 17.

A Method of Indefinitely Keeping up the Circulation of Blood in the isolated heart of a frog has been devised by Prof. C. G. Santesson of Stockholm, with which he has succeeded in keeping the heart pulsating for eight hours with a 15 centimeter inflow and an 18 outflow, pumping at each pulsation 0.25 c.c. at first and 0.2 at the close of the experiment, which could have been continued longer if desired—a total of 4.7 liters. The apparatus is extremely simple, merely two large glass cylinders (Mariotte) suspended at a certain distance above the isolated heart, which is in an air tight box partly filled with salt solution, with which they connect by a single tube with faucets, etc. The aorta tube passes out of the heart to a receptacle suspended above just below the blood cylinders, one of which is filled with normal blood while the other serves for toxicologic experimentation. Both the aorta and the vena cava tubes are connected with registering drums, and the heart box by a tube with the Ellis piston recorder. An electric device records the seconds and the four pencils write simultaneously on a Ludwig Baltzar kymographion. The *Cbl. f. Phys.*, of July 10, Vol. 9, No. 8, contains the complete illustrated description.

Physiologic Connection Between the Nerves of the Heart and the Thyroid Gland.—Prof. E. v. Cyon has resumed his important studies of the depressor nerve (horses, dogs and rabbits) and now announces: 1. That stimulation of the third root, which anastomoses with the superior cervical ganglion, diminishes the blood pressure very much by reflex action, usually accompanied by an acceleration of the cardiac impulses. He has never observed the opposite effect with this isolated stimulation, even when both vagi were intact. The pupils are frequently noticeably contracted and continue thus for a while after the irritation. 2. The root of the depressor nerve arising in the superior laryngeal nerve, serves principally to connnect the heart with the thyroid and enables it to directly control the action of the gland. The nerve fibers passing from the inferior laryngeal to the heart probably answer the same physiologic purpose. 3. Baumann's thyroiodin introduced directly into the circulation affects the nerves of the heart and the vessels, especially the depressor nerve, to a marked extent. Stimulation of the depressor after the introduction of thyroiodin causes a violent diminution of the blood pressure in many cases from which the animal is unable to rally and dies from lack of blood in the heart. He concludes his communication to the *Cbl. f. Phys.* of July 10 by stating that the anatomic and physiologic relations between the nerves of the heart and the thyroid, through the mediation of the depressor nerve, clearly explains the etiology of Basedow's disease and also of the strumous affections originating in overexertion of the heart or violent emotions.

X-Ray Photography.—J. Tarchanow has found that the body is protected from the electric effect of the Crookes' tube by placing a thin sheet of aluminum over it. It allows the passage of the X-ray, but arrests the gentle electric discharges which emanate from the Crookes' tube to quite a distance, as he has proved with frogs intoxicated with strychnin, which pass into a tetanic condition when approached to 2 or 3 cm. of the tube, if held with the nerves parallel to it. The muscles are not affected, nor the nerves, if perpendicular (*St. P. Med. Woch.*, July 17, from *Gas. Botkina*, No. 13). Foveau de Courmelles states that the more serious accidents following the use of the Crookes' tubes are caused by radiography, which requires slow vibrations, while the slighter accidents are produced by radioscopy, with which the vibrations are rapid, although the seances may be much longer and more numerous. He also asserts that a small inert Crookes' tube is acted upon by a stronger one in action, even at quite a distance. It becomes luminous also with stratified light. There is a series of discharges in a vacuum tube similar to the rapid discharges of condensers, which is Professor d'Arsonval's "high frequency." With this, the limits of sensibility once passed, the organism ceases to feel them, while still undergoing their curative effects. The action of the X-ray is analogous to this, and depends upon the rapidity with which it is obtained. By controlling this, we will secure a special autoconduction whose physiologic and therapeutic action can be regulated as desired. —Soc. de Biol., July 17, *Presse Méd.*, July 21.

Microbes and Thromboses in the Placenta.—Delore of Lyons has found microbes of several varieties invariably present in the placenta, and also has established the fact that the fetal side is always more or less covered with thromboses, to which he ascribes the rôle of safety filter, preventing the passage of the microbes into the fetus. His communication to the Acad. de Méd. contains observations of various cases of apparently healthy mothers with healthy infants in which streptococci were found occasionally in the placentæ, and almost always micro-, diplo- and staphylo-cocci. The microbes were found clustered in the thromboses, which he confirmed with experiments on animals. He deduces the practical conclusions that the prolonged presence of these microbes in reserve is a perpetual menace to the health of the mother, as they may at any moment determine an auto-intoxication which would be erroneously attributed to contagion. Again, in delivering the placenta it is of the utmost importance not to lacerate it, and thus free the microbes held in the thromboses.—*Bulletin*, July 20.

Lord Kelvin on Contact Electricity.—At the Royal Institution Lord Kelvin recently gave a most important lecture. He began by showing an experiment which conclusively proved Volta's theory that, when a zinc plate and a copper plate were put in contact, one became charged with positive electricity and the other with negative. Although he had shown this experiment fifty years ago at Glasgow University, says the *Builder*, yet an immense amount of ingenuity had been wasted recently in trying to explain away this phenomenon. He considered that Volta was absolutely right and made an appeal to physicists to study Volta's work seriously. A very interesting and novel experiment was shown. A plate of uranium was connected to one terminal of an electrometer, and was then touched by a plate of aluminum. It was seen by the deflection of the spot of light that the uranium plate became at first positively electrified; it then gradually lost its charge and became negatively electrified. Lord Kelvin could suggest no explanation of this very mysterious experiment. Another interesting topic touched upon was Becquerel's discovery of the radiation given off by uranium. This radiation is very feeble, but photographs of coins, etc., taken by its means were thrown on a screen. He stated that it had been conclusively proved that this radiation was not due to phosphorescence, or the slow radiation of light previously absorbed, and he could give no explanation of it. Lord Kelvin was slightly discursive, but he was listened to most eagerly, and his points were rapidly taken up by an appreciative audience.—*Scientific American.*

Honors Awarded to the Profession in France.—The town of Bresches has erected a statue to Velpeau (born there in 1795, the son of a blacksmith), who "by his works and discoveries placed France in the front rank in the world of science." The building in Paris which Pasteur occupied as a laboratory for many years has been marked with a medallion and inscription, giving the dates of his various discoveries made there. A monument has also been started for Pelletier and Caventou, "to whom we owe the discovery of quinin." Dr. Reech and Dr. Cuneo have been made Commanders of the Legion of Honor, and several others, officers. A gold medal has been presented to Dr. Recamier of Paris for his services at the Charity Bazar horror, with honorable mention of others. We note the above in one single issue of the *Progrès Médical*, evidences of the French policy of rewards for skill and devotion, found in every trade and profession, and which has developed artists out of artisans and aided materially in the progress of science.

Gastrectomy for Neoplasm of the Stomach.—At a recent meeting of the Paris Academy of Medicine, Péan (*Gaz. hebd. de Méd. et de Chir.*, July 18, 1897, page 679) reported the case of a man 56 years old who came under observation on account of a tumor of the stomach, associated with hematemesis and pronounced cachexia. Celiotomy exposed a new growth occupying the pylorus and the right half of the stomach. The neoplasm was excised between forceps placed five centimeters beyond the limits of the growth, the lower five-sixths of the wound closed with silk sutures, a Murphy button introduced into the remainder and union established with the duodenum. The abdominal wound was closed with sutures in three stages, the last uniting the omentum with the parietal peritoneum. Then the cutaneous wound was closed. The further course of the case was uncomplicated. Appetite returned and the patient gained in strength and eleven pounds in weight.

The Calot Method of Reducing Curvature of the Spine by Forcible Pressure.—M. Brun reports the death of a child of four during this operation but states that the fatality was due to the chloroform narcosis, which is extremely difficult to carry out in this operation as the litttle patient lies on his face and respiration is more or less seriously affected. Prof. C. Willems of Ghent contributes an article to the *Semaine Méd.*, of July 28 on this subject, in which he states that the narcosis is unnecessary and dangerous, and that the operation is equally if not more effective without it, while the pain is not excessive. The operation itself has upset all our preconceived notions of handing Pott's disease, and the fact that the forcible reduction of the curvature is not particularly painful is only one more astonishing feature. The child seems to object more to the forcible traction of the assistants than to the pressure on his back, crying: "Don't pull so!" rather than the scream of pain that might be expected. Willems reports eighteen cases thus treated without an anesthetic; the results were more than satisfactory in each case (ages two to four; oldest curvature five years). He recommends the operation to all, and adds that relaxation of the muscles is secured much more effectively by the fatigue of the traction than with a narcotic, as the effects of the latter are just passing away when the plaster corset is being applied, when the relaxation is most important; while without a narcotic, the muscles are at that time in the most relaxed condition from fatigue. He has seen more than one child fall asleep from fatigue the moment the tractions ceased. He concludes by observing that more assistants are required (six to eight), but that this is all and any physician can now undertake this simple reduction of the *gibbosités pottiques* alone, without other assistance than he finds in the patient's family, or any special apparatus except the Calot plaster corset, to immobilize the straightened spine.

Notes of a Gynecologist's Tour of Europe.—Asepsis is driving out antisepsis, and with it drainage. Carbolic acid has nearly disappeared. Formalin is taking the place of sublimate, and ordinary dry sterile gauze of iodoform gauze. My general impression is that the French method of extirpating the uterus or adnexa or both, per vaginam, is winning its way more and more. In regard to disinfecting the hands, Kümmell of Hamburg and Sänger of Leipsic, first scrub the hands with green soap and sand for five minutes, then with alcohol, and finally dip them in a stong solution of sublimate. Separate rooms are provided for celiotomies in Hamburg and Dresden. Müller of Berne makes his incision for celiotomy not on the median line but a centimeter to the right or left. Martin lays a common sponge dipped in boiled oil in the abdominal cavity to prevent adhesions. Prochownick uses submucous injections of cocain and morphin instead of general narcosis, especially in sutures of the intestines, to prevent vomiting. Bumm of Basel does not drain in abdominal nor vaginal operations. Leopold uses dry gauze for draining; Aubeau a drain tube; Schauta of Vienna, iodoform gauze, and in London the old glass drainage tubes are still used. Sänger, Ohlhausen and Chrobak do not drain at all, and Pestalozzi and Jacobs only through the vagina, and not unless there is a large pus accumulation in the abdominal cavity. Catgut is used by Prochownick and the Berlin school exclusively, usually boiled in a 5 per cent. solution of carbolic acid in 80 per cent. alcohol. Silk is preferred by Kümmell; Sänger, except for buried sutures in vaginal wall; and by Freund, with silver wire for abdominal sutures. Zweifel and Leopold use dry gauze; Sänger moistens it with a sterile soda solution, Jacobs of Brussels disinfects the vagina with: 1, a saturated solution of green soap and alcohol; 2, a solution of sodium biborate and ammonium carbonate; 3, alcohol, and 4, formalin, 1 to 1500. A fatal case of iodoform intoxication in his practice has caused him to abandon iodoform gauze and use only the ordinary sterile article. Vaginofixation is very common in Berlin, even for prolapsus, and is also practiced by Rosthorn of Prague, and Schauta for retroversio. Sänger has observed seventeen normal pregnancies and deliveries in seventy cases of ventrofixation for retroversio. In Paris a modified ventrofixation is practiced; each side of the uterus is sutured with silk to the correspoding fascia and muscles. Jacobs rejects ventrofixation for retroversio. His method is to free the uterus from adhesions through the posterior vaginal wall, and Douglas's pouch, and then close the incision. The anterior wall is then incised from right to left and the peritoneum opened. The anterior wall of the uterus is then sutured with silk to the peritoneum covering the anterior vaginal wall. Normal child-bearing occurs with this operation, the uterus retaining its position. He recently found that only three out of seventy patients had survived four years after vaginal hysterectomy for carcinoma uteri. London is far behind the Continent in asepsis.—From J. Wiener's address on the "Present Status of Gynecology in Europe." *N. Y. med. Monatsschrift*, July 20.

Gleanings.—Obstinate ozena of long standing cured with antidiphtheria serum, three cases (Molinié).—Faradization effective in curing pruritus vulvæ. *Semaine Méd.*, July 14. . . Roentgen ray does not affect the Koch bacillus, but two cases of tuberculosis have been strikingly improved by treatment with it, evidently due to the direct effect of the ray on the lung tissue, similar to its known effect upon the skin. *Bul. de l'Acad. de Méd.*, July 13. . . Injections of purgative waters recommended for constipation in infants and children. One tablespoon to the year (up to 7) in a pint or half pint of tepid boiled water.—Spanish physician (Mascaro) has trained a blind man to use the bicycle, following a seeing leader, and proposes to train others to use tandems. *Gaz. Méd. de Liège*, July 15. . . Syphilis appearing in the third generation; two cases: choroiditis and keratitis. *Ann. de Derm.*, June. . . Needle broken off in wrist drawn into palm of hand and extracted by use of weak magnet alone; nine seances, twenty hours in all.—Burns promptly and radically cured with a concentrated solution of potassium permanganate applied immediately and kept on several minutes. *Progrès Méd.*, July 17. . . Serum in pneumococcus infections found to possess the agglutinative power. *Presse Méd.*, July 17. . . The University and municipality of Berlin have each erected a Roentgen laboratory. *Therap. Woch.*, July 18. . . Silk recommended for bandages for rheumatic joints.—Case of pulsating exophthalmus after fracture of basis cranii. *Deutsche med. Woch.*, July 8. . . Anteflexion of the epiglottis corroborative symptom of syphilis. *Ann. de Derm.*, June. . . Hypertrophied, painful breasts relieved and restored to normal shape by cutting out a rectangular piece of top (not wedge-shaped) and suturing to the aponeurosis of the pectoralis major. *Presse Méd.*, July 10. . . Fatal case of fluid from intra-uterine injections passing into the abdomen. Six experimental injections of colored fluids just before hysterectomy showed the fluid in the abdominal cavity in each case where the tube ends were open, and collected at the end where they were closed. *German Gyn. Congress.* . . Heidenhain begs internal therapeutists to keep track of the patients cured of intestinal occlusion by medication alone, to note relapses. *Therap. Woch.*, July 11.

Hospitals.

The National Sanitarium for Consumptives, the first of its kind in Canada, was opened at Gravenhurst, Ontario, August 21. There is accommodation for 100 patients, the buildings standing 500 feet above Lake Ontario, on a plot of fifty acres, sheltered by low rocky ranges on each side, and so constructed that every room will have sunlight when the sun shines.—— A new wing has been added to Hamot Hospital, Erie, Pa., through a donation from the late George Selden——The Presbyterian Hospital, Milwaukee, is to be consolidated with St. Joseph's Hospital, and a new building erected for the Wisconsin College of Physicians and Surgeons on a site opposite St. Joseph's.

THE PUBLIC SERVICE.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending August 28, 1897.

Asst. Surgeon W. M. Wheeler, detached from the "*Marietta*" and ordered to the "Wheeling" September 2.

P. A. Surgeon G. Rothganger, detached from the "Wheeling" and ordered to the "Marietta" September 2.

CHANGE OF ADDRESS.

Cutter, E. and J. A., from Mott Av. and 165th St. to 1054 Boston Road, New York, N. Y.

Dandridge, N. P., from 53 E. 4th St. to 422 Broadway, Cincinnati, Ohio. Davidson, T. W., from Oneida to Galesburg, Ill.; Demaree, T. E., from Rossville to Claytonville, Ill.

Foreman, J. M., from Jonesburgh to 4128 Easton Av., St. Louis, Mo.; Foskett, W. A., from 391 N. Ashland Av. to 1556 Milwaukee Av., Chicago, Ill.; Frederick, R. C., from 1900 Dearborn Av. to 506 State St., Chicago, Ill. Fuhrman, E. H., from New London to Grafton, Wis.

Gihon, A. L., from Sykesville, Md. to "Reform Club" 233 Fifth Av., New York, N. Y.; Gilbert, M. J., Willard, N. Y.

Haldenstein, J., from 32 Beaver St. to 19 Seymour Bldg., cor. 42d St. and Fifth Av., New York, N. Y.

Keir, W. F., from 309 S. [illegible] t. Louis, Mo.

Lockwood, W. D., from [illegible] Mo.

Mennett, O. H., from U[illegible] l.; *McBride, R. E.*, from Gibson City to Houma, La.; McKinnon, J. R., from 275 Ontario St. to 313 Chicago Av., Chicago, Ill.

Ross, Thos. D., from Ferndale to Mayfield, Ill.

Seeman, F. A., from Chicago, Ill., to Dubuque, Ia.

Washington, S. S. H., from Tuskeegee to Birmingham, Ala.

LETTERS RECEIVED.

Barnes, F. H., Stamford, Conn.; Barber, W. M., Birmingham, Ohio; Beauchamp, W. W., Rockford, Ohio; Bennett, Albert L., Gross Batanga, German Kameroon, West Africa; Burns, J. F., Long Island City, N. Y.

Camac, C. N. B., Baltimore, Md.; Chiquoine, A. D., Philadelphia, Pa.; Craig, S. S., East Troy, Wis.

Davis, N. S., Jr., Chicago, Ill.; Debreu, J. A., Little Rock, Ark.

Einhorn, Max, New York, N. Y.; Ellis, T. B., Bethany, Mo.; Elliott, A. R., New York, N. Y.; England, J. W., Philadelphia, Pa.

Fairchild Chemical Laboratory Co., St. Louis, Mo.; Franklin, W. A., Pauline, Neb.; Fuller, Advertising Agency, *C. H., Chicago, Ill.*

Gœlet (2), A. H., New York, N. Y.

Harris, L. J., Pittsford, Mich.; Hill, W. B., Milwaukee, Wis.; Hot Mineral Springs, Bath, England; Hummel, A. L., Advertising Agency, New York, N. Y.

Jones, W. A., Minneapolis, Minn.; Judkins, William, Cincinnati, Ohio.

Kaszynski, Jacobus, Chicago, Ill.; Kress & Owen Company, New York, N. Y.; Kinniebrew, Tuskegee, Ala.

Larsen, L. A., Colfax, Wis.; Leach, W. W., Dundas, Minn.; *LeFevre, E.*, New York, N. Y.; Loeb, H. W., St. Louis, Mo.

Marks, A. A., New York, N. Y.; Mattison (2), J. B., Brooklyn, N. Y.; Madison, J. B., Brooklyn, N. Y.; Manley, Thos. H., Berlin, Germany; Medical Echo Publishing Co., Lynn, Mass.; Merrick, (2) M. B., Passaic, N. J.; Minor, J. C. Hot Springs, Ark.; Mulford H. K. Company, Philadelphia, Pa.

Nixon, J. W., *Soldier*, Kan.; Norwich Pharmacal Co., Norwich, N. Y.

Ohlmacher, A. P., Gallipolis, Ohio.

Pabst Brewing Co., Milwaukee, Wis.; Pantaraph Printing & Stationary Co., Bloomington, Ill.; Paquin, Paul, St. Louis, Mo.; *Paquin Laboratories, Paul, St. Louis, Mo.; Postum Cereal Co. Ltd. Battle Creek*, Mich.; Platt, H. B., New York, N. Y.; Purin, M. G., New York, N. Y.

Reed, W. W., Fowler, Colo.; Reik, H. O., Baltimore, Md.; *Rio Chemical* Co., St. Louis, Mo.

Sayre, R. H., New York, N. Y.; Stearns, F. & Co., Detroit, Mich.; Stockley, *Darwin R.*, Evanston, Ill.; Sundberg, John C., Canton Thurgau, Switzerland.

Walling, P. A., Park Rapids, Minn.; Wampole, H. K. & Co., Philadelphia, Pa.; Ward & Co., Montgomery, Chicago, Ill.; Warner, W. R. & Co., Philadelphia, Pa.; Waters, Geo. M., Columbus, Ohio; Watkins, T. J., Chicago, Ill.; Wood, F. B., Garrett, Ind.

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ADDRESS.

ADDRESS IN MEDICINE.

At the Sixty-fifth Annual Meeting of the British Medical Association, Montreal, Aug. 31 to Sept. 4, 1897.

BY WILLIAM OSLER, M.D., F.R.C.P.

PROFESSOR OF MEDICINE, JOHNS HOPKINS UNIVERSITY, BALTIMORE.

[From advance sheets of the *British Medical Journal.*]

BRITISH MEDICINE IN GREATER BRITAIN.—THE MAKING OF GREATER BRITAIN.

To trace successfully the evolution of any one of the learned professions would require the hand of a master, of one who, like Darwin, could combine the capacity for patient observation with philosophic vision. In the case of medicine the difficulties are enormously increased by the extraordinary development which belongs to the history of the present century. The rate of progress has been too rapid for us to appreciate, and we stand bewildered, and, as it were, in a state of intellectual giddiness, when we attempt to obtain a broad comprehensive view of the subject. In a safer "middle flight" it is my purpose to dwell on certain of the factors which have molded the profession in English-speaking lands beyond the narrow seas—of British Medicine in Greater Britain. Even for this lesser task (though my affiliations are wide and my sympathies deep) I recognize the limitations of my fitness, and am not unaware that in my ignorance I shall overlook much which might have rendered less sketchy a sketch necessarily imperfect.

Evolution advances by such slow and imperceptible degrees that to those who are part of it the finger of time scarcely seems to move. Even the great epochs are seldom apparent to the participators. During the last century neither the colonists nor the mother country appreciated the thrilling interest of the long-fought duel for the possession of this continent. The acts and scenes of the drama, to them detached, isolated and independent, now glide like dissolving views into each other, and in the vitascope of history we can see the true sequence of events. That we can meet here today, Britons on British soil in a French province, is one of the far off results of that struggle. This was but a prelude to the other great event of the eighteenth century, the revolt of the colonies and the founding of a second great English speaking nation—in the words of Bishop Berkeley's prophecy, "Time's noblest offspring."

Surely a unique spectacle that a century later descendants of the actors of these two great dramas should meet in an English city in New France. Here the American may forget Yorktown in Louisburg, the Englishman Bunker Hill in Quebec, and the Frenchman both Louisburg and Quebec in Chateauguay; while we Canadians, English and French, in a forgiving spirit, overlooking your unseemly quarrels, are only too happy to welcome you to our country, this land on which, and for which, you have so often fought. Once, and only once, before in the history of the world could such a gathering as this have taken place. Divided though the Greeks were, a Hellenic sentiment of extraordinary strength united them in certain assemblies and festivals. No great flight of imagination is required to picture a notable representation of our profession in the fifth century B. C. meeting in such a colonial town as Agrigentum under the presidency of Empedocles. Delegates from the mother cities, brilliant predecessors of Hippocrates of the stamp of Damocedes and Herodicus, delegates from the sister colonies of Syracuse and other Sicilian towns, from neighboring Italy, from far distant Massilia, and from still more distant Panticapæum and Istra. And in such an assemblage there would have been men capable of discussing problems of life and mind more brilliantly than in many subsequent periods, in proportion as the pre Hippocratic philosophers in things medical had thought more deeply than many of those who came after them.

We English are the modern Greeks, and we alone have colonized as they did, as free people. There have been other great colonial empires, Phœnician, Roman, Spanish, Dutch and French, but in civil liberty and in intellectual freedom Magna Græcia and Greater Britain stand alone. The parallel so often drawn between them is of particular interest with reference to the similarity between the Greek settlements in Sicily and the English plantations on the Atlantic coast. Indeed, Freeman says, "I can never think of America without something suggesting Sicily, or of Sicily without something suggesting America." I wish to use the parallel only to emphasize two points, one of difference and one of resemblance. The Greek colonist took Greece with him. Hellas had no geographical bounds. "Massilia and Olbia were cities of Hellas in as full a sense as Athens or Sparta." While the emigrant Britons changed their sky, not their character, in crossing the great sea, yet the home stayers had never the same feelings toward the plantations as the Greeks had toward the colonial cities of Magna Græcia. If, as has been shrewdly surmised, Professor Seely was Herodotus reincarnate, how grieved the spirit of the "Father of History" must have been to say of Englishmen, "Nor have we even now ceased to think of ourselves as simply a race inhabiting an island off the northern coast of the continent of Europe." The assumption of gracious superiority which, unless carefully cloaked, smacks just a little of our national arrogance, is apt to jar on sensitive colonial nerves. With the expansion of the empire, and the supplanting of a national by an imperial spirit, this will become impossible. That this sentiment never prevailed in Hellas, as it did later in the Roman empire, was due largely to the fact that in literature, in science, and in art the colonial cities of Greece early overshadowed the mother cities. It may be because the settlements of Greater Britian were things of slower growth, that it took several generations and several bitter trials to teach a lesson the Greeks never had to learn.

The Greek spirit was the leaven of the old world, the working of which no nationality could resist. Thrice it saved Western civilization, for it had the magic power of leading captivity captive, and making even captive conquerors the missionaries of culture. What modern medicine owes to it will appear later. "The love of science, the love of art, the love of freedom, vitally correlated to each other and brought into organic union" were the essential attributes of the Greek genius (Butcher). While we can not claim for the Anglo Saxon race all of these distinctions, it has in a high degree that one which in practical life is the most valuable, and which has been the most precious gift of the race to the world—the love of freedom.

> Of freedom in her regal seat
> Of England.

It would carry one too far afield to discuss the difference between the native Briton and his children scattered so widely up and down the earth. In Canada, South Africa, Australia and New Zealand, types of the Anglo Saxon race are developing which will differ as much from each other and from the English as the American does today from the original stock; but amid these differences can everywhere be seen those race qualities which have made us what we are—"courage, national integrity, steady good sense, and energy in work." At a future meeting of the Association, perhaps in Australia, a professional Sir Charles Dilke, with a firm grasp on the subject, may deal with the medical problems of Greater Britain in a manner worthy of the address in medicine. My task, as I mentioned at the outset, is much less ambitious.

THE INFLUENCE OF GREECE ON BRITAIN.

Could some one with full knowledge patiently analyse the characteristics of British medicine he would find certain national traits, sufficiently distinct for [illegible] itior [illegible] ree centuries can not do very much—and [illegible] just passed since the revival of medici [illegible] ocal conditions of isolation, which have been singularly favorable to the development of special peculiarities in the national character, have not been without effect on the medical profession. I can not do more than touch upon a few features, not distinctive but illustrative—features which will be useful as indicating the sources of influence upon Greater Britain in the past, and which may, perhaps, be suggestive as to lines of progress in the future.

Above the fireplace in Sir Henry Acland's study are three paneled portraits of Linacre, Sydenham and Harvey; the scroll upon them reads *Literæ*, *Praxis*, *Scientia*. To this great triumvirate, as to the fountain heads, we may trace the streams of inspiration which have made British medicine what it is today.

Linacre, the type of the litery physician, must ever hold a unique place in the annals of our profession. To him was due in great measure the revival of Greek thought in the sixteenth century in England, and in the last Harveian Oration Dr. Payne has pointed out his importance as a forerunner of Harvey. He made Greek methods available; through him the art of Hippocrates and the science of Galen became once more the subject of careful, first-hand study. Linacre, as Dr. Payne remarks, "was possessed from his youth till his death by the enthusiasm of learning. He was an idealist, devoted to objects which the world thought of little use." Painstaking, accurate, critical, hypocritical, perhaps, he remains today the chief literary representative of British medicine. Neither in Britain nor in Greater Britain have we maintained the place in the world of letters created for us by Linacre's noble start. It is true that in no generation since has the profession lacked a man who might stand unabashed in the temple at Delos; but, judged by the fruits of learning, scholars of his type have been more common in France and Germany. Nor is it to our credit that so little provision is made for the encouragement of these studies. For years the reputation of Great Britain in this matter was sustained almost alone by the great Deeside scholar, the surgeon of Banchory, Francis Adams, the interpreter of Hippocrates to English students. In this century he and Greenhill have well maintained the traditions of Linacre. Their work, and that of a few of our contemporaries, among whom Ogle must be specially mentioned, has kept us in touch with the ancients. But by the neglect of the study of the humanities, which has been far too general, the profession loses a very precious quality.

While in critical scholarship and in accurate historical studies British medicine must take a second place, the influence of Linacre, exerted through the Royal College of Physicians and the old Universities, has given to the humanities an important part in education, so that they have molded a larger section of the profession than in any other country. A physician may possess the science of Harvey and the art of Sydenham, and yet there may be lacking in him those finer qualities of heart and head which count for so much in life. Pasture is not everything, and that indefinable, though well understood, something which we know as breeding is not always an accompaniment of great professional skill. Medicine is seen at its best in men whose faculties have had the highest and most harmonious culture. The Lathams, the Watsons, the Pagets, the Jenners and the Gairdners have influenced the profession less by their special work than by exemplifying those graces of life and refinements of heart which make up character. And the men of this stamp in Greater Britain have left the most enduring mark: Beaumont, Bovell, and Hodder in Toronto; Holmes, Campbell and Howard in this city; the Warrens, the Jacksons, the Bigelows, the Bowditches and the Shattucks in Boston; Bard, Hossack, Francis, Clark and Flint in New York; Morgan, Shippen, Redman, Rush, Coxe, the elder Wood, the elder Pepper, and the elder Mitchell in Philadelphia—Brahmins all, in the language of the greatest Brahmin among them, *Oliver Wendell Holmes*—these, and men like unto them, have been the leaven which has raised our profession above the dead level of a business.

The *literæ humaniores* represented by Linacre, revived Greek methods, but the faculty at the end of the sixteenth and the beginning of the seventeenth centuries was in a slough of ignorance and self-conceit, and not to be aroused even by Moses and the prophets in the form of Hippocrates and the fathers of medicine.

In the pictures referred to Sydenham is placed between Linacre and Harvey, but science preceded practice, and Harvey's great Lumleian Lectures were delivered before Sydenham was born. Linacre has been well called by Payne Harvey's intellectual grandfather. "The discovery of the circulation of the blood was the climax of that movement which began a century and a half before with the revival of Greek medical classics and especially of Galen" (Payne). Harvey returned to Greek methods and became the founder of modern experimental physiology and the great glory of British scientific medicine. The demonstration of the circulation of the blood remains in every detail a model research. I shall not repeat the oft-told tale of Harvey's great and enduring influence, but I must refer to one feature which, until lately, has been also a special characteristic of his direct successors in Great Britain. Harvey was a practitioner and hospital physician. There are gossiping statements by Aubrey to the effect that "he fell mightily in his practice" after the publication of the "De Motu Cordis," and that his "therapeutic way" was not admired; but to these his practical success is the best answer. It is remarkable that a large proportion of all the physiologic work of Great Britain has been done by men who have become successful hospital physicians and surgeons. I was much impressed by a conversation with Professor Ludwig in 1884. Speaking of the state of English physiology, he lamented the lapse of a favorite English pupil from science to practice; but he added, "while sorry for him, I am glad for the profession in England." He held that the clinical physicians of that country had received a very positive impress from the work of their early years in physiology and the natural sciences. I was surprised at the list of names which he cited—among them I remember Bowman, Paget, Savory and Lister. Ludwig attributed this feature in part to the independent character of the schools in England, to the absence of the university element, so important in medical life in Germany, but, above all, to the practical character of the English mind, the better men preferring an active life in practice to a secluded laboratory career.

Thucydides it was who said of the Greeks that they possessed "the power of thinking before they acted, and of acting too." The same is true in a high degree of the English race. To know first what has to be done, then to do it, comprises the whole philosophy of practical life. Sydenham (*Angliæ lumen*, as he has been well called) is the model practical physician of modern times. Linacre led Harvey back to Galen, Sydenham to Hippocrates. The one took Greek science, the other not so much Greek medicine as Greek methods, particularly intellectual fearlessness, and a certain knack of looking at things. Sydenham broke with authority and went to Nature. It is an extraordinary fact that he could have been so emancipated from dogmas and theories of all sorts. He laid down the fundamental proposition, and acted upon it, that "all diseases should be described as objects of natural history." To do him justice we must remember, as Dr. John Brown says, "in the midst of what a mass of errors and prejudices, of theories actively mischievous, he was placed, at a time when the mania of hypothesis was at its height, and when the practical part of his art was overrun and stultified by vile and silly nostrums."

Sydenham led us back to Hippocrates; I would that we could be led oftener to Sydenham. How necessary to bear in mind what he says about the method of the study of medicine. "In writing, therefore, such a natural history of diseases, every merely philosophical hypothesis should be set aside, and the manifest and natural phenomena, however minute, should be noted with the utmost exactness. The usefulness of this procedure can not be easily over-rated as compared with the subtle inquiries and trifling notions of modern writers, nor can there be a shorter, or indeed any other way of coming at the morbific causes, or of discovering the curative indications, than by a certain perception of the peculiar symptoms? By these steps and helps it was that the father of physic, the great Hippocrates, came to excel, his theory being no more than an exact description or view of Nature. He found that Nature alone terminates diseases, and works a cure with a few simple medicines, and often enough with no medicines at all." Well, indeed, has a recent writer remarked, "Sydenham is unlike every previous teacher of the principles and practice of medicine in the modern world."

Sydenham—not Linacre or Harvey—is the model British physician, in whom were concentrated all these practical instincts upon which we lay such stress in the Anglo-Saxon character. The Greek faculty which we possess of thinking and acting has enabled us, in spite of many disadvantages, to take the lion's share in the great practical advances in medicine. The three greatest scientific movements of the century have come from Germany and France. Bichat, Laennec and Louis laid the foundation of modern clinical medicine; Virchow and his pupils of scientific pathology; while Pasteur and Koch have revolutionized the study of the causes of disease; and yet the modern history of the art of medicine could almost be written in its fulness from the records of the Anglo-Saxon race. We can claim almost every practical advance of the very first rank—vaccination, anesthesia, preventive medicine and antiseptic surgery—the "captain jewels in the carcanet" of the profession, beside which can be placed no others of equal luster.

THE INFLUENCE OF AUTHORITY IN MEDICINE.

One other lesson of Sydenham's life needs careful conning. The English Hippocrates, as I said, broke with authority. His motto was:

> Thou, nature, art my goddess; to thy law
> My services are bound.

Undue reverence for authority as such, a serene satisfaction with the *status quo* and a fatuous objection to change, have often retarded the progress of medicine. In every generation, in every country there had been, and ever will be, *laudatores temporis acti*, in the bad sense of that phrase, not a few of them men in high places, who have lent the weight of a complacent conservatism to bolster up an ineffectual attempt to stay the progress of new ideas. Every innovator from Harvey to Lister has been made to feel its force. The recently issued life of Thomas Wakley is a running commentary on this spirit, against the pricks of which he kicked so hard and so effectually. But there are signs of a great change. The old universities and the colleges, once the chief offenders, have been emancipated, and remain no longer, as Gibbon found them, steeped in port and prejudice. The value of authority *per se* has lessened enormously, and we of Greater Britain have perhaps suffered as the pendulum has swung to the other extreme. Practice loves authority, as announced in "the general and perpetual voice of men" (Hooker). Science must ever hold with Epicharmus that a judicious distrust and a wise skepticism are the sinews of the understanding. And yet the very foundations of belief in almost everything relating to our art rest upon authority. The practitioner can not always be the judge, the responsibility must often rest with the teachers and investigators, who can only learn in the lessons of history the terrible significance of the word.

In the treatment of fever the fetters of a thousand years were shattered by Sydenham—shattered only to be riveted anew. How hard was the battle in this century against the intrenched and stubborn foe. Listen to the eloquent pleadings of Stokes, pleading, as did Sydenham, against authority, and against the bleedings, the purgings and sweatings of fifty years ago. "Though his hair be gray, and his authority high, he is but a child in knowledge and his reputation an error. On a level with the child, so far as correct appreciation of the great truths of medicine is concerned, he is very different in other respects; his powers of doing mischief are greater; he is far more dangerous. Oh! that men would stoop to learn, or at least cease to destroy." The potency of human authority among the "powers that be" was never better drawn than by the judicious Hooker in his section on this subject: "And this not only with the 'simpler sort,' but the learneder and wiser we are, the more such arguments in some cases prevail with us. The reason why the simpler sort are moved with authority is the conscience of their own ignorance; whereby it cometh to pass that having learned men in admiration, they rather fear to dislike them than know wherefore they should allow and follow their judgments. Contrariwise with them that are skilful, authority is much more strong and forcible; because they only are able to discern how just cause there is why to some men's authority so much should be attributed. For which cause the name of Hippocrates (no doubt) were more effectual to persuade such men as Galen himself than to move a silly empiric."[1]

Sydenham was called "a man of many doubts," and therein lay the secret of his great strength.

MEDICINE IN AMERICA: TO 1820.

Turning now to the main question of the development of this British medicine in Greater Britain, I must at once acknowledge the impossibility of doing justice to it. I can only indicate a few points of importance, and I must confine my remarks chiefly to the American part of Greater Britain.

We may recognize three periods, corresponding to three distinct waves of influence: the first from the early migrations to about 1820; the second from about 1820 to 1860; and the third from about 1860 to the present time.

The Colonial settlements were contemporaneous with the revival of medicine in England. Fellow-students of Harvey at Cambridge might have sailed in the *Mayflower* and the *Arbella*. The more carefully planned expeditions usually enlisted the services of a well trained physician, and the early records, particularly of the New England colonies, contain many interesting references to these college-bred men. Giles Firman, who settled in Boston in 1632, a Cambridge man, seems to have been the first to give instruction in medicine in the new world. The parsons of that day had often a smattering of physic, and illustrated what Cotton Mather called an "angelical conjunction." He says: "Ever since the days of Luke, the Evangelist, skill in physick has been frequently professed and practiced by persons whose more declared business was the study of divinity." Firman himself finding physic "but a meane helpe," took orders. These English physicians in the New England colonies were scholarly, able men. Roger Chillingworth, in Hawthorne's "Scarlet Letter," has depicted them in a sketch of his own life: "Made up of earnest, studious, thoughtful, quiet years, bestowed faithfully for the increase of knowledge; faithfully, too, for the advancement of human welfare; men thoughtful for others, caring little for themselves, kind, just, true, and of constant if not warm affections"—a singularly truthful picture of the old colonial physician.

Until the establishment of medical schools—University of Pennsylvania, 1763; King's College (afterward Columbia) 1767; and Harvard, 1782—the supply of physicians for the colonies came from Great Britain, supplemented by men trained under the old apprentice system, and of colonists who went to Edinburgh, Leyden and London for their medical education. This latter group had a most powerful effect in molding professional life in the pre-revolutionary period. They were men who had enjoyed not alone the instruction, but often the intimate friendship of the great English and European physicians. Morgan, Rush, Shippen, Bard, Wistar, Hossack and others had received an education comprising all that was best in the period, and had acquired the added culture which can only come from travel and wide acquaintance with the world. Morgan, the founder of the medical school of the University of Pennsylvania, was away seven years, and before returning had taken his seat as a corresponding member of the French Academy of Surgery, besides having been elected a Fellow of the Royal Society. The war of Independence interrupted temporarily the stream of students, but not the friendship which existed between Cullen and Fothergill and their old pupils in America. The correspondence of these two warm friends of the colonies testifies to the strong professional intimacy which existed at the time between the leaders of the profession in the old and new worlds. But neither Boerhaave, Cullen, nor Fothergill stamped colonial medicine as did the great Scotchman, John Hunter. Long weary centuries separated Harvey from Galen; not a century elapsed from the death of the great physiologist to the advent of the man in whose phenomenal personality may be seen all the distinctive traits of modern medicine, and the range of whose mighty intellect has had few, if any, equals since Aristotle. Hunter's influence on the profession of this continent, so deep and enduring, was exerted in three ways. In the first place, his career as an army surgeon, and his writings on subjects of special interest to military men, carried his work and ways into innumerable campaigns in the long French wars, and the war of Independence. Hunter's works were reprinted in America as early as 1791 and 1793. In the second place, Hunter had a number of most distinguished students from the colonies, among whom were two who became teachers of wide reputation. William Shippen, the first Professor of Anatomy in the University of Pennsylvania, lived with Hunter on terms of the greatest intimacy. He brought back his methods of teaching, and some measure of his spirit. With the exception of Hewson and Home, Hunter had no more distinguished pupil than Philip Syng Physick, who was his House Surgeon at St. George's Hospital, and his devoted friend. For more than a generation Physick had no surgical compeer in America, and enjoyed a reputation equaled by no one save Rush. He taught Hunterian methods in the largest medical school in the country, and the work of his nephew (Dorsey) on surgery is very largely Hunter modified by Physick. But in a third and much more potent way the great master influenced the profession of this continent. Hunter was a naturalist to whom pathologic processes were only a small part of a stupendous whole, governed by law, but which could never be understood until the facts had been accumulated, tabulated, and systematized. By his example, by his prodigious industry, and by his suggestive experiments he led men again into the old paths of Aristotle, Galen and Harvey. He made all thinking physicians naturalists; he lent a dignity to the study of organic life and re established a close union between medicine and the natural sciences. Both in Britain and Greater Britain he laid the foundation of the great collections and museums, particularly those connected with the medical schools. The Wistar-Horner and the Warren Museums originated with men who had been greatly influenced by Hunter. He was, moreover, the intellectual father of that *interesting group of men on this side of the Atlantic, who,* while practicing as physicians, de[illegible] [illegible] labor to the study of natural history. [illegible] last century and during the first thirt[illegible] [illegible]ful practitioner was very often a [illegible]

I wish that time permitted me to do justice to the long list of men who have been devoted naturalists, and who have made contributions of great value. Benjamin Smith Barton, David Hossack, Jacob Bigelow, Richard Harland, John D. Godman, Samuel George Morton, John Collins Warren, Samuel L. Mitchell, J. Aiken Meigs and many others have left the records of their industry in their valuable works, and in the Transactions of the various societies and academies. In Canada many of our best naturalists have been physicians, and collections in this city testify to the industry of Holmes and McCullough. I was regretting the humanities a few minutes ago, and now I have to mourn the almost complete severance of medicine from the old natural history. To a man the most delightful recollections of whose studentship are the Saturdays spent with a preceptor who had a Hunterian appetite for specimens—anything from a trilobite to an acarus—to such a one across the present brilliant outlook comes the shadow of the thought that the conditions of progress will make impossible again such careers as those of William Kitchen Parker and William Carmichael McIntosh.

Until about 1820 the English profession of this continent knew little else than British medicine. After this date in the United States the ties of professional union with the old country became relaxed, owing in great part to the increase in the number of home schools, and in part to the development of an American literature. To 1820, 114 native medical books of all kinds had been issued from the press, and 131 reprints and translations, the former English, the latter almost exclusively French (Billings). Turning for a few minutes to the conditions of the profession in Canada during this period, I regret that I can not speak of the many interesting questions relating to the French colonies. I may mention, however, that with the earliest settlers physicians had come, and among the Jesuits, in their devoted missions, there are records of *donnés* (laymen attached to the service) who were members of the profession. One of these, René Goupil, suffered martyrdom at the hands of the Iroquois.[2]

Between the fall of Quebec in 1759 and 1820 the English population had been increased by the settlement of Upper Canada, chiefly by United Empire Loyalists from the United States, and after the war of 1812 by settlers from the old country. The physicians in the sparsely settled districts were either young men who sought their fortunes in the new colony or were army surgeons who had remained after the Revolutionary war or the war of 1812. The military element gave for some years a very distinctive stamp to the profession. These surgeons were men of energy and ability, who had seen much service and were accustomed to order, discipline and regulations. Sabine, in his "History of the Loyalists," refers to the Tory proclivities of the doctors, and says that they were not so much disturbed as the lawyers and clergymen. Still a good many of them left their homes "for conscience sake"; and Canniff, in his "History of the Profession in Upper Canada," gives a list of those known to have been among the United Empire Loyalists. The character of the men who controlled the profession of the new colony is well shown by the proceedings of the Medical Board, which was organized in 1819. Drs. Macaulay and Widmer, both army surgeons, were the chief members. The latter, who has well been termed the father of the profession in Upper Canada, a man of the very highest character did more than any one else to promote the progress of the profession, and throughout his long career his efforts were always directed to the proper channels. In looking through Canniff's most valuable work one is much impressed by the sterling worth and mettle of the old army surgeons, who in these early days formed the larger part of the profession. The minutes of the Medical Board indicate with what military discipline the candidates were examined. and the percentage of rejections has probably never been higher in the history of the province than it was in the first twenty years of the existence of the Board.

One picture on the canvas of those early days lingers in the memory, illustrating many of the most attractive features of a race which has done much to make this country what it is today. Widmer was the type of the dignified old army surgeon, scrupulously punctilious, and in every detail regardful of the proprieties of life. "Tiger" Dunlop may be taken as the very incarnation of that restless, roving spirit which has driven the Scotch broadcast upon the world. After fighting with the Connaught Rangers in the war of 1812, campaigning in India, clearing the Sangur of tigers—hence his sobriquet "Tiger"—lecturing on medical jurisprudence in Edinburgh, writing for *Blackwood*, editing the *British Press* and the *Telescope*, introducing *Beck's Medical Jurisprudence* to English readers, and figuring as director and promoter of various companies, this extraordinary character appears in the young colony as "Warden of the Black Forest" in the employ of the Canada Company. His life in the backwoods at Gairbraid, his "Noctes Ambrosianæ Canadenses," his famous "Twelve Apostles," as he called his mahogany liquor stand (each bottle a full quart), his active political life, his remarkable household, his many eccentricities—are they not all portrayed to the life in the recently issued "In the Days of the Canada Company"?

AMERICA: 1820–1860.

Turning now to the second period, we may remark in passing that the nineteenth century did not open very auspiciously for British medicine. Hunter had left no successor, and, powerful as had been his influence, it was too weak to stem the tide of abstract speculation with which Cullen, Brown and others flooded the profession. No more sterile period exists than the early decades of this century. Willan, a great naturalist in skin diseases, with a few others, save it from utter oblivion. The methods of Hippocrates, of Sydenham and of Hunter had not yet been made available in every day work. The awakening came in France, and such an awakening! It can be compared with nothing but the renaissance in the sixteenth and seventeenth centuries, which gave us Vesalius and Harvey. "Citizen" Bichât and Broussais led the way, but Laennec really created clinical medicine as we know it today. The discovery of auscultation was only an accident—of vast moment it is true—in a systematic study of the correlation of symptoms with anatomic changes. Louis, Andral and Chomel extended the reputation of the French school, which was maintained to the full until the sixth decade, when the brilliant Trousseau ended a long line of Paris teachers, whose audience had been world wide.

The revival of medicine in Great Britain was directly due to the French. Bright and Addison, Graves and Stokes, Forbes and Marshall Hall, Latham and Bennett were profoundly affected by the new movement. In the United States, Anglican influence did not wane until after 1820. Translations of the works of Bichât appeared as early as 1802, and there were reprints in subsequent years, but it was not until 1823 that the first translation of Laennec—a reprint of Forbes's edition—was issued. Broussais's works became very popular in translations after 1830, and in the journals from this time on the change of allegiance became very evident. But men rather than books diverted the trend of professional thought.

After 1825 American students no longer went to Edinburgh and London, but to Paris, and one can say that between 1830 and 1860 every teacher and writer of note passed under the Gallic yoke. The translations of Louis's works, and the extraordinary success of his American pupils—a band of the ablest young men the country has ever seen—added force to the movement. And yet this was a period in which American medical literature was made up largely of pirated English books, and the Systems, Encyclopedias, and Libraries, chiefly reprints, testify to the zeal of the publishers. Stokes, Graves, Watson, Todd, Bennett and Williams furnished Anglican pap to the sucklings, as well as strong meat to the full grown. In spite of the powerful French influence the textbooks of the schools were almost exclusively English.

In Canada the period from 1820 to 1860 saw the establishment of the English universities and medical schools. In Montreal the agencies at work were wholly Scotch. The McGill Medical School was organized by Scotchmen, and from its inception has followed closely Edinburgh methods. The Paris influence, less personal, was exerted chiefly through English and Scotch channels. The Upper Canada schools were organized by men with English affiliations and the traditions of Guy's, St. Bartholomew's, St. Thomas's, St. George's, and of the London Hospital rather than those of Edinburgh, have prevailed in Toronto and Kingston.

The local French influence in British medicine in Canada has been very slight. In the early decades of the century, when the cities were smaller and the intercourse between the French and English somewhat closer, the reciprocal action was more marked. At that period English methods became somewhat the vogue among the French; several very prominent French Canadians were Edinburgh graduates. Attempts were made in the medical journals to have communications in both languages, but the fusion of the two sections of the profession was no more feasible than the fusion of the two nationalities, and the development has progressed along separate lines.

AMERICA: 1860–1897.

The third period dates from about 1860, when the influence of German medicine began to be felt. The rise of the Vienna school was for a long time the only visible result in Germany of the French renaissance. Skoda, the German Laennec, and Rokitansky, the German Morgagni, influenced English and

American thought between 1840 and 1860, but it was not until after the last date that Teutonic medicine began to be felt as a vitalizing power, chiefly through the energy of Virchow. After the translation of the "Cellular Pathology" by Chance (1860) the way lay clear and open to every young student who desired inspiration. There had been great men in Berlin before Virchow, but he made the town on the Spree a Mecca for the faithful of all lands. From this period we can date the rise of German influence in the profession of this continent. It came partly through the study of pathologic histology under the stimulus given by Virchow, and partly through the development of the specialties, particularly diseases of the eye, of the skin, and of the larynx. The singularly attractive courses of Hebra, the organization on a large scale in Vienna of a system of graduate teaching, designed specially for foreigners, the remarkable expansion of the German laboratories, combined to divert the stream of students from France. The change of allegiance was a deserved tribute to the splendid organization of the German Universities, to the untiring zeal and energy of their professors, and to their single-minded devotion to science for its own sake.

MEDICINE IN AUSTRALASIA.

In certain aspects the Australasian settlements present the most interesting problems of Greater Britain. More homogeneous, thoroughly British, isolated, distant, they must work out their destiny with a less stringent environment than, for example, surrounds the English in Canada. The traditions are more uniform, and, of whatever character, have filtered through British channels. The professional population of native trained men is as yet small, and the proportion of graduates and licentiates from the English, Scotch and Irish Colleges and Boards guarantees the dominance of old country ideas. What the maturity will show can not be predicted, but the vigorous infancy is full of "crescent promise." On looking over the files of Australian and New Zealand journals one is impressed with the monotonous similarity of the diseases in the Antipodes to those of Great Britain and of this continent. Except in the matter of parasitic affections and snake bites, the nosology presents few distinctive qualities. The proceedings of the four Intercolonial Congresses indicate a high level of professional thought. In two points Australia has not progressed as other parts of Greater Britain. The satisfactory regulation of practice, so early settled in Canada, has been beset with many difficulties. Both in the United States and in Australia the absence of the military element, which was so strong in Canada, may, in part at least, account for the great difference which has prevailed in this matter of the State license. The other relates to the question of ethics, to which one really does not care to refer, were it not absolutely forced upon the attention in reading the journals. Elsewhere professional squabbles, always so unseemly and distressing, are happily becoming very rare, and in Great Britain and on this side of the water we try at any rate to wash our dirty linen at home. In the large Australian cities differences and dissensions seem lamentably common. Surely they must be fermented by the atrocious system of election to the hospitals, which plunges the entire profession every third or fourth year into the throes of a contest in which the candidates have to solicit the suffrages of from 2,000 to 4,000 voters. Well indeed might Dr. Batchelor, in his address to the Fourth Intercolonial Congress, say: "It is a scandal that in any British community, much less in a community which takes pride in a progressive spirit, such a pernicious system should survive for an hour."

MEDICINE IN HINDUSTAN.

Of India, of "Vishnu-land," what can one say in a few minutes? Three thoughts at once claim recognition. Here, in the dim dawn of history, with the great Aryan people, was the intellectual cradle of the world. To the Hindus we owe a debt which we can at any rate acknowledge, and even in medicine many of our traditions and practices may be traced to them, as as may be gathered from that most interesting "History of Aryan Medical Science," by the Thakore Sahib of Gondal.

Then there arises the memory of the men who have done so much for British medicine in this great empire. Far from their homes, far from congenial surroundings, and far from the stimulus of scientific influences, Annesley and Ballingall, Twining, Morehead, Waring, Parkes, Cunningham, Lewis, Vandyke Carter and many others have nobly upheld the traditions of Harvey and of Sydenham. On the great epidemic diseases how impoverished would our literature be in the absence of their contributions! But then there comes the thought of "the little done, the undone vast," when one considers the remarkable opportunities for study which India has presented. Where else in the world is there such a field for observation in cholera, leprosy, dysentery, the plague, typhoid fever, malaria, and in a host of other less important maladies? And what has the British Goverment done toward the scientific investigation of the diseases of India? Until recently little or nothing, and the proposal to found an institute for the scientific study of disease has actually come from the native chiefs. The work of Dr. Hankin and of Professor Haffkine, and the not unmixed evil of the brisk epidemic of plague in Bombay, may arouse the officials to a consciousness of their shortcomings. While sanitary progress has been great, as shown in a reduction of the mortality from 69 per mille before 1857 to 15 per mille at present, many problems are still urgent, as may be gathered from Dr. Harvey's Presidential Address in the Proceedings of the Indian Medical Congress. That typhoid fever can be called the "scourge of India," and that the incidence of the disease should remain so high among the troops, points to serious sanitary defects as yet unremedied. As to the prevalence of venereal disease among the soldiers, an admission of nearly 500 per mille tells its own tale. On reading the journals and discussions one gets the impression that things are not as they should be in India. There seems to be an absence of proper standards of authority. Had there been in each Presidency during the past twenty years well-equipped Government laboratories in charge of able men, well trained in modern methods, the contributions to our knowledge of epidemic diseases might have been epoch-making, and, at any rate, we should have been spared the crudeness which is evident in some of the work (particularly in that upon malaria) of zealous but badly trained men.

THE FUTURE OF MEDICINE IN GREATER BRITAIN.

In estimating the progress of medicine in the countries comprising Greater Britain, the future rather than the present should be in our minds. The strides which have been taken during the past twenty years are a strong warrant that we have entered upon a period of exceptional development. When I see what has been accomplished in this city in the short space of time since I left I can scarcely credit my eyes. The reality exceeds the utmost desires of my dreams. The awakening of the profession in the United States to a consciousness of their responsibilities and opportunities has caused unparalleled changes, which have given an impetus to medical work which has already borne a rich harvest. Within two hundred years who can say where the intellectual center of the Anglo-Saxon race will be? The mother country herself has only become an intellectual nation of the first rank within a period altogether too short to justify a prediction that she has reached the zenith. She will probably reverse the history of Hellos, in which the mental superiority was at first with the colonies. At the end of the next century ardent old-world students may come to this side, "as o'er a brook," seeking inspiration from great masters, perhaps in this very city; or the current may turn toward the schools of the great nations of the South. Under new and previously unkown conditions the Africander, the Australian, or the New Zealander may reach a development before which even the "glory that was Greece" may pale. Visionary as this may appear, it is not one whit more improbable today than would have been a prophecy made in 1797 that such a gathering as the present would be possible within a century on the banks of the St. Lawrence.

Meanwhile to the throbbing vitality of modern medicine the two great meetings held this month, in lands so widely distant, bear eloquent testimony. Free, cosmopolitan, no longer hampered by the dogmas of schools, we may feel a just pride in a profession almost totally emancipated from the bondage of error and prejudice. Distinction of race, nationality, color and creed are unknown within the portals of the temple of Æsculapius. Dare we dream that this harmony and cohesion so rapidly developing in medicine, obliterating the strongest lines of division, knowing no tie of loyalty but loyalty to truth—dare we hope, I say, that in the wider range of human affairs a similar solidarity might ultimately be reached? Who can say that the forges of Time will weld no links between man and man stronger than those of religion or of country? Some son of Beor, touched with a prophetic vision, piercing the clouds which now veil the eternal sunshine of the mountain top; some spectator of all time and all existence (to use Plato's expression) might see in this gathering of men of one blood and one tongue a gleam of hope for the future, of hope, at any rate, that the great race, so dominant on the earth today, may progress in the bonds of peace—a faint glimmer, perhaps, of the larger hope of humanity of the day wh "the common sense of most [illegible] a f [illegible] world in aw

But these, I fear, are the dreams of the closest student who knows not the world nor its ways. There remains for us, Greater Britons, of whatsoever land, the bounden duty to cherish the best traditions of our fathers, and particularly of the men who gave to British medicine its most distinctive features; of the men, too, who found for us the light and liberty of Greek thought—Linacre, Harvey and Sydenham—those "ancient founts of inspiration," and models for all time in literature, science and practice.

REFERENCES.

1 Ecclesiastical Polity, Book ii, vii, 2.
2 Parkman: Jesuits in North America.

ORIGINAL ARTICLES.

SOME DEFORMITIES OF THE CHEST IN THE LIGHT OF ITS ANCESTRY AND GROWTH.

Presented in the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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I can invite your attention to only a limited portion of the most interesting field of deformities of the chest; and even here my presentation can not claim to be exhaustive, but simply suggestive of certain lines for future work and discussion. The deformities I have chosen are the common and important ones of (so-called) flat chest, "pigeon-breast," "guttered" sternum, Harrison's groove and "funnel chest" ("Trichter Brust"). These may be, at first sight, divided into two apparently distinct classes, those in which the transverse diameter is increased at the expense of the anteroposterior, which for the sake of brevity in our future discussion we will call the transverse or "bellows" form of chest, and those in which the increase appears to be the antero-posterior diameter and the contraction in the transverse, which again, for the sake of brevity, we will call the antero-posterior or "keeled" type of chest. It is also obvious that these increases and diminutions of the diameters are relative rather than absolute, and that when we say that a chest is flattened, what we mean is not so much that its anteroposterior diameter is absolutely diminished, as that this is short in comparison with or relative to the transverse diameter, and *vice versa* in regard to the anteroposterior chest. In fact, the deformities of the chest would appear to depend upon a flattening or compression in the anteroposterior diameter and bulging in the transverse, or *vice versa*. In the transverse or "bellows" class of chests, we would place the innumerable varieties of flat chest, hollow chest as it is often termed, and the singular funnel chest; while under the anteroposterior type would be placed the pigeon breast and guttered, or grooved, sternum. It would also appear that these two divisions corresponded fairly accurately to the two great types of chest among the mammalia. The one, the typical quadrupedal chest—as found in the carnivora, the ungulates, and the great majority of the families of this class—has an anteroposterior diameter which is distinctly in excess of the transverse, so that a transverse section of the chest cavity would form an oval or heart-shaped figure with its long diameter perpendicular to the anterior wall (sagittal). This form of chest is obviously necessitated by and correlated with the backward and forward swing of the anterior limbs in the movements of locomotion. Maximum depth with a minimum width, so far as this may be consistent with abundance of room for the heart and great vessels, is the *desideratum*. This type of chest has passed into popular literature as the well-known "deep" chest of the hound or the race horse; and it is very curious to note to what an extent, by a process of transference, terms which are descriptive of this form of chest have been applied to the human torso, where we shall see they are anything but appropriate. The other type of chest is that in which the transverse diameter equals or exceeds the anteroposterior, and is found almost solely in two widely separate families, the numerous but aberrant order of bats, and the higher primates, the anthropoid apes and man. So striking was this departure from the commonest type that the bats were actually placed in close relation to man, in the old Linnean system. Here again, however, a mechanical explanation would appear to be adequate to account for the form. The two families have absolutely nothing in common, save the fact that the anterior limbs are no longer used for supporting the body during ground locomotion, in the bats being used for flight, and in the anthropoid and human species for swinging through the branches. Thus there is no longer a necessity for a limited backward and forward movement of the limbs in parallel lines, so that the "keel" or boat-shaped form of chest is no longer a necessity, and the great sheet of the pectoral muscles, using the wing in the one case and the hand with the branch it has seized, in the other, as its fixed point, is continually pulling the prominent sternum back toward the vertebral column. The ribs yield at their angle and we have the anteroposterior chest gradually transforming itself into the tranverse form. The bird, it may be said in passing, solves the problem in a somewhat different way by the development of his enormous keel or crest on the sternum, the actual chest wall itself remaining, however, in very much the same shape, with only a slight preponderance of the anteroposterior over the transverse diameter. After the upright position has been attained this modification goes still further. The arms hang by the sides instead of being permanently extended in a forward or dorsiventral direction. The shoulder-girdle, with its great mass of muscles and attached limbs, sinks downward from its former position and begins to press more or less firmly upon the lateral aspects of the chest wall, and the first joint of the limb lies parallel and in contact with almost the entire lateral border of the chest. As a result the lateral expansion of the wings of the chest, which is the chief factor in quadrupedal respiration, as can be shown in the heaving flanks of the race horse or of the hound after the chase, this lateral expansion is interfered with by the pressure and the presence of a joint of the limb in this situation; and the anterior aspect of the chest, having been completely freed from the former splint-like action of the limbs, begins to become the most freely movable part of the wall, and we have the rising and falling or anteroposterior type of respiration to a large extent substituted for the lateral or wing-like type. To afford still greater freedom for this the girdle and its scapulæ recede still further toward the vertebral column until they come, ultimately, to lie almost directly on the flattened posterior wall of the chest. In fact, the chest comes to act like a pair of bellows, of which the vertebral wall is the fixed and the sternal wall the movable flap. I am convinced that one of the most important factors in the proper respiratory development and capacity of the human chest is the extent to which the scapulæ come to lie upon the posterior wall or fixed flap of the bellows.

But I think I hear some one say, "what has all this purely morphologic process to do with us as physicians? Even if it be granted that the human chest, in the course of its development from an earlier quadrupedal form, has passed through these various stages from the keeled to the bellows type, what has this to do with our study of the human chest in the nineteenth century?" Much in every way, and I hope to be able to prove in regard to the deformities mentioned, everything in fact, for the reason that not merely do the probabilities point strongly to our human chest having passed through such stages ancestrally, but every individual chest passes through a number of these stages under our very eyes. In the embryo at the fourth month we have a chest which is almost identical in type with that of the quadruped—the dog, for instance, in which the anteroposterior diameter is as three to two, although it seldom reaches this figure in the embryo. Morris simply gives it as "greater." Macallister says, "the chest is deeper sagitally than transversely." At birth the diameters have come up to the proportion of the lower apes, in which they are almost equal, while from this period up to the twelfth or thirteenth year and to the twenty-fifth even, there is a gradual, steady modification of the chest shape until the full adult "bellows" form is reached, in which the diameters are exactly reversed, viz., as two to three in favor of the transverse. Although, according to Rotch, the proportion is as high as 1 to 2.5 or 3 (D. Powell). Though these changes in proportions are matters of common knowledge and are given in most of our anatomic works, I have been unable to find the exact records upon which the statements are based, and it had been my intention to have included in this paper at least fifteen or twenty measurements of chest diameters at each age at various periods from birth to maturity. but in this undertaking I was unfortunately thwarted and am able to give only the few following measurements and diagrams based upon them, which I think may be taken as fairly typical.

As will be seen by these measurements there is a steady progressive modification of the nearly circular or barrel-shaped chest at birth, up to the transversely oval-shaped chest of adult life. And now the question arises, is this transformation always complete? In my personal opinion it is not, by any means; and I claim that by the arrest of this progress at some particular stage, and exaggeration by the processes of respiration of the proportions which are normal at this particular time, the majority of the special deformities of the chest to which I have alluded are produced. Let us take, first of all, the condition of "pigeon breast.". None of the authorities or theories attempt to shed any light on the crucial question of the whole situation, viz., why a chest which is normally widest in its transverse diameter should suddenly begin to flatten in this diameter and increase in the opposite one. When, however, we look at the question in the light of this change of shape which is taking place, then we can at once see that pigeon breast is simply persistence or a mechanical exaggeration of the normal ancestral and fetal anteroposterior or "keeled" chest. This change or deformity usually begins during the first six to eighteen months of infant life, when the chest is, in the normal child, of nearly equal diameters, and hence capable of elongating with equal ease in either one of them if pressure is brought to bear on it in that direction. In some cases, however, it begins later, when the chest has begun to assume more nearly its adult form, and in this case we have not only a mechanical cause to consider, but also the question whether we have not what might be termed a line of least resistance, which is here, as everywhere, in the direction of the ancestral type. But supposing we have, as is usually the case, a chest whose diameters are nearly equal, or even with the transverse slightly in excess (although it must be remembered that in children who are subjects of pigeon breast there is usually a general backwardness of development in the formation of the skeleton, and it is not improbable that in many cases we have actually a persistence of fetal type after birth, so that the anteroposterior diameter is excessive to begin with), what influence is there which will cause the drawing together of the lateral walls and the forward protrusion of the sternum? In the first place a small amount of influence in this regard may be exercised by the so-called accessory muscles of respiration, the sternal group, all of which tend to pull the sternum upward and slightly forward. But the influence of these is comparatively slight in normal respiration, and would probably be more than overbalanced by the opposite tendency on the part of the intercostal, which are weaker and thinner toward the sternal end of the interspaces, and lacking over the region of the sternum. In fact, there is only one factor which we believe is adequate to account for this singular distortion, and that is the great muscle sheet of the diaphragm. I shall not weary you with anatomico-mechanical descriptions of the origin, insertion and methods of action of this muscle, further than simply to remind you that it is a great fan-shaped sheet which, in respiration, curves up over the roof of the abdominal cavity in a high vaulted dome, which dome, by the contraction particularly of the great crura, is sharply flattened and pulled down, and also flattened from side to side by the lateral fibers; the vertebral column and the inner surface of the lower ribs, acting respectively as fixed points in this descent. That the diaphragm is chiefly concerned in the production of this deformity is admitted by all, and a variety of explanations have been offered to account for its excessive and extraordinary action, chiefly in the direction of obstructions to the entrance of air into the chest in the form of enlarged tonsils, adenoids in the pharynx or obstructions in the nasal passages. The real interference with its action is, however, at the other end of the scale, and comes not from above but below. Normally the diaphragm uses the ribs and vertebral column as its fixed point and pulls down the arch of its center, but when the vault of this center is firmly supported and fixed by a mass of abdominal contents, distended by gas, engorged by portal blood or packed with a mass of enlarged lymphatics, then the action of the muscle is reversed as to its lateral wings and the center becomes the fixed point and the ribs the point acted on. In other words, given a swollen, edematous, abdominal mass and you have the diaphragm at every respiration pulling the lateral chest walls inward and upward, instead of using them as a fixed point to pull its center downward and forward; and this swollen abdomen, which in its extreme form gives rise to the familiar "pot-belly" of poorly nourished children, is precisely the condition of affairs which we find in the majority of cases of pigeon breast. This pressure is exercised almost solely in the transverse direction for the reason that between the vaulted center and the sternum there are no muscular fibers, but only the central tendon, while the muscular masses running from the central to the vertebral column slope downward so rapidly as to cause a protrusion of the abdomen instead of a sinking of the sternum. This explanation will also account for the frequent association of this condition with struma and rickets, in both of which this swollen and distended condition of the abdomen is extremely apt to occur, while in the latter there is also an abnormal softness of the bones to render them still more liable to distortion.

Now, will this relation of affairs account for any other of these conditions? For instance, the well known but not so common "hour-glass chest" with its Harrison's groove, as it is termed. At first sight it would not appear to do so, for the situation of the groove is somewhat peculiar, not at the level of the costal attachment of the diaphragm, but about two interspaces above, in fact, from one to two interspaces below the nipple. First of all, however, let us observe that this groove or constriction is not so much a diminution of the diameter of the chest above this point, as it is a line at which the chest wall suddenly begins to flare outward, and that we are really dealing with a chest of fairly uniform caliber down to this point, but of a sudden and marked widening beyond it. In a few cases, however, the constriction is not merely relative, but absolute as well. As I said, the situation of the groove at first view does not appear to fit in with our theory; but if we will examine a little more closely just what the direction of the tension of the normal diaphragm is, we shall be able to give at least a plausible explanation of how it is produced. The pull of the diaphragm on the lower ribs, when its center is fixed, is not directly inward but inward and upward. Now, what will be the result of traction in these directions acting on a yielding and movable framework like the walls of the chest? Obviously, that the lower ribs having but little or distant attachment to the sternum, would be glided upward and inward *en masse*, until they meet the resistance of the more firmly attached sternal or true ribs above them. When this takes place their further progress will be abruptly stopped, and the pull still continuing, they will, as it were, rotate round this fixed point of the sixth or seventh interspace as upon an axis and, instead of sliding upward and inward, begin to flare upward and outward. Consequently, we would expect to find Harrison's groove occurring in children in whom this marked abdomal distension did not develop until after some degree of rigidity and some approach to the adult form had begun to be attained by the chest, and this will be found to fit with the clinical facts of the case. When once the "flare" has begun it will be exaggerated both by the pressure of the distended abdomen below and also by the tension of the intercostals, and to some extent by the lower fibers of the pectorals and serrati above.

In that rare and extraordinary condition known as "funnel-chest," we have a condition in which the lower end of the sternum in general, and the base of the ensiform in particular, forms the bottom of a deep funnel-shaped depression around which the thoracic walls bulge out above and the abdominal walls below. This is a much more complicated state of affairs, and in the light of our present knowledge difficult of explanation; but we believe that the principal factor will be found to be a firm attachment, by tendinous bands, of this portion of the sternum which is accordingly prevented from yielding in the anteroposterior direction, while the walls of the chest above it and at the sides are bulging forward under the tremendous lateral pressure of the wings of the diaphragm. In other words, I believe it to be, if we may use the expression, a pigeon breast in which the lower end of the sternum has been firmly bound down and prevented from yielding in harmony with the rest of the chest wall. The same explanation will also apply, and much more obviously, to the condition of "guttered" sternum. Here we have a chest which upon measurement will be found to be distinctly above the normal in its anteroposterior diameter, but in which the greatest projection is not in the median line, but in a line drawn parallel with it upon each side about two inches from it. When we come to examine what that line represents, we find that it corresponds to the sternal end of the costal cartilages, and is paralleled by a groove corresponding to the costal ends, the weakest and most yielding point in the entire chest wall of the child; and we have here simply a pigeon-breast in which sufficient tension is exercised by this central tendon of the diaphragm upon the lower end of the sternum to prevent that bone from moving forward freely *en masse*, and consequently the lateral tension of the diaphragm is expanded upon the line of least resistance, which happens to be a double one, and corresponds to the sternal end of the costal cartilages. The curious one-sided bulgings of this description may also be explained in the same way, on the ground that the nutrition of the costal cartilages on the one side was inferior to that of the other. Again the importance of rickets as a producing cause of this disease is self-evident.

So far we have been considering exaggerations of the ancestral chest form, and now we come to those really much more common developments which are implied by the terms flat-chest, hollow-chest, etc., where we are confronted by the adult or human type. I have long been skeptical as to the actual existence of this particular type of deformity, and I regret that I have been unable to make anything like an adequate series of measurements to justify it. But the more carefully one inspects chests of this class, the more one is struck with the extent to which this flattening is apparent and not real. In the first place, even in popular terminology "flat-chestedness" is almost invariably associated with "round" shoulders. In other words, the flattening of the anterior aspect of the chest is in very large measure due to the forward movement and carrying of the great muscular masses of the shoulder girdles. Our standard of flatness or fulness of chest is simply a line drawn across it from one acromion process to the other, and it is obvious that we may have a distinct flattening of this line with a decided round chest, provided that the shoulders have slid forward far enough. As is already suggested in the term round-shouldered, even a mere glance at the hollow chest will show us that a very large proportion of this anterior flattening is due to the gliding forward of the scapulæ and their attachments so that the posterior outline of the upper part of the chest wall, instead of being almost a straight line as it should in the ideal position, is a very decided curve. And upon the application of accurate methods of measurements we find ourselves confronted by the surprising situation that our so-called flat chest is really, if anything, slightly above the normal in its anteroposterior diameter, as is shown by the following all too scanty and desultory figures:

How is this extraordinary optical illusion brought about? Not only is there no inconsistency between the facts, but one is necessarily a consequence of the other. My attention was first called to this relation in examining the chests of some school children who were undergoing special gymnastic exercise for the purpose of overcoming round-shoulderedness. The appearance of the youngsters was characteristic; the chest was flat, the back and shoulders bowed or rounded, the arms swinging slightly in front of the median line in a characteristically anthropoid position. Upon taking hold of the children by the shoulders from behind, and gently but firmly pulling the shoulders backward, while the spine was supported by the knee, it was found that an apparently normal shape of chest could be produced; but the difficulty was that the shoulders would not stay in this position, and a little further experimentation and some measurements revealed that the chest was so nearly round that the scapulæ had no flat posterior surface to rest upon, but were continually sliding forward upon the barrel-like outline of the outer surface of the ribs. This tendency was assisted by the somewhat slouching or anthropoid attitude which boys are apt to assume, and by the contraction of the great pectoral muscles. So marked was this latter fact that, in the language of their gymnasium teacher, they were said to be "muscle-bound," and I found upon inquiry that the trainer was quite familiar with this condition of affairs, and recognized it as a frequent factor in the production of this type of chest and shoulder. In short, the round chest, from the very insecurity of the position which it affords to the inner aspect of the scapulæ, tends to become, under the influence of gravitation and dominant muscle action, the apparently flat chest. In the case of children it is an amusing coincidence that when I asked the trainer what forms of exercise were found to be most useful in correcting this defect, I was immediately told that all sorts of climbing exercises, especially those which were done with the back toward the ladder, rope or framework which was being climbed were most useful. In other words, by a reversion to the arboreal habits of our ancestors who had this form of chest, its progress into the higher form can be expedited. I am not prepared to say that all forms of flat chest will be found to be of this variety, but neither, on the other hand, would I be willing to admit the existence of a flat chest in which the anteroposterior diameter was actually below the normal proportion to the transverse, until more accurate measurements than I have been able to find have been made. There may be and probably are absolutely as well as apparently flat chests, but no measurements which I have been able to discover have proved that fact yet.

Here the objection may very fairly be raised to this view of the matter, why, if these various forms of chests are either reversions to or the exaggerations of the form which prevailed in our healthy, vigorous animal ancestors, should they be associated with lack of vigor, malnutrition and ineffectiveness in the human species? I will conclude by briefly answering this objection. First of all, here as elsewhere, a reversion to a type which was perfectly normal and healthful in some of our ancestral stages may prove to be anything but that under the changed circumstances, as, for instance, the uric acid reversion in gout and lithemia, the molluscan reversion in calcareous, and the sponge reversion in fibroid degeneration. In fact, by the substitution of an anteroposterior bellows-action in the human chest, by the changed position of the shoulder masses and their appendages, the flat chest has become the type of vigor. A moment's consideration will show the reason of this. Placing a bellows in a parallel position, or in the same relative position as the walls of the human chest, with its fixed side held posteriorly and its nozzle upward, it is easy to see that the possible distension of that chest depends upon the range in an upward and forward direction permitted to the anterior flap. Now, supposing that this anterior flap has to be lifted not from a force acting from below as in the case of the hand, but by a force which radiates toward the nozzle of the bellows, it will then be obvious that the further the anterior flap of the bellows is lifted away from the posterior, the less will be the range which it can be caused to travel; or the same point may be illustrated by the bellows itself, when we have the range limited by the leather flaps, the further the free handle is lifted from the fixed, and the shorter the distance which it is capable of traveling. The same thing may be more clearly seen by studying the positions of the ribs and their movements. The ribs slant downward and forward in their natural position, and the capacity of the chest is increased by lifting them up into a horizontal position. It being impossible for them to pass the horizontal position on account of the shoulder-girdle, it is obvious that the more nearly they are forced into this position in rest, the smaller the range through which they are capable of traveling; so the pigeon-breast of rickets, and the barrel-chest of emphysema, are alike rigid chests with very small power of changing their respiratory capacity. This condition is strikingly illustrated in some cases of hunchback in which the chest wall becomes pushed upward and forward into an almost horizontal plane, as was the condition in a case which I examined during the past winter. The result was that the ribs being permanently fixed in the condition of full respiration the chest could be neither enlarged nor diminished by the chest muscles, and the breathing was almost solely abdominal. This rigidity of the chest as the concomitant of pulmonary tuberculosis was long ago pointed out by that acute and brilliant clinician, Fothergill; and the few measurements which I am able to append show with singular uniformity that this rigid chest is also a distinctly quadrupedal or keeled one.

And now for the brief series of measurements that I have as yet been able to make, for valued assistance in the collection of which I am indebted to Drs. N. G. Russell and H. G Matzinger and also to the latter for the diagrams.

My first series was a short one, of patients and members of staff at the Buffalo General Hospital. My second another from the Military Hospital (patients and assistants) at Fort Porter. Last and most valuable a series of fifty soldiers from the garrison at Fort Porter for which as well as the permission for the former, I am indebted to the kindness of Major A. H. Appel, who also appended the ages, weight and height of the men. The results may be thus summarized:

NORMAL CHEST MEASUREMENT. INCHES.
ENLISTED MEN. FORT PORTER.

Number.	Age.	Weight.	Inches Height.	Extramammillary length.	Mid-superior depth.	Nipples.		Ensiform.		Index.	
						Ant.	Trans.	Ant.	Trans.	Length.	Breadth.
1	31	146	68 5	11	6	8 2	10 8	7 1	10 5	98	76
2	42	165	68 5	11 2	7	9 2	11 3	9 5	11 2	101	81
3	40	155	64	10 5	6 5	8 6	11 5	8 5	11 3	109	74
4	24	158	69 5	14	6 2	8 3	10 5	8 5	11	75	79
5	37	174	70	14	6 2	8	12	8 3	11 5	86	67
6	23	163	71	12.6	6	8 2	11:4	7 5	12	90	72
7	28	164	71	13 2	5 6	7 2	11 5	7	11 5	87	63
8	43	160	66	12 5	7 2	9 5	12 5	9 2	11 5	100	76
9	26	162	68	12	6	8 2	10 5	8 2	11	87	78
10	29	135	65	11 8	5 6	8	10 5	8	10 5	89	76
11	36	130	64	11.6	6	8 2	9 5	8	10	82	86
12	38	218	73	12 6	7	9 8	12 6	9 5	12	100	77
13	25	138	68 5	13	6 2	8 5	10 5	8 6	10 5	81	81
14	21	137	67	12	5 5	8	11	8 6	10 8	92	73
15	27	178	72	13 8	6 5	9	12 3	8 2	12 2	93	73
16	38	140	67	13	6	8	10 6	8	11	82	75
17	34	142	70 5	13 5	6 3	8 5	10 5	8 8	10 2	78	81
18	28	158	68 5	13 6	6	8 2	12	8 5	11 6	88	68
19	29	130	66 5	12.2	6	8 5	10 5	8 2	10 5	85	81
20	29	154	66 25	12 5	6	7 5	10 6	7 5	11 2	85	70
21	31	128	68 75	12 2	5.5	7 5	11 5	7 5	11 5	94	65
22	22	132	67 5	12 5	6	8	10 6	7 5	10 8	85	75
23	24	134	65 25	12	6	8	11	8	11	92	73
24	46	150	65 5	13	6	8	11 5	8	11 2	85	69
25	27	152	68 25	12 5	6	8	10 8	7 5	11 2	86	74
26	24	130	66 25	12	5 5	8 8	10.2	9	10 5	84	86
27	28	141	68 5	13 5	5 5	8 2	9 6	8 5	9 5	71	85
28	44	138	65 5	11	6	8 5	11 5	9	11 5	104	73
29	26	149	66 5	12	6	8	12	8	11 5	100	69
30	25	147	66 5	12	6	8	11	8	11 4	92	73
31	32	142	65 5	13	6	8	11	8	11 2	83	73
32	26	140	67	11 5	6	7	11 3	7	11	98	62
33	26	128	68	13	5 6	7 5	10 2	7	10 5	78	73
34	44	174	65 75	11 5	6 5	9 6	11 7	9 5	11 5	102	82
35	38	152	71	13	6	8	11 3	7.5	11 2	81	71
36	28	175	68	12	6 5	9 2	12	9	11 6	100	76
37	30	136	68 5	13 5	5 6	8 2	11 2	8 2	11	83	73
38	36	139	69 5	12 6	6	7 5	10	7 5	10	78	75
39	27	140	66 5	12	6	8	10	8	11	83	80
40	31	144	68	13	6	7 5	11 2	7 6	11 6	80	61
41	33	130	68 25	13 6	5 5	7 5	10 6	7 6	11	78	71
42	29	160	66 75	11 6	5 7	8.2	11 1	8 2	11 2	86	74
43	26	140	66 5	12 5	5 6	7 3	10 6	7	11	85	69
44	22	134	67 25	14 2	5 5	7 1	11	7 5	11	77	65
45	26	154	67 25	13 5	6.3	8 2	10 7	8 2	11	78	77
46	26	130	65 75	13	6 6	8.5	10 5	8 2	10 5	81	81
47	27	140	66 5	13	6 2	8	11.3	7 6	11.2	81	71
48	31	136	67	12 2	6	8	11 2	8	11	92	72
49	26	130	65 75	13	5 6	7 6	10 5	8	11	81	72
50	28	140	67	13 2	5 8	7 8	11	7 5	11 2	83	71
Average Indices										87.3	73 6

	Length.	Breadth
Indices Series from Buff lo General Hospital . .	80 2	71 5
" " " Garrison Hospital	89 0	72 6
" " of enlisted men	87.3	73 6
Average	85 5	72 5

My measurements were as follows:

1. Length of chest from center of clavicle to lowest point of cartilage of tenth rib, a nearly vertical line on an inch outside of the nipple. 2. Anteroposterior (sagittal) diameter of chest from upper border of sternum (notch) to spine of opposite dorsal vertebra. 3. Anteroposterior diameter (sternum to dorsal spine horizontally opposite) at a line drawn through the nipples (fourth costal cartilage). 4. Transverse diameter at the same line. 5. Anteroposterior diameter at tip of ensiform cartilage. 6. Transverse diameter at same level. From these two indices, like the cranial indices, are constructed, the *length index* found by dividing the breadth at the nipples (four) by the length (one) and the *breadth index* found by dividing the anteroposterior diameter at the nipples by the transverse at the same level. Hence, the lower the index the longer and flatter (more bellows-like), respectively, the chest. From these three series the normal indices would appear to be length index, 85.5, breadth index 72.5.

I believe these figures will not be changed more than 1 or 2 per cent., for all these series agree very closely and the enlisted men have all passed a most rigid physical examination and are of such splendid physique that it is a pleasure to see them strip. Every one of them might be described as "certified normal."

The next table is a series of fetal, infantile and child measurements in which can be clearly traced a more or less regular transition from a high, round, short chest of quadrupedal breadth index to the flattened and slightly elongated chest of adult human form.

CHEST MEASUREMENTS CENTIMETERS.

Fetuses (Normal)	Length.	Top sternum.	Nipples.		Tip Ensiform		Index.	
			Ant. p.	Trans.	Ant. p	Trans.	Length.	Breadth
1. 8 months	. . . .	. . . .	. . .	. .	. . . .	. . . .	.	. .
2. 7 " (twin)	5 0	3 0	3 9	3 9	4 0	4 5	.	.
3. 7 " " .	5 5	3 5	4 8	4.7	5 0	5.0	. .	. .
4. 7-9 (?)	6 0	4 5	5.0	4.7	5.0	5 0	.	.
Average indices.	. . .	. . .	. . .	. .	. . . .	. . . .	72	103
Monsters.								
5. Birth (term) Hydrocephalus . .	10.0	6.00	9 5	10.5	10 0	10 75	107	90
6. 7-9 mos. (?) Anencephalus	8 0	7.00	8.0	8 75	8 5	10 0	125	91
Children. (Orphan Asylum)								
1. 5 months (Rosary)	15	10 5	11 5	12.5	12 0	13 5	90	92
2. 12 "	15	10.0	12.5	13 5	13.5	15.0	100	92
3. 14 "	12 5	10 0	11 5	13 5	13 5	15 5	124	90
4 16 "	13 5	8 0	11 0	13 0	13 0	14 0	104	90
5. 16 "	13 5	8 5	11 0	13 5	13.5	14 0	104	89
6. 20 " .	15 5	8 5	12 5	15 5	13 5	15 5	100	81
7. 36 "	*16.0*	*8 0*	*12 5*	*15.5*	*15 0*	*16 5*	*103*	*81*
Av. Normal Children	. . . .	. . . .	. . .	. .	. . . .	. . . .	103	87
Buffalo Gen'l Hospital								
8. 24 months (Rosary and slight groove)	12.5	6.5	8.75	11.00	9.5	12 0	95	80
9. 27 months (Rosary and slight groove)	12.0	6.0	10 5	11 0	12 0	13 5	108	95
10. 6 yrs (Flat chested)	19 0	8 0	13 5	14 7	14 7	15.5	82	95
11. 9 " (" ")	19 5	8 5	15.0	17 5	16.5	18 5	95	86
Average indices hospital children (older)							95	90

From this table we find the following "trial figures:" Fetal breadth index, 103; infantile breadth index (3 years and under), 87; child breadth Index 3 years and over (abnormal), 90; adult, 72.5.

As to flat-chestedness, I have made measurements of seventeen patients selected at random, from the hospital wards for their flat-chested appearance, most of them being tubercular, with the result of an average breadth index of 80 (normal 72.5). In other words all these flat-chested cases were found to have chests on an average 7.5 degrees rounder or "deeper" than the average. In only three cases was the chest flatter than the normal.

Last of all I have to present measurements of some twenty cases of pulmonary tuberculosis in all stages which, though few in number, are a surprisingly uniform series and so far as they go, fully support the contention that the typical tubercular chest is *not* a flat one, but a *round*, *long*, rigid chest. It may be termed, with grim appropriateness, the "coffin chest."

TUBERCULAR (BUFFALO GENERAL HOSPITAL).

1. 20 years	Dorsal Kyphosis	19	10 5	20 5	17 5	19 5	18 5	97	143
2. 22 "	Pulmonary Tuberculosis	31	10 5	15 5	22 0	13 5	23	76	70
3. 44 "	Tuberc. (susp.)	37.5	16 0	22.0	28 5	21 5	29 2	75	77
4. 57 "	Chronic Bronchitis (?).	28	12 5	18 0	22 5	17 5	21 5	77	80
5. 48 "	Pulmonary tuberculosis	32	11 0	18 0	27 5	16 5	25 0	78	66
6. 52 "	" "	33	12 0	18 5	25 5	17.0	25 0	76	73
7 47 "	" "	31 5	12 5	19.5	22.0	18 0	22 0	70	90
8. 33 "	" "	29	11 0	18 0	21 0	17 0	23 5	81	75
9. 43 "	" "	30	12 5	20.5	24.5	17.5	25 0	83	84
Average Indices								77 3	77
Indices of short series (Tubercular) Erie Co. Hospital . .								82 6	79
General average "Tubercular" Indices								79.9	78

All chests in which there was emphysema or reasonable suspicion of it, were omitted. The indices were: Tubercular patients (19), length 79.9, breadth 78; normal individuals, length 85.5, breadth 72.5. In other words, the consumptive chest appears to be nearly 6 degrees both longer and rounder (deeper) than the normal, so that persistence of the fetal rounded or keeled type with a further reversion to the elongated ancestral type (both of which as already explained impair the efficiency in the erect position) would appear to co-exist at least with a predisposition to phthisis. If this is sustained by more extended measurements it will furnish a most valuable indication for climbing exercises and outdoor life in the chest measurements of children and young adults.

When we remember, in this connection, that the lung in the consumptive is really slightly *more* voluminous than normal, and that, as I have elsewhere suggested, the predilection of the tubercle bacillus for the lung is due to the ancestral recentness of the latter, constituting it the point of least sterility and resistance in the entire organism, it will be seen that the importance of this method of study is likely to be great. If it will help us to detect even a possible predisposition before the bacillus has gained a foothold it will bring us face to face with the hopeful and promising problem of prevention, instead of the discouraging and difficult one of cure. A month of tree climbing may be found worth a gallon of tuberculin.

PHARMACOLOGY OF STROPHANTHUS.

Presented in the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

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To Professor Fraser, more than to any one else, belongs the honor of having brought this drug to the notice of the medical profession, and for having determined in a general way its pharmacology and clinical value. I shall not discuss the botany, chemistry or therapeutics of the drug, as these questions have been treated in an appropriate manner by others. I have verified nearly all the important points made in this paper by experiments on animals, using for this purpose freshly isolated strophanthin, and 5 per cent. tinctures, tested by pharmacologic methods, prepared from drugs bought on the open market as strophanthus kombé. The strophanthin from this source is as active as the best strophanthin procurable, and more so than the majority of samples, which vary greatly in strength. Indeed, it was nearly one hundred times as strong as one lot which I examined, and which was claimed to be a chemically pure article.

In general, strophanthus, or rather the active constituent strophanthin, is primarily a nerve and muscle poison, which affects the functions of the various tissues of the animal body in a special manner, in therapeutic doses slowing the pulse, lengthening the systole and diastole, increasing the blood pressure, and the efficiency of the cardiac muscle; and in toxic doses producing rapid paralysis of the heart.

Gley has shown that the local anesthetic action of strophanthin when brought in contact with the conjunctiva is about ten times as great as that of cocain, and that it persists much longer. Steinbaugh, from a long series of experiments on men and animals, concluded that this anesthetic action is not due to strophanthin, but to some other constituent which, when in a pure state, does not cause irritation or produce unpleasant after-effects. Hare and de Schweinitz, in attempting to confirm this work, concluded that Steinbaugh was mistaken and that the substance he used in his experiments was in reality strophanthin, which these authors declare to be a very dangerous drug in ophthalmic practice, since its application may be followed by inflammation and sometimes by ulceration.

Fraser, Boyd, Rovighi and others, claim that strophanthin has an antipyretic effect on patients suffering from various diseases. Martin found the reverse. My experiments on dogs show that a slight lowering of temperature may be produced in normal animals. These investigators also report that the drug is a true cerebral sedative. Their observations were made upon patients suffering from various diseases, and upon animals. In my studies sleep was one of the most constant symptoms noted in dogs, rabbits and guinea pigs under full doses of the drug. Brunton, Baubeyer, Evans and others claim that strophanthus does not have a cumulative action when given for a long time. I have found that if very large doses are given to animals on successive days the second or third dose may be fatal. Especially is this true with rabbits, but generally doses very much greater than should ever be given for therapeutic purposes are well borne by dogs for a number of weeks in succession. In some instances the system becomes more tolerant, as noted by Fraser.

Strophanthus is locally irritating and stimulating to the gastro-intestinal mucous membrane (Wood). It, however, produces much less disturbance to the stomach than does digitalis; in fact some authors claim that therapeutic doses act as a mild stomachic. Clinical experience shows that in many cases strophanthus can be given where digitalis is contraindicated on account of the nausea and vomiting produced.

Strophanthus causes paralysis of striped and unstriped muscular tissue. The quickness with which this result is attained depends upon the concentration of the solution employed.

Like the other members of the digitalis series, strophanthus stops the frog's heart in systole, whether administered subcutaneously or locally. At first the pulsations become slower and more powerful; then the contraction changes to a peristaltic movement, the ventricles dilate less and less, and finally the ventricular cavity is completely obliterated, even when strong efforts are put forth by the auricles to expel their contents. Soon the auricles also cease to beat. This change occurs even when the inhibitory mechanism has been paralyzed by atropin; therefore, it must be due mainly to the action of the drug upon the muscular fibers themselves. The Strassburg school claim that the systolic condition is due to increased elasticity of the muscle fibers. The work of Roy, however, has thrown considerable doubt on this point, while Cushny thinks the ultimate systolic condition is probably due to increased contractility. The whole question is far from settled at the present time.

Since strophanthus is generally used in the treatment of diseases of the circulation, a consideration of its action on the heart and blood vessels of animals is of chief importance. The normal circulation of the animal body, with its many variations that may influence the blood supply to this or that particular organ, is maintained mainly by the action of the heart and the muscular fibers of the arterioles under the influence of the central nervous system, which in turn is regulated by the different afferent impulses or direct influences reaching it. To understand the action of strophanthus upon these factors is to rationalize its therapeutic employment in those cases where the organism is suffering because of some pathologic condition of its vascular mechanism.

Pharmacologists are very well agreed that digitalis, strophanthus, lily of the valley, and the other members of the group have the same qualitative action upon the circulation, but the quantitative relation of the various drugs of the series to the different physiologic factors has been only partially worked out. Most of the work has been done on strophanthus and digitalis. When these various quantitative relations have been settled we shall be able to apply one or another of these remedies, as the case may be, with the greatest certainty according to the pathologic conditions presented in the patient.

A careful study of the papers of the early experimenters on digitalis shows that section of the vagus does not entirely prevent slowing of the heart, but if atropin be given the rhythm becomes normal; consequently the decreased pulse rate when therapeutic doses are employed is mainly due to the stimulation of the vagus centers, and partially to irritation of the peripheral endings of the vagus in the heart. Considerable dispute has arisen as to whether the behavior of the vagus be not due simply to the increased supply of blood to its medullary centers, but it seems to be well established that the drug has a direct action on these centers.

Brunton and others claim that the quickening of the pulse in the second stage is caused by paralysis of the vagus ends, while Schmiedeberg, Cushny and Boehn have shown that it is probably due mainly to the increased irritability of the muscular fibers of the heart. Generally with the slowing of the rhythm the most constant result noted is the increase in blood pressure; but this does not always occur, especially where there is extreme slowing. Brunton and many others regard the increase in pressure after administration of digitalis as due mainly to the constricting action of this drug upon the peripheral circulation, but confess that strophanthus does not narrow the caliber of the arterioles.

Fraser found, by perfusion experiments with strophanthus, that exceedingly large doses of the drug are required to produce even transient constriction of the vessels. Popper claims that with strophanthus the vessels are redder than before. Delsaux, Bradford and Philipps found that the volume of the kidney remains unchanged when studied with the oncometer.

My experiments on various animals convince me that no constriction of the vessels is produced by therapeutic doses of strophanthus. The increased blood pressure must be due mainly to direct action upon the heart.

Popper claims that venous pressure falls as the arterial pressure rises. Little experimental work has been done to prove this point.

Popper and Knoll find that the blood pressure has less influence on the pulmonary circulation than on the systemic circulation. Gley found that curare does not alter the action of strophanthus on the blood pressure, which consequently does not depend on changes in respiration.

Rolleston claims that the maximum pressure in the left ventricle and the output of the heart are increased and the circulation quickened by strophanthin.

Roy and Adami found that strophanthus at first increased the force and efficiency of the papillary muscles, with only slight effect on the walls of the ventricles; large doses quickly paralyze these muscles, having less action on the ventricular walls. Dissociated contractions of the ventricles and auricles occur before this final paralysis.

The recent exhaustive paper of Cushny on the digitalis series has very largely cleared up the question of the relations of increased muscular irritability and central peripheral vagus action. He employed the myocardiagraph, which records the relative distance between two points on the heart, and the cardiometer, which measures the volume of the heart at successive stages, and consequently registers the amount of blood ejected by this organ. These two instruments were of the form devised by Roy and Adami. Cushny divides the action of the drug into: 1. The vagus stage, which is characterized by the results of the vagus stimulation and the direct action on the heart muscle itself. 2. The periodic stage, which begins with acceleration of the ventricles. He examined the movements of the four chambers independently, and also determined their relation to each other when under the influence of strophanthus, employing the myocardiagraph. When small quantities of the drug are administered intravenously there is marked slowing of the rhythm of the heart, the ventricle dilates more fully, and systole is more perfect. The sequence of these changes is not always the same. The slowing and increased contraction are the most constant manifestations noted. Cushny agrees with Ackerman that the former is due to inhibitory action of the vagus, and claims that the increased dilatation is also due to inhibition. Neither slowing nor dilatation occurs when atropin is administered, but this substance has no influence on the increased contractility, which must consequently be due to the action of strophanthus on the muscle fibers themselves.

Without atropin the rhythm is decreased, diastole and systole are more pronounced, and the blood pressure is raised. Tracings taken on fast moving drums show the same, also that the slowing is mainly due to the lengthened diastole, although the pause in systole is somewhat greater. The slowing and increased diastole are the same as when the vagus is stimulated. The time of the relaxations and contractions remains the same as before in the normal animal.

The muscular action of strophanthus is the same on the auricle as on the ventricle, but is less apparent and may be concealed, owing to the greater influence of the vagus, exerting more opposition to the increased muscular irritability. Shortly, if the drug is pushed, what may be called the pause phase begins to manifest itself and the rhythm, which heretofore has been the same in the auricles and ventricles becomes changed. Irregularity and skipped beats may occur in either chamber first, after which the rhythm of the superior and inferior portions of the heart exhibits wide divergence. The systole and diastole become more and more incomplete, until finally considerable pauses are noticed, especially in the auricle. The two sides of the heart after a few intermittent beats begin suddenly, showing a much accelerated rhythm, but the rhythm of the auricles and that of the ventricles is entirely independent, and impulses no longer pass from one to the other.

By careful estimation of the amount of blood passing through the heart as recorded by the cardiometer during the first stage of strophanthus action, Cushny maintains that, "the contraction volume or output of the ventricle per beat is uniformly much increased, whether slowing of the rhythm is marked or not. This is, of course, due to increased systole, augmented in some cases by increased diastole of the ventricles." The amount of blood expelled per unit of time varies according to the amount of slowing produced. Where the rhythm is only slightly lessened the output is increased, but if it is greatly retarded the output is below normal.

This increased work must be due to increased muscular action, since Roy and Adami find that the heart ejects less blood when the vagus is stimulated. The increased dilatation of the ventricles due to vagus stimulation, helps to offset the slowing. If the nervous mechanism is paralyzed with atropin the contraction volume is greater, owing to more perfect systole and the output is *uniformly increased*.

Blood pressure is raised during the first stage, even before a change in the heart is noticed. In general, during the first stage analogous results are shown by the myocardiagraph, cardiometer and kymograph, slowing and increased work; if atropin is used increased work without slowing.

I have dwelt at length on the primary action of strophanthus because it is never desirable to go beyond this stage under any condition in the therapeutic application of the remedy. In fact it is not wise to produce more than a moderate degree of the first stage, as better filling of the vessels is secured when the rhythm is but moderately decreased.

At the close of the first stage, as already mentioned, the ventricular and auricular contractions become slower and slower, and may occasionally skip; soon, however, the irritability of the muscle becomes so much increased that the restraint of the vagus is thrown off and the ventricles usually first, soon followed by the auricles, show an accelerated, very irregular rhythm, the ventricles beating together, and the auricles also having the same rhythm, while the normal sequence of the respective contractions is entirely destroyed. The inhibitory mechanism still acts, but is entirely insufficient to control the exaggerated muscular activity. The individual beats of the different chambers are very irregular and the amount of work is greatly lessened; soon the spasmodic effects of the organ cease, generally in the auricles first, in a position somewhat nearer diastole than systole; then follow delirium cordis and complete dilatation.

Knoll, working with a less perfect myocardiagraph than that devised by Roy and Adami, obtained results which correspond quite accurately with those obtained by Cushny. Neither Cushny nor Knoll has yet completed their observations on the action of the heart during the second stage. During the second stage there is generally present an increased excitability of the central nervous system, and violent movements of the respiratory and other muscles occur, the animal appearing much as though under the influence of one of the convulsive poisons.

It has been found from extensive experiments that diuresis is one of the most constant results noted when strophanthus is administered to healthy individuals (Semoine) or to patients suffering from various cardiac lesions (Fraser, Semoine, Wood and others). The diuresis may be due entirely to increased blood pressure, to direct renal action (Wood), or to a combination of the two. The action of strophanthus is very much more rapid, and the drug is eliminated from the system more quickly than is the case of digitalis, presumably because of the greater solubility of its active constituent strophanthin, which is probably excreted in the urine (Wood).

During the past two years with a view of ultimately being able to standardize all the various preparations of the digitalis and strophanthus series by physiologic methods—since they can not be assayed by chemic means—I have examined hundreds of samples of crude drug and active constituents, as purchased on the open market or procured from private sources. The task is indeed a difficult one, owing to the small amount of quantative work that has been done. Sufficient data have already accumulated to convince me that the task of perfecting pharmacologic methods for standardizing all those powerful drugs and chemicals which can not be assayed by other methods is not a hopeless one. Owing to the ready solubility of strophanthin, the preparations of strophanthus are perhaps the most easily standardized of the heart tonics.

As already stated the strophanthin on the market varies greatly in strength. The same is true of the crude drug. As physicians, I believe the time has come when we should demand at least a qualitative pharmacologic examination of these drugs before they are made up into pills, tablets, tinctures, fluid extracts, etc.

The sphygmographic work of Fraser, Paschkis, Zerner and especially Wilcox, shows that strophanthus produces the same effects on the circulatory apparatus of man as upon that of other mammals. The fatal dose of strophanthus varies for different groups of animals. Reusing and others claim that strophanthus is at least twenty times as strong as digitalis. Fraser claims it is 300 times as strong. I have found one sample of strophanthin sufficiently powerful to kill medium-sized frogs in doses of 1-7000 of a grain. For therapeutic use I believe 1-300 to 1-200 grain of strophanthin, and from 3 to 5 drops of a 5 per cent. tincture to be the correct dose.

Briefly summarizing the pharmacology of strophanthus we may say that its chief action is upon the nervous mechanism controlling the action of the heart, and upon the heart muscle itself, lessening pulse rate, increasing the blood pressure and augmenting the work of the heart; without causing constriction of the arterioles or any special action on the vasomotor mechanism; the diuresis and other important results being due mainly to improved circulation.

Its special advantages over digitalis may be briefly stated as follows: It does not produce gastric disturbances, and does not show cumulative action. The constriction of the vessels by digitalis may be a source of great danger owing to the extra strain thrown on the ventricle, especially in fatty heart. Strophanthus has no such tendency. It acts quicker and with greater certainty. Owing to its ready solubility it is better for hypodermatic administration, and the strength of its preparations can be more easily standardized.

Let us have a Department of Public Health!

STROPHANTHUS; A CLINICAL STUDY.

Presented in the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

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NEW YORK CITY.

For many years I have been convinced that the very discordant reports made by competent observers were due to the fact that the source of strophanthus preparations was varied, for otherwise it would be impossible to believe that excellent effects could be obtained from one preparation while another would give rise to alarming or even dangerous symtoms. And further it is impossible to believe that the very large doses so frequently mentioned in literature could be safely administered, if the preparation had been made from an active crude drug.

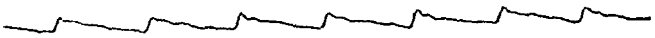
Last January, I read a paper before the Medical Society of the State of New York which was published in the May number of the *American Journal of the Medical Sciences* giving the results of a careful study of strophanthus kombé. In this paper I stated that I believed that kombé was not a variety of strophanthus hispidus, but a distinct species. In that study based on extended observation of twelve patients I made use of a tincture prepared according to the terms of the "United States Pharmacopeia," and standardized by physiologic methods, reaching the following conclusions: That success in the administration of strophanthus requires; an active well-made preparation from a reliable source; avoidance of its use in fully or overcompensated hearts, or in those which present advanced muscular degeneration or mechanical defects of high degree; the use of not too large nor too frequently repeated doses.

From these observations it was apparent that a dose of five drops of this preparation, three or possibly four times a day, is sufficient. From this preparation of strophanthus kombé (pubescent variety), we could discover in a short time that the line of ascent of the tracing of the pulse as taken with the Dudgeon sphygmograph became longer and more perpendicular, the distance, between the successive apices longer, the dicrotic wave disappearing, while the irregularities were almost always overcome. In other words, under the influence of this preparation the force of the heart beat became stronger, its rate slower and its rhythm more regular. This change took place without any change in blood tension other than could be justly attributed to a more powerfully and evenly acting heart. Coincident with these changes in the pulse there were also equally well-marked changes in the pitch, volume and quality of the heart sounds, clearly indicating that the heart was working under a better mechanical advantage. With all these changes as determined by physical signs, the patient would note the relief of breathlessness, the diminution of pain, the disappearance of swelling, the increased flow of urine, the improved appetite, and the disappearance of palpitation or, if the last did not disappear, fluttering was changed to more forcible apex beats. These conclusions are, I believe, fairly presented and justly based on the observations recorded in the above mentioned paper.

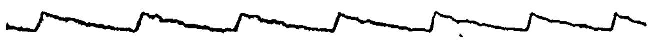
As I have said above, the study was made of a single preparation from a single drug source. It is my purpose now to give you the results of my observations on other preparations from other drug sources. Early in March of this year I received, from Dr. H. H. Rusby, fluid extracts made from different species of strophanthus. The following are the observations:

A.—Fluid extract of strophanthus hispidus, from No. 16 powder containing 1.815 per cent. of strophanthin.

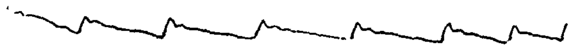
Case 1.—This was administered to a woman aged 35 years who, on March 14, complained of constent dyspnea, swelling of feet, severe chest pains, and palpitation. Physical examination showed moderate aortic obstruction, marked mitral incompetency, slight mitral obstruction, with long standing myocarditis. The dose was five drops in a wine-glass of water after meals. The following is the pulse tracing.



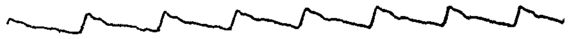
March 28. The patient announces that the breathlessness and palpitation are relieved but the medicine causes four or five watery, rather painful movements. The dose is reduced to four drops.



April 7. The patient has now no swelling of the feet but still complains of the diarrhea. The dose is now reduced to two drops.

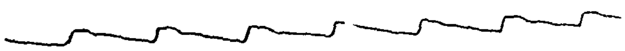


April 21. The patient has complained of some nausea, but the symptoms of the cardiac lesion have become less; however, it is thought best to abandon the use of the drug.

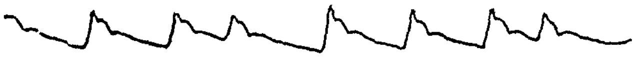


B.—Fluid extract of strophanthus hispidus from No. 30 powder containing 1.726 per cent. of strophanthin.

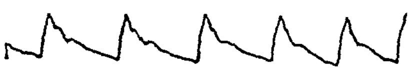
Case 2.—April 1. A young woman 26 years of age has been troubled with palpitation and pain in the heart on exertion: she had noticed an enlargement of the neck for the past four months. Physical examination revealed a simple goiter, mitral incompetency and dilatation of the left ventricle. The patient received four drops of this preparation.



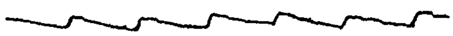
April 7. The palpitation has been somewhat less severe and the pain has diminished. The goiter is slightly softer.



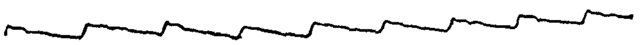
April 17. The patient complains that the medicine nauseates and requests its discontinuance.



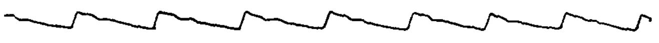
Case 3.—A woman aged 55 years, very obese, has suffered from swelling of the feet, palpitation and dyspnea for about two years. Physical examination revealed mitral insufficiency with considerable dilatation of the left ventricle and presumably a fatty degeneration. Two drops were given thrice daily on April 2.



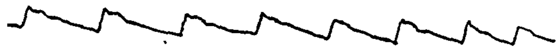
April 9. The symptoms are slightly relieved.



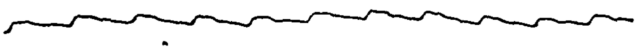
April 16. There is considerable improvement in the dyspnea and the edema has disappeared.



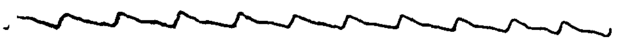
April 23. The palpitation is still marked but less than formerly. As the improvement is not sufficiently great and the patient complains of the griping and diarrhea the medicine is omitted. (See E.)



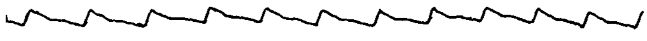
Case 4.—A woman 64 years of age has been breathless for many years particularly on exertion. She was thin, active but tired easily. Examination showed considerable mitral obstruction and incompetency with slight aortic obstruction. The muscular wall of the ventricle is in fair condition. Three drops were ordered thrice daily on April 23.



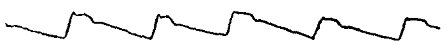
May 9. The patient has observed considerable caution in her movements and feels stronger.



May 16. She does not tire so easily, but complains of loss of appetite.

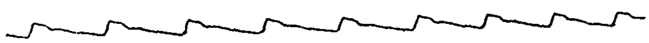


May 23. The shortness of breath is markedly better, but some nausea has appeared.

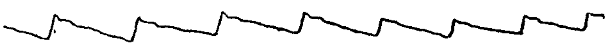


C.—Fluid extract of strophanthus kombé (pubescent variety) from No. 30 powder containing 3.372 per cent. of strophanthin.

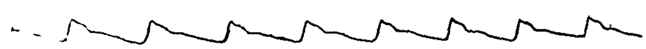
Case 5.—On March 24 a woman 55 years old presented herself complaining of fainting sensations on exertion, extreme nervousness and mental depression. She was found to have thickened aortic valves and a dilated left ventricle. Three drops, thrice daily were ordered.



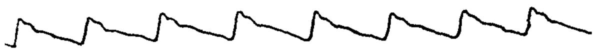
March 31. There has been no return of the fainting sensations.



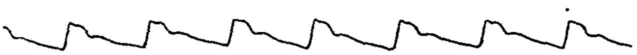
April 7. The mental depression is less but the appetite is poor.



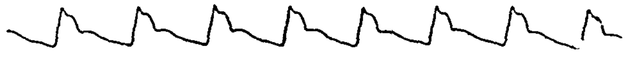
April 14. On account of the loss of appetite the amount of the drug is diminished to two drops. The nervousness is less.



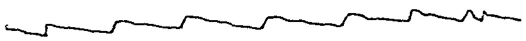
April 21. In spite of the diminished dosage, diarrhea is now complained of and some abdominal pain.



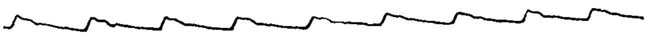
April 28. The digestive symptoms are still annoying.



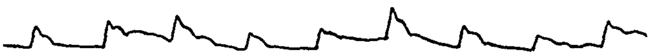
Case 6.—A rather stout but active woman of 60 complained of swollen hands and feet, headaches, dyspnea and oppression on exertion. Examination showed insufficiency of the mitral valve, ventricular dilatation, possibly fatty infiltration. Two drops of the preparation were given thrice daily on March 28.



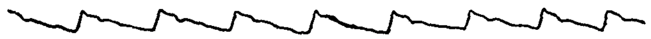
April 7. The edema has become considerably less.



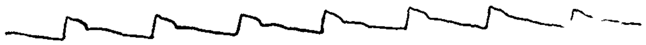
April 9. An attack of vomiting with purging commenced today, and medicine is now omitted.



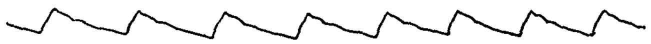
April 14. The strophanthus is now resumed, the digestive symptoms having been attributed to dietary indiscretion. The edema has returned.



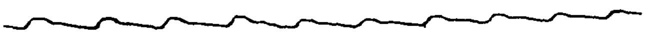
April 21. The headaches and oppression are relieved; the edema is less.



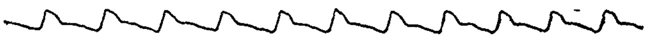
April 28. Nausea has appeared for all that the symptoms of cardiac debility are less.



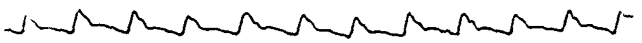
Case 7.—On March 31 a woman aged 41 years applied for relief from persistent headaches, palpitation and precordial distress on exertion, from which she had suffered for many years. Examination showed some aortic regurgitation with marked mitral obstruction and less apparent regurgitation. She received four drops thrice daily.



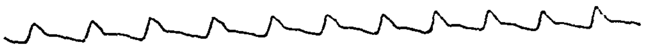
April 2. The headaches are lessened in severity, but the palpitation is persistent.



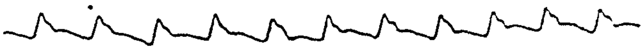
April 7. The precordial distress appears only on severe exertion.



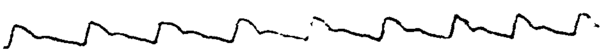
April 9. Headaches have been absent since last report, but the appetite has become seriously impaired.



April 16. The patient complains of loss of appetite, but admits the improvement in other symptoms.

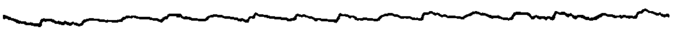


April 23. There have been two attacks of diarrhea and the condition of the appetite is unchanged. (See I.)

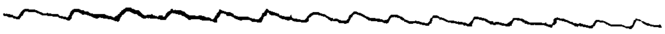


Case 8.—On April 1 a man aged 52 years complained of great breathlessness, fainting sensations, fatigue on slight exer[illegible] which had become gradually worse d[illegible] six m

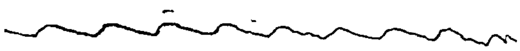
Examination discovered slight aortic obstruction, marked *mitral incompetency, with* extreme ventricular *dilatation.* Three drops were ordered thrice daily, with rest in bed.



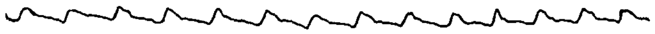
April 5. The dyspnea has improved.



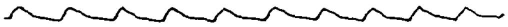
April 9. There have been no fainting sensations since last report.



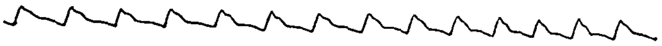
April 14. The improvement still continues. He may now recline on a sofa during the daytime.



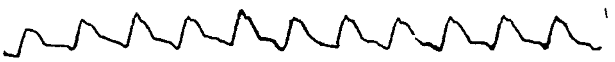
April 16. The patient complains of nausea. The dose is diminished to two drops.



April 22. The nausea has disappeared, but total inappetence has arisen. On two days there has been diarrhea. One drop is to be given thrice daily.

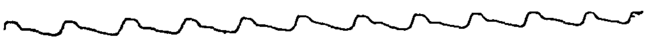


April 26. The condition of the patient has remained unchanged. (See H.)

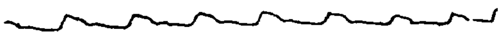


D.—Fluid extract made from strophanthus kombé (non-pubescent) No. 30 powder containing 1.87 per t. of strophanthin.

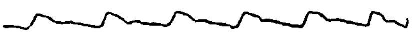
ase 9.—A man aged 42 has suffered from gouty attacks for 1 years. He is easily fatigued, suffers from precordial on and pains extending down left arm. He was found to have aortic obstruction, probably secondary to degeneration of the conus arteriosus, with considerable ventricular dilatation. On March 26 he was directed to take five drops thrice *daily.*



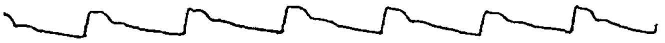
April 3. There have been no attacks of pain in the arm.



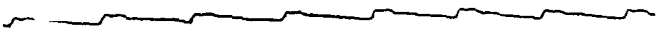
April 10. The oppression is less marked, but the fecal movements are softer in consistency.



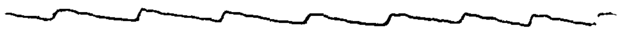
April 17. The strength has improved, but the appetite is impaired. The character of the movements is unchanged.



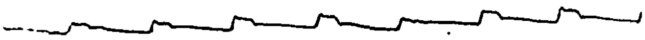
Case 10.—On March 28 a man aged 31 consulted me for the relief of palpitation, chest pains, slight swelling of the feet and dyspnea on exertion. There was found on examination a fairly well compensated heart, but presenting aortic obstruction and mitral incompetency. Four drops of the preparation *thrice daily were ordered.*



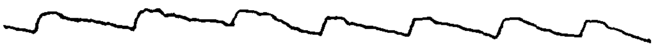
April 7. The edema has entirely disappeared and the pains are slightly better.



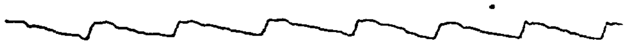
April 12. Improvement continues.



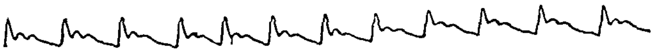
April 19. The dyspnea is considerably improved and the general condition good.



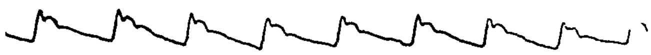
April 26. The improvement is not so marked and but littl progress has been made.



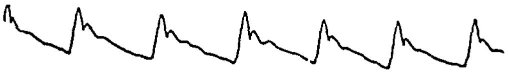
Case 11.—A woman aged 67 consulted me on March 23 fo painful swelling of the feet, cough, headache, restless slee and dyspnea. Examination revealed marked incompetency a both aortic and mitral orifices, with moderate dilatation Three drops were ordered to be administered thrice daily.



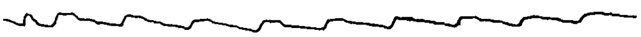
April 5. The feet are still swollen, but less painful; th cough has disappeared.



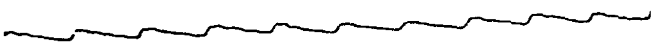
April 19. For all that the headaches, disturbed sleep an shortness of breath are better, a severe attack of diarrhea during the past four days, which was not accompanied by eithe nausea or vomiting, necessitated the omission of the drug.



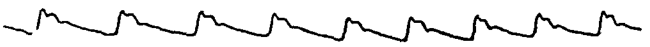
Case 12.—A woman 48 years of age complained of genera weakness, swollen feet, headache, disturbed sleep and dyspnea Examination showed slight aortic obstruction, with bot incompetence and obstruction at the mitral orifice. There wa slight dilatation. On March 24 three drops were ordere thrice daily.



April 7. The sleep has improved and the feet are les edematous.



April 14. The headache has disappeared, the dyspnea i less and considerable exertion is possible without distress, bu the appetite has been entirely lost. (See F.)

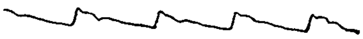


It will be noticed that in nearly all the cases th symptoms which brought the patient to the physicia were relieved; in some they entirely disappeared. O the other hand the investigation had not been long i progress before it was apparent that the preparation were causing digestive disturbances varying from simple inappetence, nausea and vomiting to abdominal pai and diarrhea. Were it simply a question of purgation these untoward symptoms might be disregarde or possibly it might be considered to be beneficial in that it might relieve the edema. Yet on the whole the irritating properties of the fluid extracts as concern the alimentary tract are undesirable and certainly limit their employment within narrow lines. The behavior of the fluid extracts is in marked contrast to that of the tincture, which in none of the twelve cases recorded in my previous paper, created any digestive disturbance.

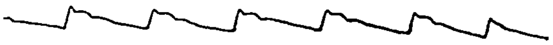
The following observations were made upon hypodermatic tablets of strophanthin from the same manufacturer as of the fluid extracts.

E.—Hypodermatic tablets, one two-hundredth of a grain each, obtained from a No. 30 powder of strophanthus hispidus which contained 1.726 per cent. of strophanthin.

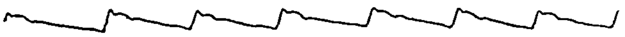
Case 3.—(See above.) On April 25 the patient was directed to take by the mouth one tablet dissolved in a teaspoonful of water before each meal.



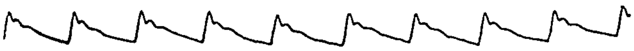
May 2. There are at present no intestinal symptoms.



May 9. The palpitation is much improved and the dyspnea is entirely relieved.

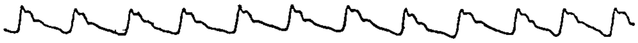


May 16. The patient presents an excellent appearance and the cardiac sounds are distinctly stronger.

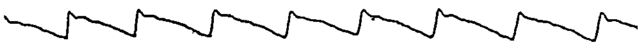


F.—Hypodermatic tablets, one two-hundredth of a grain each, from No. 30 powder of pubescent strophanthus kombé containing 3.372 per cent. of strophanthin.

Case 12.—(See above.) One tablet is given as above, commencing April 17. During the three days' abstinence from medicine the appetite has been regained.

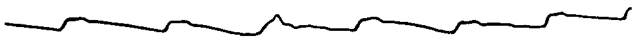


May 13. The swelling of the feet has entirely disappeared, the sleep is tranquil and the patient expresses herself as greatly improved.

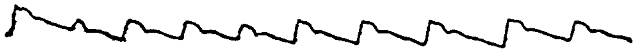


G.—Hypodermatic tablets of one two-hundredth of a grain from No. 30 powder of non-pubescent strophanthus kombé containing 1.87 per cent. of strophanthin.

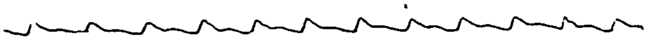
Case 13.—On April 4 a woman aged 56 years complained of weakness, headaches, palpitation and precordial distress, the last two symptoms being especially marked on exertion. On physical examination there was found marked mitral insufficiency, slight aortic obstruction (vegetations) with marked dilatation of the left ventricle.



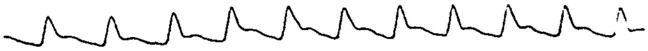
April 10. The patient feels stronger and suffers less from headaches.



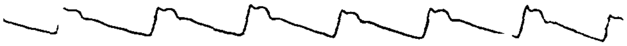
May 3. The palpitation had improved and the distress is less upon exertion.



May 17. The appetite and bowels are in excellent condition and there is general betterment.

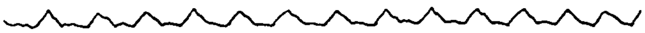


May 24. The patient feels much stronger and had not suffered from headache since last report.

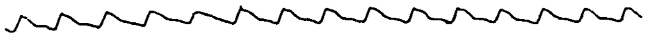


H.—Hypodermatic tablets of strophanthin, one two-hundred and fiftieth of a grain each, from strophanthus kombé (pubescent variety).

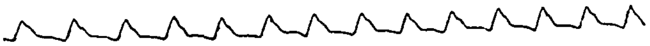
Case 8.—(See above.) On May 6 one tablet was directed to be taken dissolved in a teaspoonful of water before each meal. The diarrhea and inappetence had disappeared.



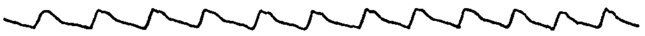
May 9. The dyspnea has markedly improved.



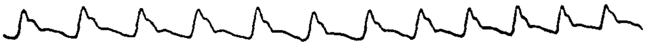
May 12. The patient now sits up the greater portion of the day.



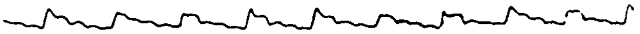
May 15. There has been a great gain in strength.



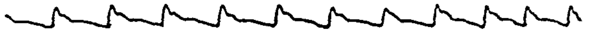
May 19. The dyspnea has entirely disappeared and moderate exertion is possible without fatigue.



Case 14.—A woman of 60 has been unable to walk without fatigue for several years. She also complained of swollen feet, fainting, dizziness, pain in left side of chest and a persistent cough. Examination on May 6 revealed a well-marked incompetency of the mitral orifice and extreme dilatation of the left ventricle. One tablet was ordered to be given as above.

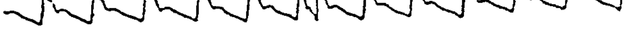


May 20. The cough, dizziness and edema have diminished and the pain in the side has disappeared. This instance is notable for the rapidity of relief.

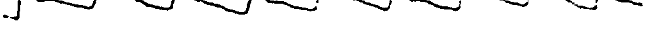


I.—Hypodermatic tablets of one three-hundred and fiftieth of a grain from strophanthus kombé (pubescent variety).

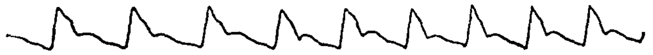
Case 7—(See above.) On May 6 the patient reported that there had been no further attacks of diarrhea and the appetite had returned.



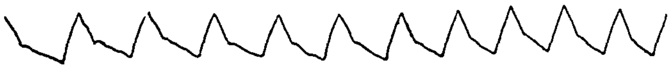
May 8. The patient feels stronger.



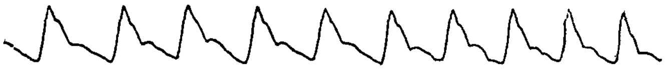
May 10. The palpitation is markedly improved and distress is no longer felt.



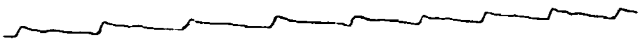
May 14. The heart sounds are distinctly more vigorous and the general improvement continues.



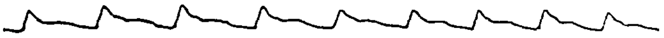
May 21. There has been no palpitation since the last report and the cardiac first sound is improved in quality, pitch and intensity.



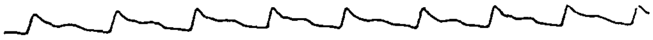
Case 15.—A man aged 25 years consulted me with reference to persistent headaches, general weakness, excessive nervousness and palpitation. Physical examination on May 9 showed mitral incompetency with slight dilatation of left ventricle. One tablet was given as above.



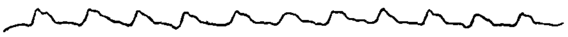
May 15. The palpitation is lessened and the patient is less nervous.



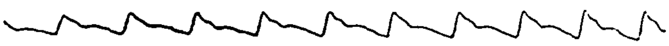
May 22. There has been no headaches nor palpitation since last report. The patient feels markedly stronger and can endure less fatigue.



Case 16.—A woman aged 26 years had suffered from fainting, dizziness, headaches, and palpitation for three months. Examination revealed an anemia and probably a secondary dilatation of left ventricle with consequent mitral incompetency. On May 14 she was directed to take one tablet as above.



May 21. Although this report covers but one week yet there is distinct improvement as regards fainting, headaches and palpitation. The anemia is not appreciably changed, although the cardiac first sound is distinctly stronger.



On studying the histories of these patients it will be observed that there was no digestive disturbances produced by the tablets; this is marked contrast to the results of the administration of the fluid extracts. It will be further observed that in the case of the three first mentioned tablets that the source was the same as of the last three fluid extracts.

From my observations we may fairly conclude: 1. The tincture of strophanthus kombé (pubescent variety) is an active and eligible preparation of which the maximum dose should be five drops four times daily. Of the tinctures made from strophanthus hispidus, which are found in the shops many are inert or nearly so. 3. The fluid extracts of strophanthus hispidus and of strophanthus kombé (both varieties) are unsuitable preparations on account of the digestive disturbances which they occasion, and these appear to be independent of the amount of strophanthin contained in the crude drug. It is likely that the character of the preparation is responsible for these untoward effects and possibly it may be so changed that these objections will be removed. 3. The hypodermatic tablets of strophanthin as prepared from all kinds of strophanthus and are satisfactory preparations in dose of from 1-350 to 1-200 grain, and are not irritating to the digestive tract. The source of the glucosid, and the strophanthin percentage of the crude drug are apparently without influence on their activity. The reputation which strophanthus enjoys, of being an irritant drug is probably based on the use of the fluid extracts.

These tablets do not, so far as limited experience indicates, irritate when used hypodermatically and the smaller dose (1-350 gr.) seems to be sufficient for all practical purposes.

I had hoped to be able to report on the clinical use of strophanthus bracteatus, but have not been able owing to failure to obtain a supply of the crude drug. If I might base an opinion on the excellent researches of Boinet it is likely to prove to be an irritant to the alimentary tract and in spite of its demonstrated action upon cardiac muscular fiber, it is probable that its clinical use would of necessity be marked by caution in administration.

This paper has been written in the hope that the profession may learn to carefully determine the mechanical problems which present themselves in the treatment of cardiac diseases and meet the indications with scientific precision. The advantages of approved preparations of strophanthus over digitalis are: 1. Greater rapidity of action. 2. Absence of so-called cumulative effects. 3. Non-interference with the caliber of the arteries. On the first point it can be truly said that reliance on digitalis for the emergencies which may occur in surgical cases is absolutely without a scientific basis. On the second the fact that digitalis has ceased to be quite as harmful, as it might be helpful, only since the practice has become general to combine it with a nitrite is sufficient reason for the use of strophanthus. And lastly the marked safety of strophanthus in the aged, nephritic, gouty and atheromatous, as well as the fact that it should be the cardiac remedy for children, needs no argument for the search for reliable preparations. The reputation of strophanthus has suffered in the past from the variability, unsuitability and unreliability of the commercial preparations. That is now removed and we know the dose and the preparation on which we may rely. I ask for the drug the same careful study and observation which has been accorded to digitalis, and I doubt not that a just verdict will be reached within as many years as decades elapsed before digitalis came into scientific employment.

749 Madison Avenue.

DISCUSSION.

Professor REMINGTON of Philadelphia—We are undoubtedly reaching a point where the relations of pharmacy and general medicine are coming closer and closer. I can not discuss the physiologic action of the drug; but I may discuss some of its physical and chemic qualities, and the difficulties which he had in making preparations of the remedy. I understood Prof. Wilcox to say that from the use of the fluid extract of the drug he obtained untoward results; but that from other preparations, such as the tincture or the glucosid itself he did not obtain these unpleasant effects. Now reasoning from analogy it is quite probable that the fatty material in the crude drug may be responsible for these effects. Fraser, in his experiments, extracted this before using. If this were done it might be that the fluid extracts would then become eligible preparations.

Dr. J. C. HEMMETER of Baltimore—It is well to have clear cut ideas in our study of the physiologic action of drugs, for the reason that there are many organs in the body which are affected contemporaneously. The action must be limited to the organ which we are studying. The observations of the German experimenters is open to the objection that they do not confine their observations to single organs. In Prof. Wilcox's paper we had a study directed to one question, does strophanthus act as a stimulant to the heart muscle or through its effect on the blood vessels? I may recall some experiments which I made with digitalis when a student with Dr. H. Newell Martin in the laboratory of Johns Hopkins University, in order to determine the effects on the heart. The heart of a frog was isolated from all surrounding structures, including nerves and blood vessels. The heart was then placed on a warm stage, and connected with two reservoirs of defibrinated blood, in one of which the medicament was placed. By this means we could study the effect on the heart tissues by comparing its action when the pure blood was supplied with its action when the digitalis was introduced. These experiments were repeated too often and studied too closely to admit of error; they forced us to the conclusion that after the administration of digitalis the effects on the heart are due not to any action upon the wall of the heart, *but entirely to its influence upon the nerves* and blood vessels. This was followed by another line of experiment to study the action upon the blood vessels. In this experiment the mesentery of the living frog was placed on the stage of the microscope and immersed in warm salt solution, so as to keep the stage wet during observation. It was noticed that as soon as the drug was introduced into the circulation, there was a contraction of the blood vessels like that observed after administering ergot. I merely mention this to show the importance of confining our observations to one organ in studying the effects of a remedy.

Prof. Wilcox—I would be remiss in my duty if I did not record my appreciation of the value of the work which Dr. E. M. Houghton of Detroit has done and also my gratification that the results of laboratory investigation confirm the observations made in clinical medicine. I may say with regard to the suggestion of Professor Remington that the tincture furnished by Parke, Davis & Co. is satisfactory and no bad results follow its use, whereas the official tincture is unsatisfactory because of great variations in strength. I desire particularly to call attention to the necessity of having these preparations standardized. The crude drug varies in their percentage of strophanthin from 1.726 to 3.372, so that, according to their source, they should not only be standardized by chemic means but also by physiologic methods, if we wish to get good results from their use. *Finally, I call attention to one other point:* Before you get the full effect of digitalis when administered by the mouth, some forty-eight hours must elapse; but you can get the same results at once from the hypodermatic injection of one two-hundred and fortieth of a grain of strophanthin in about twenty minutes because of the great solubility of the latter.

Dr. E. M. Houghton of Detroit—Before this investigation is complete, a very large amount of work must be done before we decide upon all the factors which must be taken into consideration in establishing the physiologic effects of strophanthus. I trust that during the coming year this work will be carried on and I will endeavor to do my part, especially in the line of physiologic investigation.

OBSERVATIONS IN THE USE OF DIPHTHERIA ANTITOXIN, WITH SPECIAL REFERENCE TO ITS USE IN MALIGNANT CASES.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY ALEXANDER McALISTER, M.D.

CAMDEN, N.J.

In bringing this subject before you it is my purpose to confine myself to those features of the disease which demonstrate the rationale of the serum treatment, as now recommended by all leading clinicians.

The development of the bacillus of Löffler in a susceptible individual constitutes diphtheria in its primary form. The seat of development, a local lesion, is usually the mucous surface of the respiratory tract, but may be any mucous surface or flesh wound of the body. The medium of infection is atmospheric air, and the portions of the body most exposed are the tonsils because of their structure, function and situation. It is important in this connection to recall the anatomy of the tonsils. They are racemose glands, covered with reduplications of the oral mucous membrane. Their inner surface presents from twelve to fifteen orifices leading into small recesses, from which numerous follicles branch out into the substance of the gland. The orifices, recesses and follicles are lined with a continuation of the pharyngeal mucous membrane. The viscid secretions which serve as a lubricant invite to the folds of the tonsils the diphtheria bacillus; when once within these folds in a susceptible person, they not only rapidly develop, but in so doing produce toxins of most astounding virulence. In their development *per se*, they constitute the local lesion of diphtheria; as their toxic products are absorbed and carried by the circulation to every part of the system they produce indirectly the constitutional lesion of diphtheria. The pseudomembrane is always present and more or less extensive, but this does not constitute the essential lesion. The latter is the acute degenerative cell change particularly affecting the mucous membrane underlying the local lesion, but showing a marked predilection for the cardiac muscles, the kidneys, the peripheral nervous system and the lymphatic glands. In necropsies of malignant cases this cell destruction is shown in extensive localized necroses in these organs.

Diphtheria is a self-limited disease which tends toward a fatal issue. For reasons which are not now fully understood, the rapidity with which symptoms appear and the membrane spreads, or the course of the disease is run after infection, varies considerably in different persons. Next to the importance of an early diagnosis stands the question of malignancy. Formerly a malignant case of diphtheria was one that terminated fatally; but with the advent of our present superior methods of the serum treatment many cases once properly so classed recover. Malignancy now refers to the severity of a case rather than to its termination, depending on the seat and extent of the pseudomembrane and the virulency of the infection.

While the former may be ascertained by inspection we have as yet no means of knowing the latter in advance of its dire effects. The virulency of diphtheria toxins is nowhere more forcefully demonstrated than in a case of the disease in which a comparatively small number of bacilli situated in a mere speck of pseudomembrane produce a high degree of toxemia almost from the first. In such cases the bacilli of the infection are especially virulent and determine the malignancy of the resulting disease. In cases attended by extensive formation of pseudomembrane the malignancy of the disease is due to the rapidity of absorption of toxins from the local lesion or to the mechanical impediment they cause to the respiratory function. The rapidity of absorption on the other hand, depends on the particular understructure of the affected membrane. In laryngeal diphtheria the pseudomembrane is often quite extensive, yet because of the underlying membrane it is not so tough as elsewhere, and the absorption of the *toxins and the resulting toxemia do* not form an element of danger. On the other hand, because of the structure of the larynx and trachea and their abundant nerve supply, the immediate danger is from stenosis, spasm, cyanosis and asphyxia. Such cases show comparatively little *toxemia and are generally* not followed by the usual sequelæ. Glandular enlargement, albuminuria and sthenic symptoms are wanting, and in necropsies of cases that die early, localized areas of parenchymatous degeneration in the heart and kidneys are not observed.

The opposite, however, is true where the local lesion is situated on the pharyngeal mucous membrane. Here the resisting basement membrane is displaced by glandular structure, vascular sinuses, erectile tissue and the like, and absorption takes place very rapidly. A fibrous network is situated around and among the above structures, and connects the mucous membrane to the periosteum. The glands are composed of tortuous tubules with many sinuses and oblong offshoots, all favoring rapid absorption. This applies especially to the rhinopharynx and nares where the hypersecretion which attends all acute inflammations of these parts makes the field all the more favorable to the thrifty development of the bacillus of Löffler. Vascular engorgement and accumulation of nasal secretions alike facilitate, the one in the formation of a specially dense membrane and the other in making the colony of bacilli specially thrifty. Such cases run a comparatively short acute course, and if they do not terminate fatally are followed by a train of sequelæ and attended by complications.

Barring any immediate danger from asphyxia, which is now readily met by intubation, the highest consideration in the question of treatment should always be the nature and degree of toxemia present. The danger now confronting the serum treatment of diphtheria, greater than any other, is that it be applied generally upon an empirical basis. To obviate this it is of importance that the question of malignancy and the degree of toxemia of each case be carefully studied. A scientific remedy requires to be employed scientifically. In a certain sense each case is a law unto itself. It is not sufficient to say that antitoxin must be administered during the first two, three or four days of the disease. It is possible that any case may speedily change in type and prove fatal within twenty-four hours. At times a case will run this short course when the pseudomembrane has the most innocent appearance and occupies only one or two recesses of a tonsil. If the infection could be early recognized and treated in its incipiency, nothing in the remedial art would be easier than the cure of every case of diphtheria with one moderate dose of antitoxin. But cases must be treated as they are found, and alas, many are not found until the disease has made serious inroads by damaging vital organs or arousing latent disease. "The prognosis of any case of diphtheria is always doubtful, since the mildest case may become severe and the severe may improve. The prognosis is especially grave among children and in proportion to their youth; sucklings, however, are rarely affected. The progress is more severe among patients debilitated by previous disease or faulty hygienic surroundings. The outlook in the individual is worse as the disease becomes sceptic or gangrenous, since mixed infection there exists." (Wood's "Practice of Medicine," 1897, fol. 172)

In my own practice I have found it advantageous to distinguish between early and late cases in the question of dosage and supplementary treatment. This is not based on an estimate of the hours or days the disease has probably continued, but on the progress it has made. Though somewhat arbitrary, it seems to me the best classification that can be made for the purpose. A thorough clinical examination of the patient will generally suffice to determine to which class a particular case belongs.

Early cases will require only the initial dose of antitoxin, 1,000 units. The disease is promptly arrested and its natural course cut short. In such cases the patient is generally found quite well on the third or fourth day, and no sequelæ or complications will be observed. The conditions found are as nearly those of experimental diphtheria as is possible in clinical practice and accordingly the full specific powers of the remedy are obtained. In a series of early cases the physician's work becomes a matter of simple routine. He administers the requisite dose of antitoxin, orders a mild aperient and directs that the nose and throat be kept clean with a mild antiseptic or alkalin. Other remedies are not needed, and frequently it is difficult to keep the little patient in bed. If one will review his work as compared with his experience in the disease before the introduction of antitoxin, he is tempted to pronounce such cases of mild type and probably so conclude that many of the cases would have recovered without specific treatment. Bearing in mind, however, the gravity of any diphtheritic infection and the natural tendency of the disease, it is safe to declare that of a given number of cases treated with antitoxin early, less than 1 per cent. would have terminated in complete recovery within four days if treated otherwise; while according to the best pre-antitoxin statistics, between 25 and 30 per cent. would have died. On the other hand the 70 to 75 per cent. that would have recovered would have run courses ranging from ten days to three weeks and been attended by both sequelæ and complications. This applies to all cases treated early whether the type of the disease is pharyngeal or laryngeal. Cases treated early with antitoxin are universally mild because treated early; and remain mild because treated scientifically and specifically.

Late cases usually require more than one dose of antitoxin. The conditions to be met are graver and less easily appreciated than in early cases. In addition to the primary lesion there is the secondary or constitutional lesion. The pathologic condition from being purely local has become widely disseminated throughout many and important organs of the body. The toxins absorbed from the pseudomembrane have caused the essential lesion of the disease or scattered centers of cell necrosis. From these centers arises a new element of danger. The way in which this is caused is clearly indicated in the following from Louis Fisher: "If large quantities of this so-called membrane-toxin are absorbed into the system through neglected or delayed treatment, these toxins transform the albuminoid bodies of the tissues and cause tissue poisons or tissue toxins. These tissue toxins can be classed as those that belong to digested proteids, and those that are not proteid substances. The first is an albumose; the second is an organic acid. Albumoses have a specific action on the human organism; when present in large quantities they produce fever, and if allowed to act for any length of time they produce paralysis. In very large quantities they produce great exhaustion and also fatty degeneration of the heart and kidneys. It is in these cases that antitoxin at times fail, owing to the presence of poisons other than those peculiar to pseudomembrane, and which are by-products of degenerative changes in the tissues."

In late cases then the condition is that of primary diphtheria for which antitoxin is fully specific, plus the damage already done and its grave constitutional results. The cases seen late are frequently of mixed infection, streptococci or other pathogenic organisms having followed upon the diphtheritic infection.

The local lesion soon becomes gangrenous and the constitutional condition, that of approaching pyemia. To this must be added in a certain percentage of cases the effects of pre-existing disease, either manifest or latent. While it is now largely conceded that antitoxin exerts specific power in neutralizing the membrane toxins and arresting the primary infecting process, it is not known to have such action against the tissue toxins, and certainly will not restore the integrity of damaged organs. In these cases the danger from the disease *per se*, is not so great as that from the damage already sustained by vital organs. The former is much more promptly amenable to treatment than the latter.

In treatment every feature must be kept in view. As early as possible the primary infecting process must be removed. It is impossible to form an adequate estimate of the number of antitoxic units required to accomplish this. The symptoms hyperemia, stupor, coma, or certain physical signs, the appearance, condition and extent of the pseudomembrane, the rapidity of spread may indicate a high degree of toxemia and mark the case as one of great malignancy, but all these form no basis for estimation. The condition must be met by special dosage. In these severe cases give 2,000 units of antitoxin and repeat the dose in eight to ten hours if the desired effects are not obtained. The full neutralizing effects of a dose of antitoxin are secured on absorption of the serum and within ten hours. To wait a longer time before repeating the dose is to expose the tissues of the body to further damage from the unneutralized toxins. Too much importance can not be attached to the use of concentrated serum. The smaller bulk is more promptly absorbed and results can be confidently expected in a much shorter time than when weak serums are employed. When this rule is followed I find comparatively few late cases require more than two doses. Late cases are always to be regarded as in imminent danger. Any undue effort or excitement on the part of the patient may induce cardiac paralysis. The patient's strength must be husbanded by quiet, the recumbent posture and nutritious food. To tax the heart as little as possible I have the foot of the bed slightly elevated. To these measures must be added, in many cases, cardiac and general tonics and stimulants. Such cases always run a more prolonged course and are often attended by complications and sequelæ. Though the disease proper is cured by the entire removal of the primary infecting process, the damage already sustained is sufficient to carry the disease process through a fixed course with the above named results.

Since introducing the serum treatment of diphtheria into my practice in January, 1895, I have employed it in sixty cases with a loss of five. In all these cases, excepting a few seen in consultation with other physicians, the diagnosis was confirmed by laboratory culture. They embrace all types and all degrees of malignancy and include a number of cases seen quite late in the disease. My earliest experience was with the French product, but since a most excellent antitoxin has been furnished by a reliable Philadelphia firm I have used this exclusively. My first eighteen cases were treated in the West Jersey Orphanage and all recovered. These have been under my observation ever since and are in perfect health to this day. My results with the treatment have been entirely satisfactory in every particular, so that my former dread of meeting diphtheria cases has entirely left me. My only anxiety now is to see the cases reasonably early.

When I hear a physician question the value of antitoxin in the prevention and cure of diphtheria, or what is more in the face of the volume of testimonies now in its favor openly oppose antitoxin, my conclusions are that he has never used it or seen it used; or if the contrary is true, that a reliable product was not employed or was employed improperly. Antitoxin is not employed scientifically when the physician delays in order to first know whether the patient will most likely die without it, or to have his diagnosis confirmed by a culture before inaugurating the serum treatment; or when employed it is given in too small doses and at too long intervals.

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STREPTOCOCCIC INFECTION AND MARMOREK'S SERUM.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

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CHICAGO.

The study of bacteriology during the past few years has developed many interesting facts, not alone to the scientist, whose labors and interests are confined to the laboratory, but also to the clinician, whose work it is to practically apply the knowledge furnished him by the former. It would be difficult to name any one branch of the subject which could justly claim precedence if viewed merely in its scientific aspect, for all are of absorbing interest in this regard; but in the matter of practical application and tangible results it may be safely asserted that the study of the streptococcus microbe stands first in the list. It is the most widely distributed of any of the members of its class; it is more variable in its morphologic development than any of the others; it is unique in the matter of biologic characteristics, and it is decidedly the most far-reaching in its pathogenic effects. Unlike any of its congeners its mere presence does not signify a single specific operation, but may be the harbinger of one of several conditions that vary widely in their effects on living tissues. Thus the microbe is found alone or associated with other micro-organisms in such diseases as erysipelas, puerperal septicemia, diphtheria, scarlatina, bronchitis, bronchopneumonia, septic wounds, gangrene, salpingitis, otitis, appendicitis and many others, as well as on the mucous surface of the natural orifices of the body in individuals who appear to be free from disease of any kind.

The very fact of the presence of this germ in such a large number of diseases and conditions of dissimilar character makes it difficult to attribute to it any certain and fixed pathology; while on the other hand this seeming confliction of testimony readily accounts for the wide diversity of opinion that exists between various observers as to its nature and effects.

It does not come within the scope of this paper to treat of the history, morphology, biologic characteristics and pathogenesis of this germ, for these are all lucidly taught in various text-books; but rather to deal with the practical side of the question of what to do with the little mischief-maker when we have found it. In passing, however, we may state that it belongs to the facultative anaerobic group—living both in the presence and absence of oxygen—and, according to Sternberg, is a spherical coccus from four-tenths to one micro-millimeter in diameter on the average, but varying considerably in size. It multiplies by binary division, forming chains of various lengths by the adherence of the elements to each other, and making one of the most attractive fields to be seen in the bacterial world. The germ grows readily, but somewhat slowly, in nearly all kinds of media, solid, semi-solid and liquid, and multiplies in temperatures ranging from 16 to 60 degrees C., but most readily between 30 and 37 degrees C. It stains readily with the aniline colors, and also by Gram's method. For the best inspection a magnifying power of about 1000 diameters is required. It shows beautifully under a one-twelfth inch immersion lens.

While we have here a microbe that is easy to cultivate and easy to preserve, it is with much satisfaction that we can confidently assert that it is also easy to destroy. It succumbs to the influence of appropriate treatment with such alacrity that but a few days were required to completely annihilate it in any of the tests that have come under my personal observation.

It may be true that Méry, as mentioned in the *Bulletin Médical* (France), April 22, 1896, isolated a chain microbe from a malarial fever patient which resisted the antistreptococcus serum; but may it not also be true that the serum used for the test was stale, attenuated or otherwise unfit for use? Such instances are so very rare that they should not be permitted to stand against the thousands of successful trials, and be used as an argument against the [illegible]; but should rather be regarded as accidents or the results of faulty experimentation.

It will be noticed that we speak of the streptococcus in the singular number, thereby indicating a belief in the unity of this form of germ. Such is the opinion held by several of the most careful investigators; and while more than a dozen different species of streptococci have been described by various observers, we think it has been quite clearly shown by the researches of Marmorek and Widal that they are all so closely related as to be the offspring of a single parent microbe.

The difference in size, form and effects may be accounted for by the widely different conditions under which they have been cultivated. All have noticed the difference between cultures made in artificial and natural media, and even between those made in natural media of different origin. In the cultivation of the streptococcus it was early noticed that in some instances the chains were long, forming immense and fanciful loops, and exceedingly virulent in character. In others the chains were short, straight and comparatively innocuous, leading to the belief that the virulence was in direct proportion to the length of the chains. This theory, however, was soon exploded, as it was found that by inoculations of the same cultures into rabbits and mice, the resulting chains would be long in the former and short in the latter, while the virulence would remain the same in both. It was these widely varying results, obtained by untiring zeal in the prosecution of innumerable experiments, that led Marmorek to the belief in the unity of the streptococcic germ. In his interesting report of his work in this line, published in the *Annales de l'Institut Pasteur*, July, 1895, he sums up in these words: "Our experience confirms the opinion of those who regard all streptococcic affections of man as due to one sole microbe."

Having settled in his own mind the question of the character of the germ, Marmorek began the task of making a serum for its destruction. In this work every facility was afforded him by Professor Roux, who placed all needed appliances at his disposal, while wise counsel and encouragement were constantly furnished by his old friend and colleague, Dr. Metchnikoff.

Others had been engaged in this work before the young Austrian was ever heard of in the world of science, special importance attaching to the researches of Roger, Behring, Mironoff and Lingelsheim. These investigators succeeded in establishing many points of interest in connection with the development and effects of the germ itself, and even prepared a serum that was partially successful in destroying it. However, they never succeeded in procuring a serum of sufficient potency to effectually act upon the severer forms of the infection. A good and sufficient reason for this failure will be suggested in the following division of this subject, namely:

The serum.—Like all blood serums, antitoxins and products of like character, the antistreptococcus serum requires time, skill and experience for its proper manufacture. A lack of one or more of these factors has undoubtedly led to the production of inferior serums, and consequently to failure and disappointment in their use. It has been clearly demonstrated that "laboratory serums," such as were formerly made by using the usual selection of members of the rodent family are so attenuated as to be almost inert. Such animals do not seem to be able to resist the toxic effect of repeated injections, and hence the serum procured from them is not of sufficient potency to act with much if any effect upon the germs. This seems to have been the difficulty with the serums made by the four pioneer manufacturers already alluded to They deserve all praise for their foresight and for pointing the way which eventually led to such a great achievement by another. Their work was a triumph, but their patience gave out, their enthusiasm abated, their faith relaxed, or for some other reason they abandoned a noble cause and left a half finished task to be completed and gloriously crowned by that indefatigable worker, Alexander Marmorek. This great investigator may be said to have commenced where the others left off. He began to use larger animals in his experiments and at once noticed a decided improvement in the serum. First he utilized the sheep, then the ass and finally the horse, when the ideal seemed to be reached. This animal tolerates the toxin remarkably well and yields by far the largest quantity of serum of any yet tried; hence it is the one now exclusively used by Marmorek in the preparation of his serum. Not only is it necessary to exercise good judgment in the selection of animals, but it is even of greater importance to properly care for them during their treatment, and especially to avoid a too early withdrawal of the blood. The process of manufacture is necessarily a slow one and the utmost patience is required for its accomplishment. Not only must oft repeated injections be made to insure the proper degree of potency, but even after the animal is known to be thoroughly immunized and after the last injection is made several weeks must be allowed to elapse before the blood is withdrawn, as during the reaction the blood is actually toxic and if injected into rabbits during this time will invariably kill them in from five to ten days. On the other hand, if allowed to remain until the reaction has ceased it may be used upon these animals with impunity. This discovery constitutes one of the notable features in the great work of Marmorek, whose enduring patience enabled him to accomplish so much and without which the world would yet be in all probability without an effective and reliable streptococcic remedy.

Marmorek has shown that the serum is effective in exact proportion to the amount of toxin received by the animal. He has also demonstrated that the serum as manufactured by him, although the strongest of any yet made as regards the toxic action on the microbe, is incapable of working injury to the human organism. This feature he attributes to the great care taken in its manufacture. Like all the blood serums made at the Pasteur laboratories in Paris, it is entirely without antiseptics. It is claimed by Roux that his vast experience in the manufacture of antitoxins and serums has taught him that antiseptics can do no possible good and are capable of doing a great deal of harm. The serums are not preserved by the antiseptics, as is popularly supposed; they will only keep a certain length of time; they must be kept at a proper temperature in order to retain their activity, and if so kept, will remain potent as long without antiseptics as with them. Made without antiseptics there is scarcely any limit to the dosage, as the toxic symptoms following injections are always due to these so-called preservatives or other impurities, and not to anything that is inherent in a pure blood serum.

A very conservative and fair-minded editorial appeared in the *Medical News*, April 24, 1897, concerning the uses of this serum, and while the editor rendered a verdict of "not proven" in regard to the various claims made for it, he more than offsets this verdict by his honest admission of what may occur under favorable conditions. He mentions the harmlessness of a pure serum, notes that only one case of kidney involvement has so far been attributed to its use, and admits that no one is in a position to say that the disease itself (septic infection) was not responsible for the renal involvement. He goes on to state that "our apparent lack of success up to the present time may be due to the *imperfect* or *insufficient* administration of the serum." He advises the use of Marmorek's serum in connection with appropriate surgical measures, warning his readers to "utilize a serum obtained from a reliable source and free from extraneous substances, such as carbolic acid," on the ground that such a product is "hardly likely to do harm, and may do a world of good."

Therapy.—By far the most important division of this subject is the one which treats of clinical data. In this we can speak with greater confidence, notwithstanding the fact that we are occasionally confronted by theoretic clashings which tend to make our position at first glance appear somewhat paradoxic. For example, an ordinary acute abscess seems to bear very little resemblance to a case of erysipelas, especially a case of erysipelas in which suppuration does not occur; and yet it is admitted on all hands that the pathogenic germs of these two affections are identical, one being the "streptococcus erysipelatis" of Fehleisen (1883) and the other the "streptococcus pyogenes" described by Rosenbach (1884) and Passet (1885). Again, puerperal septicemia caused by streptococcic infection and chronic inflammation of the middle ear, do not seem to stand in very close relation to each other, and neither of them would ordinarily be placed in the same class with either of the two diseases just mentioned: and yet we have in all of them the same pathogenic force at work, and all of them readily yield to the same line of treatment.

It would be impossible to enumerate all the diseases in which the streptococcus figures, either as the principal or as a complication, for the simple reason that in all probability not a tenth of them are known; but it is sufficient for us to know that wherever and whenever found it is a danger signal of weighty import, and that immediate steps should be taken for its destruction. It is no argument to say that because certain so-called "kinds" or "species" of the germ are harmless we would ever be justified in waiting for a demonstration of their virulence. If the deductions of Widal, Marmorek and others who believe in the unity of the germ are correct, the most benign of them may, by change of conditions, soon become the most virulent.

In order that I may not be misquoted or misunderstood, I wish to distinctly state that the antistreptococcus serum is only recommended for streptococcic infection, and not for diseases or conditions in which this infection does not exist. Some cases of puerperal septicemia are caused by the bacillus coli communis, and in the treatment of these the serum would be without effect. But in the greater number of cases chains of streptococci are found in large numbers, and these yield to the serum treatment in a most remarkable manner. Hence we emphasize the necessity of a bacteriologic examination in every suspected or doubtful case, in order that treatment may be pursued upon rational and scientific lines. As a general rule there is ample time for thus settling the question of diagnosis before treatment is begun; but in occasional instances where the gravity of the case would render delay dangerous we would advise yielding to empiricism to the extent of administering at least one efficient dose of the serum without waiting for the bacteriologic test, knowing that in any event no harm would follow, while, as has frequently been the case, it might be the means of saving a human life.

When we say that erysipelas may be aborted by the use of this remedy, we speak from authority furnished by the case-books of reputable physicians. To say that it can always be aborted would probably be a flagrant error; but that it may always be modified, ameliorated and abridged is the almost universal verdict of the profession of two hemispheres. If its value as a therapeutic agent had to be measured by its power over one such disease as puerperal septicemia, it would doubtless retain its place in the list of valuable remedies for all time to come. But such is not the case. We already have such an overwhelming array of proof of its efficacy in a number of apparently diverse conditions as to lead to the belief that it will soon be esteemed as the most valuable of the blood serums yet discovered. Besides the diseases already mentioned, in which it may be relied on to effect a cure with little or no other treatment, it has been used with remarkable sucess in many cases of mixed infection, removing with great promptness an ugly complication and rendering a disease amenable to ordinary treatment, which would otherwise have resulted fatally. Among such diseases may be mentioned diphtheria, scarlet fever, bronchitis, bronchopneumonia and phthisis pulmonalis. In the last named it has been especially useful, as will appear in the report of cases to follow.

It is claimed by several observers that, no matter what the disease may be, the use of the serum is always followed by increased leucocytosis. If this be true, and the army of fighting phagocytes can be recruited at will, what mind can foretell the future, even the near future, of this infant that we designate sero-therapy? It is already one of the recognized branches of legitimate medicine in the old world, and is rapidly gaining in popularity here. The diphtheria antitoxin is no longer an experiment with us, and considering that the Marmorek serum was only introduced into the United States less than a year ago, its success in this country must be regarded as little less than phenomenal.

Reports of cases.—In France, where the serum has been used most extensively, the weight of evidence is vastly in its favor. True, it has been severely criticised in a few instances, but a careful study of such cases has generally resulted in victory, rather than defeat, for the serum. They have almost invariably been cases of mixed infection in which the serum was expected to exhibit powers not attributed to it by its discoverer, and, very generally too, when it was given in *inadequate doses.* In some instances, too, where adverse opinions were expressed, an admittedly weak or doubtfully prepared serum was used. Thus in the *Botkins* (Russia) *Clinical Gazette,* No. 43, 1896, we find a report of sixteen cases of scarlet fever treated by Dr. L. Rappoport, in all of which a serum was used. This series of cases he divides into three groups, as follows: Four of "medium gravity," two "severe," and ten cases "with various complications." The serum employed was of Russian manufacture, and admitted to be much weaker than Marmorek's; and as [illegible]0 c.c. was the maximum dose given in any one case, it seems but natural that some of the cases should die "without," tó quote Dr. Rappoport, "the serum having had any apparent effect upon their course." Very different from this report is the one of Dr. Rondot, made at the meeting of the French Medical Congress held at Nancy, France, Aug. 6, 1896. In this report Dr. Rondot gives his experience with Marmorek's serum in the treatment of a large number of cases of erysipelas. He invariably found that the serum produced a rapid improvement in the general condition, and marked reduction of temperature and diminution in the duration and gravity of the disease. In the most severe cases there was always rapid and pronounced retrocession in the acuteness of the lesions.

At the meeting of the Ophthalmologic Society of France, Nov 3, 1896, Dr. Boucheron related his successful use of Mamorek's serum in the treatment of purulent dacryocystitis and other cases of streptococcic infection of the eyes. He, in common with Widmark, Morax and others had noticed that many cases of dacryocystitis were caused by the streptococcus, and that they were always of a well defined type. The most rebellious of these are those that he specially commends for the serum treatment. Boucheron also found that this serum could be successfully used as a preventive of streptococcic infection of the ocular organs at the time of operation for cataract or ocular traumatism.

Drs. Vahle, Steffek, Döderlein and Walthard all found the streptococcus present in the vaginal secretions of such a large proportion of pregnant and parturient women that Dr. Vahle arrived at the conclusion that before every accouchement, even in healthy subjects, prophylactic injections of the serum should be made. (*Zeit. für Gebur. und Gynec.*, Vol. 35, No. 2.)

At a meeting of the Medical Scientific Society of Lyons, France, Dr. Vinay reported thirteen cases of puerperal fever treated with Marmorek's serum, nine of which were eminently successful. This is not a record to be ashamed of; but it is highly probable that with more extended experience in the technique of administering the serum since these cases were reported, the percentage of recoveries would be considerably increased in a similar series at this time.

In the London *Practitioner*, April 1897, Mr. Watson Cheyne reports three cases of prophylactic injections of the serum in removal of malignant disease about the tongue and upper part of the pharynx, cases which are so generally followed by septic infection. No such infection followed in any of these cases, two recovering with no unpleasant sequelæ and one dying from cerebral embolism.

The *British Medical Journal*, Oct. 31, 1896, contained a report from Dr. J. I. Williams of fourteen cases of severe puerperal septicemia treated with Marmorek's serum. Twelve (86 per cent.) of these made excellent recoveries, and in the other two it was admitted that treatment had been too long delayed.

Dr. Lainsbury, at Royal Free Hospital, London (*Lancet*, Oct. 10, 1896), reports a case of malignant endocarditis cured by the use of 70 c.c. of the serum, the beginning dose being 20 c.c.

Dr. Sevestre, in charge of the diphtheria patients in the Sick Children's Hospital, Paris, uses Marmorek's serum freely in all cases of mixed infection, with excellent results, the proportion of recoveries being considerably augmented since the employment of this remedy.

M. Cuffer reports a remarkable recovery after the use of twenty-eight vials of the serum extending over a period of one month. The case was one of endocarditis, pericarditis, congestion of the lungs with pleurisy, arthritis and éndometritis. He also reports a case of acute pelvic inflammation in which the left broad ligament was infiltrated forming a very large tumor. Injections of serum prevented the formation of pus in the tumor and all unpleasant symptoms rapidly disappeared.

Dr. Chantemesse of Paris, had remarkable success in the treatment of 411 cases of erysipelas in which he used the serum. In every instance the symptoms were most favorably influenced by the treatment; and after deducting three cases which were absolutely hopeless on account of complications, the recoveries were 99 3 per cent.

But it is not necessary to remain on the other side of the Atlantic in order to find reports favorable to this line of treatment, and I have so far done so principally to show the wide range of application of the serum. Coming home, then, we begin the report of cases by mentioning some that are characterized as "unsuccessful." In this list one of the most interesting is the series of six cases reported by Dr. R. F. Wier at the New York Academy of Medicine, and published in the *Medical Record*, May 1, 1897. Antistreptococcus serum was used in all of the six cases, and according to the report, "with no apparent benefit." According to the *Record*, a brief analysis of these cases is as follows:

Case 1.—Tuberculous ileo-lumbar abscess. On the fifth day after opening *streptococci* and *staphylococci* were found. Serum used. No benefit.

Case 2.—Chronic tubercular ostitis of the femur; after operation *staphylococci* were found, but no *streptococci.* Serum used. No benefit.

Case 3.—Carcinoma of the breast; amputation of the gland. Does not state whether streptococci were found. Serum used. No benefit. Death.

Case 4.—Compound fracture of the femur involving the knee-joint; suppuration; amputation. Serum used. No improvement. The report does not state whether or not streptococci were found.

Case 5.—General extensive purulent peritonitis from appendicitis. Serum used. No benefit. Death. Does not mention the presence or absence of streptococci.

Case 6.—Perforative appendicitis with general suppurative peritonitis. In this case "the only effect of the serum was on the pulse."

It is difficult to understand why six such cases as these should be reported as an argument against antistreptococcus serum. Cases 5 and 6 would almost necessarily terminate fatally under any line of treatment; cases 3 and 4 might reasonably be expected to succumb to the surgical operation and systemic infection, while in case 2 it is admitted that none of the germs (streptococci) were found, for which alone this serum is recommended.

Dr. Lilienthal, in discussing Dr. Wier's paper, mentioned that his experience had been most favorable, and that the eight cases in which he had used the serum had led him to predict a great future for it.

Dr. Van Arsdale, also of New York, reported two interesting cases, one of appendicitis with general purulent peritonitis, and the other gangrene of the gall bladder accompanied by seropurulent peritonitis. Both were extremely grave, but under appropriate surgical measures coupled with the use of the serum, recovered.

Dr. Henry W. Berg of the Willard Parker Hospital, has reported so many instances of the successful use of the serum in cases of diphtheria and scarlatina where there was mixed infection, that his experience must be familiar to most practitioners and it is therefore only necessary to mention it here.

The *Medical Record*, March 14, 1896, and the *Medical News*, April 4, 1896, both give glowing accounts of the efficacy of Marmorek's serum in the complications and sequelæ of scarlet fever. Adenitis, otitis and albuminuria are among the complications mentioned by these authorities, and all of them were speedily controlled by the serum.

Prof. E. E. Montgomery (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Aug. 1, 1896), advises the early use of the serum in puerperal septicemia in daily doses of 20 c.c.

Dr. Howard Lilienthal (*Medical Record*, March 20, 1897), reports a case of a child supposed to be suffering from rheumatism of the hip joint. The doctor opened an abscess, found chains of streptococci, and used the serum with success.

Dr. Gerster corroborated Dr. Lilienthal and said he had used the serum in a number of cases at Mt. Sinai Hospital, including such diseases as peritonitis, appendicitis and general sepsis, and all with excellent results, some of the recoveries being regarded as marvelous. Dr. Richards in the same journal reports the successful use of the serum in a case of puerperal septicemia in which the prognosis was very bad.

Reasoning from analogy it may be supposed that the gynecologist will find in Marmorek's serum a sheet-anchor in his specialty. He finds pus everywhere. It confronts him in the reproductive tract from the ovary to the ostium vaginæ, and is one of his most dreaded enemies in the connective tissue throughout the pelvic cavity. It can not be possible that all of these are of gonorrheal origin. Many of them must be sequelæ of simple congestions brought about by innocent and unavoidable causes. If Marmorek's serum controls this condition when applied in the congestive stage in other localities, why not also in this hotbed of abscesses? We believe it will do so if intelligently employed, and we believe also that laparotomy, so frequently resorted to in the past may often be rendered unnecessary by this simple and easy means.

In conclusion we will refer to the use of Marmorek's serum in cases of tuberculosis, having purposely reserved mention of this disease till the last on account of its vast importance. A little more than a year ago Dr. Chas. T. McClintock of Ann Arbor read a paper before the Michigan State Medical Society, in which he predicted that the antistreptococcic serum would find its greatest usefulness in cases of tuberculosis. That was the first published utterance to this effect, and Dr. McClintock has proved himself a prophet. During the month of July, 1896, Dr. W. H. Weaver of Chicago used Marmorek's serum in three such cases, reporting them in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Sept. 5, 1896. That was the first published report of cases treated in this way. Since that time a number of cases have been so treated by physicians in different parts of the country, but little or nothing has been published concerning them. Why, it would be difficult to say. The importance of the subject would seem to merit more attention than it has received. In all the published reports, however, and in all received from private sources, there has been a pleasing unanimity in the action of the serum. Without exception it has done all that was expected of it. That is to say, it has invariably destroyed the streptococcus microbe and thus freed the case from a disagreeable and dangerous complication. Having thus converted the case from one of mixed infection into one of simple tuberculosis, the system is left in better condition to resist the ravages of the tubercle bacillus, and consequently more likely to respond to appropriate treatment for the destruction of this germ. The serum should be used in those cases only where the bacteriologic test shows the presence of the streptococcus microbe. In all such cases there is liable to be considerable cough, purulent expectoration, night sweats, high temperature, insomnia and anorexia, all of which are greatly modified and sometimes disappear altogether under the influence of the antistreptococcus serum. Oftentimes the train of symptoms just enumerated will be found where there is no streptococcic infection. These, as a rule, are very grave cases and the serum treatment is not indicated. Lack of space forbids a detailed account of the progress of the different cases in which the serum has been used; but suffice to say that while some of them were hopeless as far as ultimate recovery was concerned, yet without exception there was such decided amelioration of distressing symptoms as to lead to the conclusion that earlier employment of the serum would at least have resulted in greatly prolonging life.

Dosage.—Marmorek's serum should always be used by hypodermic injection into the cellular tissue. If due antiseptic precautions are observed and ordinary skill used in its administration, it is free from danger, and the dose is practically without limit.

In all grave cases, such as puerperal septicemia, and especially if treatment has been considerably delayed, an initial dose of 30 c.c. is advised. This may be followed by doses of 10 c.c. or 20 c.c. every twelve or twenty-four hours, according as the symptoms are affected.

In ordinary cases of erysipelas the initial dose is 20 c.c., and in many instances may be all that is required. However, it may be repeated once or twice in twenty-four hours if necessary. In the complications of diphtheria and scarlet fever one dose of 10 c.c. will be found sufficient in the vast majority of cases. In the mixed infection of tuberculosis, the dose should ordinarily be 10 c.c., to be repeated every second or third day until the microbes have disappeared from the sputum, usually requiring from four to six injections.

In all other affections, such as acute abscesses, pelvic inflammations, chronic inflammation of the middle ear, and in suppurative processes generally where the streptococcus germ is found, the dose must be regulated according to the exigencies of the case.

Children bear the serum remarkably well, and 10 c.c. is the usual dose for children of all ages.

Almost any part of the body where the skin is not tightly drawn may be selected for the injections. In adults preference has usually been given to the lumbar or gluteal regions; while in children the lower abdomen, a little to the right or left of the median line, is more frequently selected. A perfectly sterile syringe and needle should be used; and unless some special condition exists to call for more thorough cleansing, the site may be sufficiently prepared by a careful bathing in alcohol.

Conclusions.—1. In Marmorek's serum we have a remedy of the greatest therapeutic value. 2. So far as known, it is only applicable to streptococcic infection, simple or mixed, hence it naturally follows that, 3. An early bacteriologic examination should be made in order to settle the question of diagnosis and point the treatment. 4. Its action upon the microbe is rapid and certain if given in adequate doses.

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DISCUSSION.

Dr. Flagg—I would ask where this serum can be obtained in this country; also whether in order to use it the physician must make bacteriologic examinations and cultures in every case.

Dr. Ames—I was impressed, while listening to this paper, by its possibilities in the treatment of tuberculosis. I would ask whether or not Dr. Cox can refer to any other reports of its use besides his own work in the treatment of tuberculosis? I would suggest that a combination of the nuclein with the streptococcic serum might be suitable in the later stages of tuberculosis.

Dr. Cox—The remedy can be obtained at the agency for the Pasteur Institute (the Pasteur Vaccine Co.) in Chicago. There is no work on the subject that I know of except this communication I have just read.

Dr. Hill—I have been using antistreptococcic serum for some time. I think that an idea, suggested by Dr. Cox, to have an examination made when possible in order to settle the value of the remedy, is a good one. In other words, do not condemn a remedy without being scientific in your treatment. In many cases the laboratory examination is unnecessary, and the clinical diagnosis is quite sufficient. For instance, in erysipelas and in puerperal septicemia, you have a perfect illustration of streptococcus infection. You can not make a mistake in diagnosis. In these cases, it has never failed me.

Dr. Cox—In closing the discussion, I must express my delight at witnessing the interest shown by the members of the Section in the subject of serotherapy. I am glad that I have been able to correct some false impressions growing out of the indiscriminate use of serums of uncertain value. In reply to the question as to the necessity of making bacteriologic tests in every case, it is stated in the paper that this should always be done when practicable, always excepting cases where delays would be dangerous. The experience of the chairman is in keeping with that of other careful observers, viz., the rapid destruction of the streptococcus germs. It is to be hoped that those especially interested in the study of that dread disease, tuberculosis, will be on the lookout for complications caused by this germ and direct their treatment accordingly. I desire to emphasize this request, inasmuch as the subject is of such vital importance to the race.

CLASSIFICATION AND SURGICAL TREATMENT OF ACUTE PERITONITIS.

Read by invitation in the General Session of the International Medical Congress, at Moscow, Russia, Aug. 20, 1897.

BY N. SENN, M.D., Ph.D., LL.D.

CHICAGO, ILL.

(Concluded from page 463.)

Methods of drainage.—At present there are three methods of drainage in general use: 1. Tubular drainage. 2. Capillary drainage. 3. A combination of tubular and capillary drainage. All of these methods have their advocates and are applicable under certain circumstances. No one method of drainage will answer in all cases.

Tubular drainage.—Tubular drainage is specially indicated in cases in which the abdominal cavity contains pus. The tubes employed are made either of glass or soft rubber. Keith's glass drains answer an excellent purpose in draining the lowest portion of the abdominal cavity. They should be slightly curved at the abdominal end so as to reach the floor of the pelvic cavity without making harmful pressure against the bladder. Frequent aspiration of the contents of the drain is necessary for the purpose of removing the fluid inflammatory product as soon as it is formed. The rubber drain answers the same purpose, but is properly accused of causing more mechanical irritation than the smooth glass tube. Prolonged tubular drainage has not infrequently caused intestinal fistula by pressure. It is for this reason that I now almost invariably surround the rubber or glass tube with a few layers of iodoform gauze securely fastened to the tube. In draining the pelvic portion of the abdominal cavity I frequently use two drains the size of the little finger, one on each side brought out through the same opening in the lower angle of the wound. In draining in the lumbar regions and through the vagina rubber drains should be employed.

Capillary drainage.—Capillary drains are frequently employed as substitutes for the tubular drains and in addition must often be relied on as an important hemostatic resource in arresting parenchymatous oozing. Iodoform or sterilized gauze are usually employed as capillary drains in draining the abdominal cavity for peritonitis. Bardenheuer first resorted to strips of iodoform gauze in draining the peritoneal cavity. The greatest objections to this method of drainage are the danger from iodoform poisoning if a considerable quantity of gauze is used, the difficulty of removing the gauze, and the likelihood of a ventral hernia as a legacy. The name of Mikulicz is connected with a special method of gauze drainage of his own device, familiarly known as the Mikulicz iodoform gauze tampon or drain, which has proved of the greatest value in abdominal operations and in the surgical treatment of peritonitis. The typical Mikulicz tampon is made by taking a piece of iodoform gauze the size of a large handkerchief, to the center of which a strong piece of aseptic silk thread is stitched. When used it is arranged as a pouch and is carried by means of a curved forceps to the bottom of the pelvis and is filled with strips of iodoform gauze, the free end of the silk thread issuing from the mouth of the pouch. When it is desired to remove the drain the gauze strips are removed and the pouch removed by making traction upon the string. I must, however, take issue with Mikulicz and his immediate followers. He speaks of an iodoform gauze drain, and any surgeon who has had considerable experience in abdominal surgery can testify to the fact that where the Mikulicz drain is called for we are frequently dealing with large cavities requiring an enormous amount of gauze. It is in such cases that I have learned to fear iodoform gauze, because the cases are by no means isolated in which a gauze drain composed exclusively of iodoform gauze became the immediate cause of death from iodoform intoxication. This is particulary liable to occur in cases in which the patient's kidneys are not functionating properly, or are diseased. It is in dealing with this class of cases that the elimination of iodoform is accomplished with great difficulty, and hence when accumulation occurs death is liable to follow from intoxication. Again, there are persons that are extremely susceptible to the local and general toxic effects of iodoform. A very small quantity of this substance may prove fatal from intoxication. I should, therefore, in using the Mikulicz drain limit the iodoform gauze to an outer layer or two and pack the pouch with ordinary sterilized gauze. This advice I am sure you will all appreciate. Drainage by using sterilized wicking has been popular in Germany for a number of years, and in many cases has answered an excellent purpose. It has never found its way to any extent into America, where gauze is employed in preference. A most excellent method of securing capillary drainage has been described by R. T. Morris (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, July 25, 1892). To avoid the danger of hard and soft tubes and of unprotected gauze he recommends wicks, which he employs in a peculiar way. The simplest wick consists of a little roll of absorbent bichlorid gauze, around which is wrapped a couple of thicknesses of Lister's protective silk. The gauze protrudes a little from each end of the cylinder, and a few small fenestræ in the protective silk allow the serum to reach the gauze elsewhere. In certain cases where injections through a tube are desirable, the soft tube can be surrounded by this wick. When a large gauze packing for the pelvis or abdomen is needed, an apron of the silk can expand over the gauze and protect against intestinal adhesions. This method of drainage possesses great advantages over ordinary tubular and capillary drainage as heretofore described and recommends itself more especially in the surgical treatment of diffuse septic peritonitis. The prolonged contact of gauze with a serous surface is very prone to give rise to permanent adhesions as every clinician knows. In employing gauze in draining the peritoneal cavity, it is necessary to use long strips which should be inserted some distance in different directions and brought out at the same place and fastened together with a safety-pin. Van Hook has shown by his experiments that the gauze drains more freely if the external ends of the strips are left long and placed on the side of the pelvis below the level of the wound. Drainage must be dispensep with as soon as possible in order to prevent adhesions and to enable the surgeon to close the incision by secondary suturing, an important precaution against the formation of a ventral hernia. The strips should be shortened and one after the other removed as the indications for drainage disappear.

Combined tubular and capillary drainage.—The simultaneous use of a tubular and capillary drain is an excellent method of securing drainage. It is made by packing loosely a glass drain of proper length and size with strips of gauze or aseptic wicking. This manner of drainage is especially useful when the inflammatory product is serum instead of pus. It does away with the annoyance and risks of removing the transudate at frequent intervals, as is necessary in the employment of simple tubular drainage. If it is the design of the surgeon to resort to frequent irrigation after the operation, tubular drainage is necessary, but to this can be added capillary drainage by inserting strips of gauze into localities that would not be reached by the irrigating fluid.

Intra-intestinal saline injections—The value of saline cathartics in the treatment of peritonitis in its early stages not caused by perforation and after operations for peritonitis is now generally recognized. One of the difficulties encountered in the treatment of such cases is the intolerance of the stomach to food and medicines. A. J. McCosh has succeeded in securing free catharsis and in overcoming the intestinal paresis after operations for peritonitis by injecting into the intestine saline cathartics in concentrated solution. ("The Treatment of General Septic Peritonitis," *Annals of Surgery*, June, 1897.) He claims that since he has resorted to this additional procedure his results have been greatly improved. Sulphate of magnesia is injected through a hollow needle attached to a large aspirating syringe, into the small intestine, at a point in the jejunum or in the ileum as high up as possible. A saturated solution containing between one and two ounces of the salt is used. The needle puncture is closed by a Lembert suture. This suggestion certainly appears rational and should receive a fair trial by the profession.

After-treatment.—In all cases of general septic peritonitis subjected to operative treatment the most attentive and careful after-treatment is essential to success. All such patients are prostrated from the effects of the disease and the immediate effects of the operation and require a stimulating treatment. External dry heat is an important element in counteracting the direct effects of the shock caused by the operation and in restoring the peripheral circulation. The distressing thirst is quenched most effectually by the administration of water by subcutaneous infusion or rectal enemata. Strychnia and alcoholic stimulants are best calculated to increase the force of the heart's action and the tone of the arterial circulation. Partial inversion of the body by raising the foot of the bed and autotransfusion are potent means of inducing cardiac stimulation. A well-fitting abdominal bandage applied firmly exerts a favorable influence in preventing and diminishing abdominal distension. As long as nausea and vomiting persist main reliance must be placed on rectal feeding. Saline cathartics should be administered as soon as the stomach is in a condition to absorb them. Meteorism can often be relieved by high turpentine enemata and the use of the elastic rectal tube. As no operation ever secures complete asepticity of the peritoneal cavity in cases of general peritonitis, Marmorek's anti-streptococcus toxin may prove a useful adjunct to the after-treatment.

A number of cases have recently been reported in which the serum appears to have been of great value in the treatment of septic conditions in the peritoneal cavity and elsewhere. It is not probable that the serum treatment will ever displace the knife in the treatment of diffuse general septic peritonitis, but it is more than probable that it will prove to be an important therapeutic agent in the treatment of peritonitis before and after operation. Opium should be used with great caution in the after-treatment, as it is liable to cause intestinal paresis and thus increase the danger from auto-intoxication. If the peritoneal cavity has been drained with gauze the external dressing should be changed as soon as it has become saturated. The same course of treatment is to be pursued if the combined tubular and capillary drain has been used. In cases in which tubular drainage has been established the surgeon usually intends to follow the operation by continuous or periodic irrigation. If continuous irrigation is decided on the normal salt solution is the one usually employed. The solution should be used at a temperature of 105 degrees F.; the current should be small and without much force. The outflow from the peritoneal cavity should be received upon a rubber blanket and the necessary provision made to conduct it into a receptacle near the patient's bed. This method of irrigation recommends itself particularly in cases of diffuse septic peritonitis. In suppurative diffuse peritonitis periodic flushings, repeated at intervals of two or three hours, will prove of value in removing from the peritoneal cavity the fluid products of the inflammatory process. The solutions best adapted for this purpose are a saturated solution of the acetate of aluminium, a 3 to 5 per cent. solution of boracic acid or Thiersch's solution. Between the flushings the wound and openings of the drains are covered with the usual hygroscopic aseptic dressings to receive the discharge and to prevent secondary mixed infection with putrefactive bacilli. Drainage when once established should be suspended gradually and not suddenly. As soon as the peritoneal cavity and the drain canals are aseptic the external wound should be sutured to prevent as far as possible the subsequent formation of a ventral hernia.

3. PERFORATIVE PERITONITIS.—Perforation of the abdominal wall or of any of the abdominal organs containing septic material may give rise to general or circumscribed peritonitis; large visceral perforations usually result in general septic peritonitis, small perforations are preceded by visceral adhesions which limit the extension of the infection and inflammation and end in circumscribed peritonitis. Perforative peritonitis invariably occurs as a secondary affection, usually in connection with an ulcerative or gangrenous lesion of any part of the gastro-intestinal canal. Perforating ulcer of the stomach, duodenum, or typhoid or tubercular ulcers of the ileum, perforation or sloughing of the appendix vermiformis, the different forms of intestinal obstruction, are the most frequent causes of this well-defined clinical form of peritonitis. Penetrating wounds of the abdomen with visceral injury of the gastro-intestinal canal must be regarded in the same light as perforative lesions of the abdominal organs in the causation of peritonitis, and should hence be classified under this head from a bacteriologic as well as anatomico-pathologic standpoint. Perforative peritonitis is manifested by the sudden onset of the disease, by diffuse pain and tenderness, rigid abdominal walls, fever, vomiting, the impossibility by inspection, palpation and auscultation to ascertain intestinal peristalsis, the latter being almost positive proof of the presence of gas in the free peritoneal cavity. According to the author's observations, peritoneal meteorism in perforative peritonitis caused by appendicitis is rare, while he has seldom found it absent in perforations of any other portion of the gastro-intestinal canal. According to the number and virulence of the microbes which find their way into the peritoneal cavity with the extravasation, the resulting peritonitis is either diffuse or more or less circumscribed. The colon bacillus is invariably present in the inflammatory product, but in addition streptococci, staphylococci, putrefactive bacilli, the typhoid bacillus, or bacillus of tuberculosis, according to the nature of the primary affection, may also be found. Perforative peritonitis must be regarded and treated as a strictly surgical disease. The primary lesion must be exposed and treated as soon as a diagnosis can be made and the necessary measures applied to limit the extension of the infection and to prevent death from toxemia. The perforation should be found and properly treated before a general septic peritonitis has had time to develop. There are exceptions to this rule in cases where the perforation is small and the extravasation has produced a limited peritonitis in a locality where it is safe to wait for abscess formation, as is often the case in the region of the gall bladder and appendix vermiformis. Penetrating wounds of the abdomen with visceral lesions of sufficient extent to give rise to extravasation should be subjected at once to treatment by laparotomy. If at the time the operation is performed peritonitis has set in, this must receive proper attention after the visceral wounds have received the necessary treatment.

Perforating gastric ulcer.—Perforating ulcer of the stomach is found most frequently on the anterior wall of the stomach near the small curvature. According to Brinton, in 85 per cent. of all cases the anterior wall of the stomach is the seat of the perforation. Perforation in this locality is followed more constantly by diffuse peritonitis than if the posterior wall is the seat of ulceration and perforation. In seventy-five cases of perforating ulceration of the anterior wall of the stomach collected by Eichhorst, in sixty-four the perforation was complete, whereas in thirty cases at the cardiac extremity, escape of contents into the peritoneal cavity occurred but twelve times. When perforation of the ulcer into the free peritoneal cavity takes place the onset of the disease is always sudden, no matter what the antecedent symptoms may have been. Shock is present in greater or less degree. Vomiting, though frequent, is not constant. Abdominal pain and tenderness increased by pressure are nearly always present; abdominal rigidity in the early stage, and distension later on, are frequently noted. The duration of the cases vary from a few hours to five days, most of them terminating in death in less than twenty-four hours.

Treatment.—Mikulicz performed the first operation for this condition in 1883. The first successful case was reported by Kriege of Berlin. The incision should be made in the median line from the ensiform cartilage to the umbilicus, and enlarged if necessary. A long incision is required if the operation is performed after peritonitis has developed. In such cases suprapubic and epi-umbilical drainage is required after suturing of the perforation, and free flushing of the abdominal cavity is indicated. If the posterior wall is perforated and the perforation can not be reached in the usual manner, the anterior wall is incised and the perforation closed through the incision, after which the incision is sutured and the peritoneal cavity cleansed and the external wound closed if the peritoneal cavity has not become infected. Before suturing the perforation the stomach should be emptied through a stomach-tube or through the opening before suturing the perforation. It is not necessary to excise the margins of the ulcer, as these can be inverted in tying the Lembert sutures. Should the wall of the stomach in the immediate vicinity of the ulcer present an unfavorable condition for successful suturing, an omental flap or graft of requisite size should be sewed with catgut over the line of suturing.

Barling ("Perforation of Gastric Ulcer." *British Med. Jour.*, June 15, 1896) operates after the symptoms of shock have subsided. According to his experience, the prognosis is best if the operation is performed as soon as possible after the accident has occurred. In nine successful cases, collected by this author, the operation was made on an average seven and three-fourth hours after the perforation occurred, shortest interval three hours, longest ten hours. In fifteen cases which died, the average time was twenty-seven hours, the shortest interval four, the longest seventy hours. Perforation of the posterior wall of the stomach frequently gives rise to a subdiaphragmatic abscess, and when the disease resulting from the perforation has reached this stage, it must be treated in accordance with the rules that will be laid down in discussing this subject later on.

Perforating ulcer of the duodenum.—Much that has been said concerning perforating ulcer of the stomach applies to the same pathologic condition of the duodenum. The perforation occurs suddenly and frequently without any marked premonitory symptoms indicative of the existence of the primary disease. The direction in which the extravasation takes place depends on the location of the ulcer. Perforation into the free peritoneal cavity before any adhesions have taken place results in diffuse and rapidly fatal peritonitis. If perforation takes place into the lesser peritoneal cavity, circumscribed suppurative peritonitis is caused, which occasionally terminates in the formation of a subdiaphragmatic abscess.

Treatment.—It is only recently that peritonitis resulting from this cause has been subjected to operative treatment. Percy Dean, in 1894, performed the first successful operation. Grieg Smith advises incision over the seat of perforation; that is, if the condition is suspected. If we follow this rule the incision will be above the umbilicus and through the right rectus muscle. The ulcer is usually in the first part, but may be in either of the other two portions. In order to expose the lesser omental cavity we must split the gastrocolic omentum in part. The ulcer is simply inverted, excision being unnecessary. Drainage must always be provided for.

Perforating typhoid ulcer. — Perforation of a typhoid ulcer, large enough for extravasation to take place into the free peritoneal cavity, is a fatal accident, death ensuing in the course of a day or two. Perforation, however, does not always terminate in that way. Extravasation is often prevented by the affected part of the intestinal wall becoming attached to an adjoining serous surface, thus protecting the peritoneal cavity against infection. I have seen several cases of typhoid fever in which about the time that perforation is most likely to occur circumscribed peritonitis set in, which could only have been caused by a perforating ulcer under such favorable conditions, and from which the patients recovered without operative intervention.

Treatment and results.—Kussmaul was the first to perform laparotomy, excise and suture a perforating typhoid ulcer. The operation was performed October 1885. Luecke (*Deutsche Zeitschrift f. Chirurgie*, 1888) reports a case in which he performed laparotomy for the same indication Oct. 22, 1885. A large perforation was found, excised, and the edges sutured. The abdominal cavity was washed out with salicylated water, the wound sutured except a space left for a large tubular drain. The patient died in seven hours. A pint of fluid with a fecal odor was found in the pelvic cavity. Luecke in connection with the report of this case suggested the performance of the operation in two stages, the perforated intestine to be fastened to the abdominal wall in the wound in the first, and the direct treatment of the perforation later. The following three years the operation was performed by Bontecou, Bartlett and T. G. Morton with no recoveries. Van Hook (*Medical News*, Vol. 50, No. 217) reports three cases treated by laparotomy and suturing of the perforation, of which one recovered. He collected nineteen cases of which four recovered. He places the line of sutures parallel to the long axis of the bowel and flushes the peritoneal cavity with a thick stream of sterilized salt solution at a temperature 105 to 112 degrees F.

Wiggin (*Medical Press*, Jan. 1, 1896) collected twenty-four cases of perforating typhoid ulcer subjected to laparotomy with six recoveries. If those cases are rejected in which the diagnosis is somewhat doubtful, there are seventeen patients with three recoveries. The first successful result was obtained by Van Hook, the second by Netschajans, the third by Abbe. J. Price has recently reported three consecutive operations with as many recoveries, a surgical feat which it will be difficult to duplicate. The writer has performed the operation three times with one recovery. The feasibility and justifiability of abdominal section for perforating the typhoid fluid ulcer have been established in view of the fact that all of the patients who have been operated on would have died without the operation. The operation should be performed as soon as possible after the accident has occurred. The mortality will always remain great owing to the debilitated condition of the patients and the existence of multiple ulcers. The incision is made through the median line between umbilicus and pubes and at least large enough to insert a hand. The first point to be sought for is the ileocecal region, when search is made for the perforation in an upward direction replacing the part of the bowel examined so as to prevent extensive eventration. Excision of the ulcer is unnecessary as its margins can be inverted by the Lembert stitches which should be placed transversely and not in the long axis of the bowel as advised by Van Hook. Should the serous surface over any other ulcer present indications of an approaching perforation it should be covered with an omental flap or graft fastened in place with a few points [illegible]

Flushing of the abdominal cavity with a warm physiologic solution of salt followed with Thiersch's solution and free drainage are strongly indicated and should invariably be carried out. If the patient is much prostrated, Luecke's suggestion to perform the operation in two stages should receive serious consideration. If the perforation has resulted in circumscribed suppurative peritonitis, incision and drainage of the abscess cavity are indicated, leaving the perforation to heal spontaneously or to be closed by a subsequent operation.

4. CIRCUMSCRIBED PERITONITIS.—A circumscribed peritonitis is an inflammation of the peritoneum during which a greater or lesser part of the peritoneal cavity becomes excluded from the original source of infection by the formation of plastic visceral, parietal, or visceral and parietal adhesions. The complexus of symptoms varies according to the degree of virulence of the microbic cause, which only occasionally is overshadowed by the primary affection. The symptoms appear suddenly, or are preceded by those incident to the primary disease. The severity of the pain and the extent of muscular rigidity and tenderness will correspond with the extent of the disease. The intensity of the general symptoms are determined more by the nature and virulence of the microbic cause than the area of the peritoneal surface involved. The inflammatory focus may be limited to a very small space, or it may involve the greater portion of the peritoneal cavity and organs which it contains. The clinical course and termination are determined largely by the nature of the bacterial cause, the anatomic location of the primary starting point and nature of the environment. Localized peritonitis is most likely to occur outside of the limits of the small intestine area. If the organs adjacent to the primary focus of infection are favorably located to limitation of the process, diffusion is frequently prevented by the formation of adhesions. This is especially true in cases where the primary infection is limited by the existence of old adhesions. Localized peritonitis may be confined to the lesser omental cavity, particularly in cases of perforating ulcer of the stomach and duodenum. More frequently it is caused by appendicitis and cecitis. A very frequent cause of circumscribed peritonitis is inflammation about the gall blader, uterus, Falliopian tubes and ovaries. The localized form of peritonitis is very often overlooked during life. It can usually only be detected if a demonstrable swelling forms at the seat of inflammation. The mildest form of infection gives rise to fibrinoplastic peritonitis which leaves temporary or permanent adhesions, but terminates without suppuration. Circumscribed suppurative inflammation is always attended by fibrinoplastic peritonitis the products of which and the viscera which it involves form the abscess wall. The microbes which most frequently produce fibrinoplastic peritonitis without suppuration are the gonococcus and staphylococci. Circumscribed suppurative peritonitis is usually the result of infection with staphylococci, bacillus coli communis and pneumococci. In fibrinoplastic peritonitis surgical interference only becomes necessary when intestinal obstruction is caused by adhesions. In circumscribed suppurative peritonitis the pus should be evacuated as soon as the disease is recognized and if possible by an extraperitoneal route.

Acute tubercular peritonitis.—Tubercular peritonitis met with in the majority of cases in the circumscribed form occasionally presents itself as a widely diffused acute affection. The rapid diffusion in the peritoneal cavity, either through the circulation or by rupture of a tubercular abscess into the peritoneal cavity, or by extension from a tubercular salpingitis, occasionally gives rise to a form of acute peritonitis characterized as such in a modified way by the clinical manifestations which accompany it. According to the intensity of the infection or the degree of susceptibility of the patient to the action of the tubercle bacillus, the disease assumes one of the following pathologic forms: 1. Tubercular ascites. 2. Fibrinoplastic peritonitis. 3. Adhesive peritonitis. Suppuration only takes place when the tubercular product becomes the seat of a secondary mixed infection with pus microbes. Laparotomy is now a well established operation in tubercular peritonitis. The exact manner in which the operation exerts its therapeutic influence is not well understood.

Nannotti and Baciocchi (Hildebrand, *Jahresbericht f. Chirurgie*, 1896, p. 661) studied the curative effect of incision and drainage for peritoneal tuberculosis experimentally produced on rabbits and dogs. The operation yielded only temporary improvement in rabbits, but usually resulted in a permanent cure in dogs. They found, soon after the operation, a decided local reaction in the periphery of the tubercle nodules, an increased phagocytosis which in dogs brought about absorption of the tubercular product and formation of new connective tissue. Irrigation of the peritoneal cavity did not appear to add to the therapeutic effect of the operation. According to these investigators, the curative influence of the operation is to be attributed to the local reaction which it induces, and by increasing the absorptive power of the peritoneum. The writer has obtained very satisfactory results in cases which resisted laparotomy and drainage by repeated tappings and injections of two to four drachms of a 10 per cent. iodoform glycerin emulsion.

Suppurative peritonitis.—Suppurative peritonitis, *i. e.*, an inflammation of the peritoneum which results in the formation of pus, is always more or less circumscribed. This form of peritonitis is most frequent and is generally associated with fibrinoplastic exudation. The pus is either serous, seropurulent, or may reach the consistence of cream, when it is usually of a yellow color. The accumulation of pus may be so large that upon opening the abdomen it may appear as though the entire peritoneal cavity and all of the organs contained within were implicated, but a careful examination will almost always reveal the fact that a large part of the peritoneal cavity and many of the organs were shut out from the inflammatory process by plastic adhesions. Suppurative peritonitis must therefore be regarded from a practical standpoint as a circumscribed inflammation. The appearance and character of the pus are often greatly modified by the admixture of an extravasation accompanying the perforative lesion which produced the peritonitis. If the pus is thin, serous, we speak of a seropurulent peritonitis. It is a serous peritonitis with the formation of pus in sufficient quantity to render the serum more or less turbid. This subvariety of suppurative peritonitis is without exception in combination with fibrinous exudations which tend to limit the extension of the infective process. Sedimentation of the solid constituents takes place, so that the fluid contains more of the solid matter in the most dependent portion of the affected district.

III. *Plastic peritonitis.*—A very frequent form of circumscribed peritonitis is the one in which the inflammatory exudate is composed largely of fibrin—fibrinoplastic peritonitis. It is usually a secondary process following a primary affection of one of the abdominal or pelvic organs, and denotes a mild form of infection the extension of which becomes limited by firm adhesions. The inflammation results in plastic exudation with little or no effusion. The character of the exudate depends on the intensity and quality of the bacterial cause. The exudation is often so copious that it has been mistaken for malignant disease. The distinguishing features of this form of peritonitis from abdominal tumor are less circumscribed outline, the lesser resistance offered, the more regular surface and the fact that ascitic fluid is not bloody, but serous or seropurulent. The exudation in the course of time contracts and results in strong bands of adhesion which frequently fix and distort the organs to which they are attached, which has given rise to another term, *peritonitis deformans*.

Treatment.—The surgical treatment of circumscribed peritonitis by abdominal section has yielded very encouraging results. In many of these cases the surgeon is able to reach the abscess and gain access to the primary lesion without invading the peritoneal cavity. In such instances the operation is an *celiotomy* and should be distinguished from the operation in which the free peritoneal cavity must be invaded to reach the pus cavity, which is then an *abdominal section* in the sense in which this expression is used in surgical language. The extraperitoneal route is the operation of choice in all cases in which the abscess cavity can be safely reached and efficiently drained by this method. In circumscribed accumulations of pus in the peritoneal cavity, in which the seat of the disease must be reached through the free abdominal cavity, the safest course to pursue is to perform the operation in two stages. The first operation then consists in suturing the parietal peritoneum to the wall of the abscess cavity, suturing the abdominal incision with the exception of a space large enough to incise and drain the abscess cavity later. This space is packed with iodoform gauze, and two or three days later the abscess is incised and drained. If the symptoms are urgent and the operation must be completed, the contents of the abscess cavity should be removed by aspiration, after which the suturing can be more thoroughly done, when the abscess can be incised and drained with less risk of infecting the peritoneal cavity than without preliminary evacuation by the use of the aspirator. These methods of treatment are especially applicable for single pus cavities. If the disease is more diffuse, involving a number of abdominal organs, and the abdominal incision reaches at once the infected territory, pus wherever found must be removed by flushing or by mopping with a soft sponge. In fibrinoplastic peritonitis without suppuration no attempt should be made to tear the adhesions except they have caused intestinal obstruction, when the raw surfaces are dusted with aristol, which, as has been shown by the experiments and clinical observations of R. T. Morris, is the most efficient way to prevent recurrence of the adhesions.

[illegible] ("Ueber die Erfolge der chirurgischen Behandlung der diffusen eitrigen Peritonitis und peritonealen Sepsis," [illegible] No. [illegible], 1888) admits that in cases of peritoneal sepsis, the most acute and gravest form of infection, surgical treatment is of no avail. In general and circumscribed suppurative peritonitis operative treatment is indicated. Evacuation and removal of the pus with sponges are not permissible, as animals thus treated invariably died. Experiments on animals as well as clinical observation satisfied [illegible] that multiple incisions, drainage and irrigation with salt solution proved successful in thoroughly cleansing the peritoneal cavity without causing shock.

Winkler ([illegible] No. 28, 1888) advises that in progressive fibropurulent peritonitis the adhesions should not be disturbed, and each abscess should be evacuated separately in order to prevent fresh infection from the liberated contents of these encapsulated foci of infection. In one case six intraperitoneal abscesses were evacuated through as many incisions at four consecutive operations. The diagnostic indications of such abscesses are increased resistance, tenderness, dulness and elevated temperature. In cases of doubt an exploratory puncture should be made. The abscess cavities should be drained with iodoform gauze. Some surgeons pursue a more aggressive course and are not content in removing the fluid pathologic product, but aim to remove at the same time the fibrinous exudate. At the meeting of the French Surgical Congress ("Transactions," 1896) Demons made a strong plea in favor of early operative intervention and the removal of fibrinous deposits. In 1886 he had under his care a woman suffering from suppurative peritonitis following suppuration of an ovarian cyst. Her condition at the time of operation was critical. He opened the abdomen, evacuated the pus, removed the cyst, and with a rough sponge and blade of a knife scraped the entire surface of the intestines; a most satisfactory recovery followed. He deemed it advisable to scrape the inflamed surfaces as more efficacious and affording less risk of missing portions of the exudates. In a similar case he assisted Denuce in performing this radical method of cleansing, and the patient rapidly recovered. There are few surgeons who would today follow his example. Adhesions tend to limit the infective process and should be interfered with as little as possible in the search and liberation of pus.

Körte ("Erfahrungen über die chirurgische Behandlung der allgemeinen eitrigen Bauchfellentzündung," Archiv f. klin. Chirurgie, Bd. [illegible]) saved six out of nineteen cases of acute general suppurative peritonitis treated by abdominal section. All cases without adhesions and peritoneal sepsis died, also all cases operated upon after the fourth day. He cautions not to separate adhesions and is content in evacuating the pus and establishing drainage. The closure of perforations should be left unless it can be done without additional risk.

3. HEMATOGENOUS PERITONITIS.—The existence of primary peritonitis without an antecedent injury, lesion and direct source of infection is looked upon with suspicion by most modern pathologists and surgeons. Idiopathic peritonitis so-called [illegible] tonitis does occur, but is much more [illegible] affections of the pleura and pericardium [illegible] mary affection peritonitis is [illegible] during [illegible] able that the [illegible] which [illegible] toneal cavity through [illegible] nitis is always caused by [illegible] peritonitis that [illegible]

source of infection is the result of an infection through the blood, and should be called hematogenous or metastatic peritonitis. It has been observed in connection with nephritis, pyemia, rheumatic arthritis and acute exanthematous diseases. In the absence of even a distant focus of infection it is plausible to assume that peritonitis in very rare cases is caused by the localization of pus microbes derived from the circulating blood in some part of the peritoneum prepared for their reception and growth by some antecedent disease or injury. In primary peritonitis the disease is not preceded by any symptoms which would suggest the existence of an antecedent disease or injury. Hematogenous peritonitis assumes different pathologic types, resembling in this respect peritonitis produced by direct local causes.

Treatment.—The surgical treatment must be guided by the location and extent of the disease, the existence or absence of complications, and the pathologic type the disease presents at the time of operation. The absence of primary visceral disease of any of the abdominal organs is a favorable item in the prognosis and in the technique of the operation to be performed in the surgical treatment of this form of peritonitis.

6. Visceral Peritonitis.—A localized peritonitis that can be brought in direct etiologic connection with the organ primarily affected is expressed by a compound word, with the prefix *peri* and the noun used to indicate the organ primarily affected in a state of inflammation. The inflammatory process is seldom limited to a single organ, as during the course of the disease adjacent organs or the parietal peritoneum will surely become involved. The nomenclature of visceral peritonitis is a lengthy one, as it includes all of the abdominal and pelvic organs from which, when the seat of a suppurative inflammation, may come the primary starting point of an attack of localized or diffuse peritonitis. The mesentery and omentum are modified forms of the peritoneum, and when the seat of inflammation we speak of a mesenteritis and epiploitis. In inflammatory and traumatic affections of the abdominal walls and the abdominal and pelvic viscera, plastic inflammation of the omentum frequently constitutes the safeguard against infection of the general peritoneal cavity by the omentum becoming firmly attached over a threatened perforation or visceral or parietal wound, thus affording protection against infection from within and without. On the other hand such adhesions between the different abdominal viscera, and the viscera and any portion of the abdominal wall are often transformed into firm bands of adhesions which later on so frequently become a direct cause of intestinal obstruction. The surgeon often imitates nature's process and makes use of the omentum in covering denuded surfaces or in suturing tissues of doubtful resistance, and in covering surfaces of the gastro-intestinal canal the seat of a threatened perforation. In visceral peritonitis the primary disease often furnishes the special indication for which the operation is performed. Inflammation of the gall bladder often gives rise to inflammation of the serous investment of a number of adjacent organs resulting in succession in pericystitis, epiploitis, perigastritis, perihepatitis and peri-enteritis. The removal of the original cause which provoked the primary disease furnishes the main indication in the treatment of such extensive pathologic indications. The surgical treatment of appendicitis and its various complications is not well settled at the present time. Some surgeons advise operation in all cases in which a diagnosis of appendicitis can be made, regardless of the nature of the disease and the character of its complications. The more conservative element of the profession limit the use of the knife to cases in which there are positive indications for surgical interference. For my own part I resort to operation in all cases, during a first attack, when the symptoms point to perforation or gangrene of the appendix. The sooner the operation is undertaken under such circumstances the better the results. The appendix should only be sought for and removed if pus is found in the iliac fossa, when this can be done without a material increase in the immediate risks of the operation, otherwise the treatment by incision and drainage will yield the best results. In mild cases of appendicitis, from 80 to 90 per cent. recover under appropriate medical treatment, and in a fair percentage of cases the disease does not return. The gravest cases are those in which the affection of the appendix is followed by diffuse peritonitis. In the treatment of this class of cases nearly all surgeons are fully in accord with the rules laid down by McBurney (*Medical Record*, No. 13, 1895). This surgeon reports twenty-four cases of diffuse peritonitis caused by appendicitis treated by abdominal section, of which number fourteen recovered. He prefers glass tubes to rubber drains. The glass tube is loosely packed with sterile gauze and inserted to the floor of the pelvis. He irrigates with a hot sterile salt solution. The incision, four to six inches in length, is made from a point near the anterior superior spine of the ilium following the direction of Poupart's ligament and about an inch above it. Adhesions are interfered with as little as possible. Collections of pus or seropurulent fluid are searched for and evacuated. After removal of pus with sponges, irrigation is practiced. If fluid is found outside of the pelvis, strips of iodoform gauze are used to drain the different spaces. At the end of twenty-four to thirty-six hours the glass drain is removed and a strip of gauze inserted in its place. If the clinical history reveals the fact that during the first or any subsequent attack an abscess in the vicinity of the appendix has ruptured into the cecum, I should hesitate to recommend an operation, as such cases usually recover spontaneously in the course of time, an operation for such a condition is attended by many and serious risks. The writer has operated in four cases, in which the balance of what remained of the appendix was removed, the opening in the cecum sutured, two of which recovered and two died of septic peritonitis within three days after the operation. In relapsing appendicitis an operation is indicated, particularly in cases in which the attacks set in at short intervals and with gradually increasing intensity.

In peritonitis resulting from infective lesions of the female internal genital organs, the uterus, ovaries and Fallopian tubes, the organ primarily affected and the resulting intraperitoneal abscess can often be reached more safely by a vaginal than by an abdominal operation. Occasionally the combined operation will afford greater safety, more complete removal of the infected tissues and organs, and more efficient drainage.

7. Pelvic Peritonitis.—Pelvic peritonitis is seldom met with in the male. It is a form of peritonitis in which the female pelvic organs are the primary starting point of infection with extension to the periton-

eum, either through the Fallopian tubes, or the lymphatics of the uterus or its adnexa. It is caused most frequently by gonorrheal or puerperal infection, or develops after instrumental examination of the interior of the uterus or operations upon this organ. In pyogenic infection the inflammation may become diffuse, and if circumscribed usually leads to the formation of parametritic or intraperitoneal abscesses, or pus formation takes place in both of these localities. In the peritoneal cavity the gonococcus produces a plastic peritonitis, and sometimes localized suppuration. Salpingoperitonitis and more diffuse pelvic peritonitis are most frequently caused by gonococcus infection. Ceppi (*Revue Méd. de la Suisse Romande,* 1888) reported the first case of laparotomy for gonorrheal peritonitis. Gonococci were found in the pus cells. The patient recovered. Abdominal section is seldom performed for gonorrheal peritonitis during the acute stage. Opening of the abdominal cavity by this route is usually reserved for the removal of the remote consequences of the disease, and the operation usually includes the removal of the adnexa on one or both sides. An early incision through the vaginal roof into the *cul-de-sac* of Douglas in the treatment of pelvic peritonitis, so strongly urged and frequently practiced by Henrotin, is a rational procedure and frequently succeeds in preventing the extension of the infection, and the occurrence of serious remote complications. I have in several instances incised and drained the Fallopian tube through such an incision, and in this way prevented further leakage from the tube into the peritoneal cavity, and thus directly cut off additional supply of infectious material. The treatment of large parametritic abscesses extending to the brim of the pelvis and above it by making an extraperitoneal incision the same as is resorted to in ligating the external iliac artery, a procedure advocated by Pozzi, is preferable to a transperitoneal operation in all cases in which the abscess can be reached by this route.

Birnbaum (*Der Frauenarzt,* July 7, 1894) advises in puerperal sepsis in which a pelvic exudate has been thrown out, if continued high fever persists, drainage of the abcess as required. When fluctuation is detected an incision is made from 1 to 2 centimeters above Poupart's ligament and from 2 to 3 centimeters from the anterior superior iliac spine. When fluctuation is not positive exploratory puncture is recommended; vaginal exploration and incision are indicated when the abscess is located lower down in the pelvis. We shall hear less of intestinal, vesical and rectal fistula in the future, as the remote results of pelvic peritonitis or parametritic abscesses, as soon as the profession recognizes fully the importance and necessity of timely operative interference.

8. PUERPERAL PERITONITIS.—By the term puerperal peritonitis is understood a progressive inflammation of the peritoneum occurring in consequence of an extension of an infection from any part of the genital tract in puerperal women after delivery or abortion. The infection usually takes place through the lymphatics, which in the majority of cases terminates in diffuse septic peritonitis. In some instances the disease remains limited to the pelvic organs and their serous investment, when abscess formation intra- and extra-peritoneal is very likely to occur. The infection in such comparatively mild forms of puerperal sepsis is usually caused by the different varieties of the staphylococcus while the diffuse septic puerperal peritonitis is nearly always produced by the streptococcus.

Treatment.— The treatment of the localized form of puerperal peritonitis is the same as that we have advised in circumscribed peritonitis resulting from other causes. The foudroyant form of puerperal sepsis proves fatal in spite of the most energetic medical and surgical treatment. The use of the antistreptococcus serum may prove of great value and should receive an early and fair trial. It has been suggested that early removal of the infected uterus would prevent the extension of the disease to the peritoneum and death from sepsis. A number of vaginal hysterectomies have been performed for this indication, but on the whole the results have not been encouraging. It is exceedingly difficult, and in many cases absolutely impossible, to make a sufficiently early and positive diagnosis to warrant such a grave and mutilating operation as a timely and life-saving measure. If the uterus is removed after general septic peritonitis has developed, the operation is performed too late, and death from shock and sepsis is the rule. Professor von Winckel ("Ueber die Kölotomie bei der diffusen, eitrigen puerperalen Peritonitis," *Therapeut. Monatschefte,* Heft 4, 1895), is not in favor of resorting at once to the removal of the uterus and adnexa by the vaginal route. In cases in which the Douglas *cul-de-sac* is prominent in the vagina, he recommends a broad and free incision behind the uterus. If the inflammatory product is not within safe reach of a vaginal incision he advises abdominal section. He is in favor of vaginal hysterectomy only in cases in which a double parametritis sets in after such a procedure.

9. SUBDIAPHRAGMATIC PERITONITIS.—A peritonitis limited to the under surface of the diaphragm and any of the adjacent abdominal organs is called subdiaphragmatic peritonitis. If the inflammation remains limited and life is sufficiently prolonged, it usually terminates in the formation of a subdiaphragmatic or subphrenic abscess. Perforating ulcer of the stomach and duodenum, abscess of the spleen and liver, are the most frequent affections which precede subdiaphragmatic peritonitis. Maydl has wrtiten the most complete treatise on subphrenic abscesses, dividing them into twelve groups according to their location and the organ from which they have their starting point. The diagnosis is usually difficult and Maydl recommends the exploring needle very strongly as an important diagnostic resource. The abscess often ruptures into the pleural cavity. The abscess is most frequently reached through the pleural cavity, which is sometimes found obliterated where the puncture and incision are made through the diaphragm. In cases of empyema of the pleural cavity the possible existance of a subphrenic abscess must be kept in mind.

Witthauer ("Über Magenperforation and subphrenische Abscesse," *Therapeut. Monatshefte,* October, 1895), reports two cases of subphrenic abscess caused by perforation of the stomach, which terminated fatally without operation. In the first case carcinoma of the stomach was diagnosticated, in the second the diagnosis was first made of perforating ulcer of the stomach but was later doubted, as the usual symptoms of peritonitis did not appear. A similar case is reported by Schesinger. Trojanow (*Annalen der russ. Chirurgen,* 1896, Heft 3) reports a case of subphrenic abscess which had its starting point in a splenic infarct which occurred during an attack of typhoid fever. He resected the tenth rib between the axillary line and scapula, found the pleural cavity at that point obliterated, and at once incised the diaphragm, opened and drained the abscess, in the contents of which fragments of necrosed splenic tissue were found. In cases in which the pleural cavity is not found obliterated, he advises suturing of the pleura to the diaphragm before opening the abscess. A valuable contribution to the statistics and surgery of subphrenic abscesses has recently been made by C. Beck of New York (*Medical Record*, Feb. 15, 1896). He reports five cases treated successfully by operative interference. Rib resection and opening of the pleural cavity usually become necessary as preliminary steps in opening a subphrenic abscess. Accurate location of the abscess and a positive diagnosis are made by exploratory puncture. As perforating ulcer of the stomach is the most frequent cause, subphrenic abscesses are more frequently located on the left than the right side. Occasionally a spontaneous cure occurs by perforation of the abscess into a hollow adjacent organ. Maydl has shown that out of 104 cases not operated on only six recovered, while out of eighteen cases operated on only 11 per cent. died. The satisfactory results of the operation furnish the most conclusive proof regarding its necessity and life-saving value.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
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(Continued from page 484.)

XII.—FRENCH AND ENGLISH WAR SURGERY.

The beginning of the French war surgery; The first flying and stationary hospitals; Improvements under Louis XIV. and XV.; Organization of war hospitals and military physicians under Louis XVI. and the Republic; Means of transportation; Ravaton, Colombier; Trecourt, Lombard, Percy, Moreau, Boy; English regulations; the lash; J. Hunter, Jackson; J. Pringle, fresh air, recreation of the sick; Brocklesby, barracks; Count Stair, treaty for the protection of the wounded; French and German voices concerning barracks and protection treaty.

From the downfall of the Roman Empire to the time of the crusades one hears nothing of military surgery; it was dormant and awakened first in *France*. When Louis the Good made a pilgrimage to the Holy Land, Pitard was the first surgeon who accompanied the army with a few others, almost all monks or priests who along with their clerical functions also gave medical treatment. The later generations troubled themselves but little over the care of the wounded warriors. For their personal attendance alone, the kings, barons and generals took surgeons with them to the war, and these also occasionally treated the officers for a compensation, but they were never obliged to do so. The common soldier was left to the quacks who preyed on the army with their wound balsam and secret remedies. Women established themselves on the battlefields; they adjusted bandages and washed out wounds. Such was the condition in France and everywhere. Although through the introduction of shotguns, a great change took place as well as in the manner of fighting, which was no longer between individuals but between large masses, as in the kind of injuries sustained, and the number of wounded was enormously increased; still military physicians were never appointed. Ambroise Paré, who during the war from 1536 to 1569, although in the service of only a single prince, first extended his help in a large measure to the wounded soldiers, can therefore be regarded as the first qualified military surgeon. How great respect this surgeon enjoyed in the French army was shown in the hard-pressed fortunes of Metz, whose completely discouraged garrison felt that his arrival was the greatest reinforcement which they could receive. His king, Charles IX., saved him to the Reformists on the night of St. Bartholomew.

The great confidence which the troops felt in him and in his pupil Pigray, who, placed under similar circumstances, had never refused his assistance to the soldiers, was the inducement which moved Henry IV. to organize the military medical system. In 1591 the king issued a decree for the care of the wounded, and in 1597, at the siege Amiens by Sully, he established the *first portable hospital* with a surgeon-major at the head. This new creation was christened by the French with the new name "ambulance," a word which had not before appeared in their language. Under Louis XIII., besides the portable hospitals (Hôp. ambulant), which followed the army, there arose also *fixed military hospitals* (Hôp. sédentaire, the first one at Pignerol), of which Cardinal Richelieu regarded himself as the founder. To each regiment a surgeon-major was now appointed. The wars of *Louis XIV.* made new improvements necessary. The king increased the number of stationary and portable hospitals as well as the number of physicians. He appointed to the ambulances and to each regiment, subordinate to their chief, an over-surgeon (chirurgien-major), under-surgeons (sous-aide-major), assistant surgeons (aide-major chirurgien) and students. With all of these a surgeon-major was provided for consultation.

Under Louis XV. institutions for the training of military physicians were first established, and by him and his successor repeated decrees were issued for the better organization of the sanitary system. France led all other countries and served as an example to them. They opened the amphitheaters in Lille, Metz and Strassburg, and erected two new ones in Brest and Toulon, where for the education of skilful physicians medicine and surgery, together with the supplementary sciences, were taught. In order to learn the nature of a field-hospital under Louis XV., we may consider the plans of Ravaton, at that time military surgeon. A field-hospital for 20,000 men should have an able surgeon-major at its head who should in every case be chosen from the military hospitals; also twelve chirurgiens aides-major, and thirty students who should be chosen only according to merit and not by favor, and thirty attendants. There should be in addition a war commissary, director, sub-director, cook, butcher, baker and three priests, so that the whole field-hospital includes 134 persons and forty-six horses. They carried crucifixes and all the accessories with which to celebrate mass; there were also six complete surgical instrument chests, six tackles, 1,000 pieces of bandage cloth, ten centners of lint, 10,000 strong needles, etc. In the enormous store of medicines there were, among other things, 200 pounds of licorice, 150 pounds of senna, 200 pounds of turpentine, 200 pounds of manna, 400 pounds of eau de vie de France, 100 pounds of olive oil and 150 pounds of ungt. basilicum. Ravaton assumed that in the beginning of a campaign 3 per cent of the troops would be sick; in the middle of the campaign 5 or 6 per cent.; and at the end from 10 to 12 per cent.; while after a battle which had raged from morning till evening, he assumed that 10 per cent. of the troops would be wounded.

Under Louis XVI. each army had a consulting surgeon, whose advice was sought when new field-hospitals were laid out, in important surgical cases and in all scientific questions. On the other hand the surgeon-major of the army, the distribution of the wounded, and in short, the mechanical part of the service. (This arrangement corresponds nearly to the present consulting surgeons and general physicians of the Prussian army.) In the portable hospitals, only the first and most necessary aid was extended, and none were admitted who could be safely transported to a stationary hospital. The military physician, Colombier, at that time required that the hospital be isolated, located near a river but high and dry, have lofty rooms, chimneys and lofty windows provided with green curtains. The water closets were to connect with running water and be provided with gypsum instead of wooden bowls. The beds were to be of straw and all coverings of linen, never of wool, while the physicians, surgeons and apothecaries were to reside within the hospital. Besides these regular field-hospitals, Colombier proposed a hospital for each regiment, consisting of its own wagons and tents under which the patients could be sheltered as soon as the regiment made a halt. In this way the sick soldier stayed with his own regiment and was not sent into a field-hospital for any slight cause. The regimental surgeon knew his own people well and could treat them better. In this way they also avoided the practice of sending the patients from one surgeon to another, and from one hospital to another, remaining so short a time in each that their disease could neither be properly diagnosed nor treated. Colombier did not intend with this plan to entirely do away with the great field-hospitals, but to diminish their number. He interested himself in the whole subject of a sanitary system and recommended among other things that the soldier wear a leather waistcoat and breeches, polished half-boots, a buckram coat and a hood of oil-cloth in order to protect the head from rain. cold and sun. On account of vermin the hair was to be cut short; the marshal of Saxony had the heads of his people shaved close. He recommended meat frequently but in small quantities as it spoiled easily, and furthermore recommended the cultivation of potatoes in France according to the German custom in order to provide them for the troops. The head of the hospital was the chief-surgeon. He performed all the serious operations himself, but a physician was required to be present, and was generally called for consultation in all important cases. Only the more skilful under-surgeons and assistant surgeons were allowed to operate, and then only with the consent of the war commissary, and under supervision. When the physicians made their visits these assistants put on the bandages and could at the same time consult in any special case; but the bandage was not prepared until everything else had been properly made ready in order that the wound might not be too long exposed to the open air. Afterward they fumigated with juniper and the like. Upon penalty of a fine of 1,500 livres no hospital director dared use brandy, either in bandaging wounds or in the preparation of medicines. and every surgeon or apothecary who used it ran the risk of being dismissed from the service. Physicians as well as surgeons were responsible for the quality of the medicines and food. The students, for the most part taken from the amphitheaters, slept in the hospital and had charge of the diet of the patients and of the force of nurses; they allowed one student to ten officers or twenty-five patients. and one nurse to two officers or fifteen patients. If one of them fell asleep during his watch he was fined 20 sous; whoever left the ward was dismissed. Each one of the wounded had his own bed, if it was at all possible, to which a tablet was attached upon which name, number of bed, disease, day of entrance, food and medicines were written. Woe to the soldier who was the third time treated for syphilis! as a punishment he had to serve two years longer. In order to turn this material to the account of science special regulations were enacted. Aside from the fact that in particular cases sections were made, the chiefs of the hospitals submitted reports to the state secretary of the war department to the inspector of physicians (Médecin-inspecteur titulaire), and of surgeons (chirurgien-inspecteur titulaire). They both conducted a correspondence with all the hospitals and passed their opinions on the reports of cases. The most valuable of these were collected by a specially appointed old military physician under the title of *Médecin consultant de l'armée*, and after the Royal Society of Physicians had passed upon them were published. The journal for this purpose appeared quarterly at the expense of the State. This custom was originated by Louis XV., who ordered all the surgeons of the field-hospitals to submit their most important notes as well as a report on the topography and the epidemics of the hospitals. Richard de Hautesierk, at that time chief military physician, published these collections as "Recueil d'obs. de Méd. des Hôpit. milit." (2 Vols. 1766, 72.) The yearly salaries of the French military physicians in 1781 were as follows:

Médecin-inspecteur titulaire	10,000	livres.
Chirurgien-inspecteur titulaire	6,000	"
Médecin consultant des camps et armées, 1,000 to	5,000	"
Physicians and chief surgeons according to the rank of the hospital, 500, 800, 1,000, 1,500 and	2,000	"
Under-surgeons, with board	288	"
Assistant surgeons, with board	252	"
Students, with board	96	"
Nurses, with board	120	"

Under Louis XVI., the sick soldiers were cared for at a comparatively greater expense than in other countries. Nowhere in Europe, were there at that time, military hospitals to compare with those in the French garrison cities, where they were divided into five classes according to their size, and provided with a sufficient number of physicians and surgeons. Under the supervision of the latter, the field-physicians gave their services when necessary; accordingly there was no army in which the military physicians were so much respected as the French; for the Prussian soldier did not consider his steward as belonging to the military class and regarded any subordinate officer as a person of more consequence than the regimental physician

The *republic* made every citizen a soldier. It could be relied upon, that the sick officer could lay no claim to better treatment than the soldier, and they took even better care than before, that the wounded should receive proper nursing. The highest authority lay with the physicians, surgeons and apothecaries, comprising the conseil de santé in Paris, which was subordinate to the minister of war, and met daily, making up the personel of the physicians in the army. according to examinations previously held, and receiving fortnightly reports from the hospitals and the different bodies of troops. Each army had its chief physician and chief surgeon. As the chirurgien-consultant and the chirurgien-major de l'armée found their duties frequently conflicting, both offices were abolished and replaced by a chirurgien en chef de l'armée. There was only one class of physicians, while the surgeons and apothecaries were divided into three classes, according to their knowledge, merit and seniority. The physicians wore grayish blue coats with black velvet collars, with gold cord and black facings; the surgeons and apothecaries wore light blue coats with red cloth waistcoats and breeches. The different borders distinguished the three classes. The yearly salaries of the hospital physicians, who were paid *monthly*, was under the republic, as follows:

Chief physicians, chief surgeons and chief apothecaries	7,200	livres.
Physicians, surgeons, apothecaries, first class	4,800	"
Surgeons, apothecaries, second class	3,600	"
Surgeons, apothecaries, third class	2,400	"
Nurses, first class	1,080	"
Nurses, second class	720	"

When a battle took place, the chirurgien en chef summoned all the surgeons who could be spared from the stationary hospitals and the troops, to the *field hospitals* in every head-quarters; the over-physician and the over-surgeon collected their subordinates, a corps of whom were alloted to each army, and apportioned them among the hospitals. On the day of battle, a depot containing sufficient bandage-material, wine, bouillon, etc., was erected one or two hours march behind the army. From this point, three detachments, which were in touch with the center and both wings of the army, and could unite if necessary, were formed. Each detachment had a sufficient number of litters and wagons for transportation. The train wagons, which carried the apparatus of the field hospital, were drawn by four horses, were covered with oil cloth, and bore the words in large letters, "Hôpital ambulant nr. . . ." The wounded were first received into the field hospital where an immediate examination was made. In order to have enough room in this hospital, as many as possible were transferred daily to the nearest hospital, and no one was admitted who could endure the journey to a stationary hospital. Soon after the battle, the regiments sent a few officers to the hospitals to find their sick and furnish them with billets d'entrée, as no one could be accepted without these. Wine, meat and bread (auf Bons), and mattresses were required to be furnished by the community. In spite of the comparatively good equipment of the field hospitals under the republic, the mortality, especially in cases of amputation, was enormously large.

At that time, in France, they performed operations which should not have been allowed, in order to boast of them; it is known that a military surgeon in the beginning of the year 1796 had made over 400 amputations. A great and frequently a very injurious abuse, as Wardenburg noted, was practiced with the roller bandage, and he said that especially in the field hospitals, where there was so much to do, the use of the sling bandage and of cloths would be much simpler (l. c. I, p. 71. The same idea was later advanced by Esmarch). There were *stationary hospitals*, as already mentioned, in all the garrison cities, and wherever the civil hospitals were not large enough, new ones were built. The most important one was the Hôtel des Invalides in Paris. It was built for 2,500 men and was provided with 430 beds for patients, of which the surgical contingent, about a hundred and twenty, were under the care of Sabatier. The second one, the Val de Grace in Paris, with its dark and dingy rooms, left much to be desired; here there was a school where Larrey officiated, and where anatomy, physiology, medicine and surgery were taught. The hospitals were divided into three classes, according to the strength of the garrison, and were under the supervision of municipal officers and of men appointed in each community by the Committee of Safety (comité de surveillance) of the Revolution, which committee consisted of patriotic citizens. These were under the dictation of the war commissary, and cared for the welfare of the patients. In a few of the hospitals courses of instruction were given; for instance, in the newly founded school of Strasburg, twelve teachers lectured gratuitously on all the medical sciences. When a patient was taken into the stationary hospital, he received hospital clothing and his own bed, with a hair or wool mattress, or a straw sack if he soiled the bedding. The wounded were separated from those having internal disease, syphilis and scabies. Over a hundred patients were allotted to one physician and over twenty-five wounded to one surgeon, while one of the attendants, who were chosen with the greatest strictness, attended twelve patients. The surgeons could perform an operation only after they had consulted with their colleagues. They were in constant correspondence with the chirurgien en chef. Food and medicines for all the hospitals were provided through stewards and not, as formerly, farmed out, to the great detriment of the patients; only the furnishing of the beds was entrusted to the contract system. Even in the middle of the century the most of the stationary war hospitals in France were farmed out, a system in which many peculations arose, and each physician was burdened with too many patients; for the personnel of the physicians depended at that time entirely upon the contractor. The diet of the patients, under the republic, was the same as we have given in the fourth chapter for the year 1781. We should add that a sentinel was stationed in the kitchen, in order to see that no meat was taken out of the pot while the meat was cooking. As early as the middle of the century, the French soldiers received a so-called ration braid, pain de munition, which was made of flour and bran. Prisoners of war enjoyed the same fare, and if necessary an interpreter was provided between them and the physicians. Card playing and tobacco smoking were forbidden in all the wards of the hospital; at night lamps were used.

(*To be continued.*)

Operations with the Magnet on the Eyes.—The secret of success in these cases is promptness and the extraction of the iron splinter while the wound is still gaping. J. Hirschberg inspects his apparatus twice a week and tests it to have it ready at a moment's notice, and to this he ascribes his success in saving the eye in several severe cases. He prefers the Asmus sideroscope, uses cocain, and extracts the fragment with his small electromagnet, connected with a simple zinc-carbon battery, attracting a pound, combined with the large Schlosser magnet and accumulator, attracting twenty pounds. He also has on hand a still smallar magnet attracting 200 grams. Five minutes after the patient crosses the threshold, all the instruments, including the ends of the small magnets, are soaking in Schimmelbusch's soda solution, and in five to ten minutes more the iron splinter is on the table. He describes thirty-four cases thus treated, with technical success in thirty-three, in the *Deutsche Med. Woch.*, July 29, completing his record of sixty-seven magnet operations.

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SATURDAY, SEPTEMBER 11, 1897.

MEDICAL MEN AND LIFE INSURANCE.

It is very evident from the large correspondence which has come to this office, that there is a widespread distrust among the profession of the methods of life insurance companies in relation to medical services. We have no desire to engage in any controversy or criticism of any company's methods of doing business, but it is clearly just to give some expression to the numerous complaints which some of the best men in the profession are making. The following incident speaks for itself: An excellent physician examined for a leading company for twenty years, receiving from three to five dollars for each case examined. On several occasions he appeared in court as a witness for the company, receiving insignificant sums compared with others; remaining away from one to five weeks at a time. His personal medical opinion was sought and given many times a year, for which he received thanks only. On one occasion he represented the company in the settlement of a case involving fifty thousand dollars, spending three days and much time in correspondence and study, for which he received as an honorarium one hundred dollars, although his services saved the company over twenty thousand dollars. Finally he took out a ten thousand dollar policy in the company, and divided the commission with the agent. His services to the company about half paid the yearly cost of the policy. Then he was taken ill and lost his little property by accident, and the company dropped him as an examiner and he failed to keep up his policy. Then he was given a paid up policy representing the amount he had paid, and finally he died. Then his policy was disputed on account of some technical error, and after a long time a settlement was made, giving less than half of the amount called for. In all this the company was legally and technically right. It was the pound of flesh, no more or no less. The services of the physician were received at the lowest rates and gratuitously, and when their interest called for it he was dropped, and his policy received the same treatment as others. A brother of this physician defended this company in a contested policy and received five hundred dollars for three days' services in court, and yet his services were inferior to his brother's testimony in the same case. A leading company, which boasts of their munificent payments of five and ten dollars for medical examination, complained bitterly and refused to pay a very competent man fifty dollars a day in a contested case.' He finally settled at thirty, although the experts on the other side were paid double this sum. While this is simply business in the commercial sense, it is the so-called liberal policy which medical directors and company managers assert so positively. The denial that companies do not encourage the aid of examiners to solicit business is contradicted in the experience of nearly all the companies. One man writes: "If it were not for the commissions from agents who share the profits with me, I would receive very little for my services." Another man writes, that while no direct bargain is made between the agent and examiner, it is expected that the examiner will suggest that his company is the best, and always advise a large policy or an increase of the present one, and receive from the agent a gratuity. Agents are always wise enough to keep up a warm interest in their company in the mind of the examiner, by presents and gratuities, and while this is not a cause for complaint, it shows that the selfishness of companies reacts and will bring its own penalties by and by.

These are only hints of the injustice and low estimation of the services of medical men by life insurance companies. There can be no doubt that the profession are responsible for this, not the companies. As long as medical men will sell their services for a mere pittance there will be buyers. Companies have no sentiment or ethics, it is simply cold selfishness – to make all the money possible, and they are ever ready to take advantage of the services of any one who will contribute to this end. The physician who fails to recognize this, and fails to demand a proper payment for his services is unwise, to say the least. One of the best physicians in the country received ten dollars for his judgment on a policy of one hundred thousand dollars. What lawyer would give an opinion on a contract involving this amount for this sum? There can be no controversy with the companies, but the profession are wrong and suicidally so. There can be no change until the physician recognizes and demands an adequate return for his knowledge, which has cost him so many years of labor and effort.

OPIUM HABIT IN CHILDREN.

Among the most decidedly bizarre statements of the report of the British Opium Commission are those anent the harmlessness of the opium habit to Hindoo children. The evidence of the report as a whole would appear to a student of the law of evidence closely akin in nature to that whereby quackish procedures are "proven" to the satisfaction of promoters of patent medicine stock companies. The inveterate opium habitué is notoriously always under an opium dream as to the harmlessness or even benefit of his habit. Propaganda for spread of opium using is often a cult with habitués. From just such persons much of the testimony in favor of opium has clearly come. The evil effects of opium on children have been publicly recognized for nearly a century. Crabbe, in that series of sociologic and medical pictures, "The Borough," sang:

> "Then the good nurse (who, had she borne a brain,
> Had sought the cause which made the babe complain)
> Has all her efforts, loving soul, applied
> To set the cry, and not the cause aside.
> She gave her powerful sweet without remorse;
> The sleeping cordial—she has tried its force.
> Repeating oft, the infant freed from pain,
> Rejected food, but took the dose again,
> Sinking to a sleep, while she her joy expressed
> That her dear charge could sweetly take his rest;
> Soon may she spare her cordial, not a doubt
> Remains but quickly he will rest without."

According to the report from 60 to 90 per cent. of Hindu infants are dosed with opium. According to one witness:

"The practice is begun in the first few weeks or months of life, sometimes even from birth, and is continued up to the end of the second or third year. The dose is usually one-sixteenth to one-twelfth of a grain to begin with and this is gradually increased to a quarter or half grain and even to one or two grains, according to the age and necessities of the child. Sometimes it is given in the form of a pill, sometimes a nursing mother smears it on her nipple. It is given partly as a remedy for the ailments of infancy, partly to keep the chid quiet. A peasant woman who has to work in the fields gives her child some opium and puts him in a basket in a corner of the hut, or perhaps she takes her child to the field and puts him in a small basket and gives him a little opium to keep him quiet. Fatalities and cases of poisoning rarely occur and it should be carefully borne in mind that this practice is discontinued usually at the third year and certainly at the fifth, and has no connection with the habit which may or may not be formed when the child is grown up."

This evidence contrasts decidedly with the results of the experience both of general practitioners and students of the opium habit. Practically the majority of these will agree with Calkins ("Opium, and the Opium Habit," 1871) in the opinion that "pestilent as is opium upon the brain developed in its maturity, yet more pernicious, times over, is the reaction when it falls upon immature years. Whether the child suck in the poison immediately through the natural, lacteal channels or whether it receives the same pure and undiluted as measured out by the teaspoon, contamination is equally assured. *Mourir en fleur ou vivre bien petit;* such is the the slippery tenure of life, such the inexorable necessity imposed. In view of such prospects what shall be thought of the fashion obtaining among families of distinction in China, that of encouraging boys yet within the age of puberty in the use of the opium pipe, with the fallacious expectation that such habit may, perchance, exert a resistive force against appetites and indulgences of a more sensual character. The furnishing of laudunum by their impoverished parents to the children employed in the cotton mills of Lancashire may make plausible show of excuse, but what can be said in palliation of practices, such as those of lace factory employes, for instance, where the infant incumbrances (fruits of the *impermissa gaudia* enjoyed in their *liaisons de convenance*) are put upon Godfrey's cordial precedent to the stronger alcoholic tincture, by which together they are used up in about six months. Dr. Harper of the Fen district, where laudunum is given extensively, states that the infant mortality is at an excessively high figure and his account is corroborated by the medical men and the clergy of parochial districts all over England.

The Fen district in England is singularly like India in its prevalent opium habit and the alleged causes for this. Opium is used in the Fens as in India for its alleged efficacy in malaria. In the Fens are seen, among other things, marked expressions of degeneracy despite the opium habit, survivals to old age of isolated members of a family, plural and frequently repeated births and a large infant mortality. On the evidence of benefit afforded by the first two phenomena, stress has been laid by the report of the British Opium Commission. They, and the fact of the survival of children from the opium habit, are brought into strong relief as proof of the sanative effects of opium. Such a style of argument clearly betrays an ignorance of the salient features of the biologic stigmata of degeneracy on the one hand and an unscientific pandering to commercialism by ignoring well ascertained facts as to the opium habit in children on the other. Levinstein (*Alienist and Neurologist*, 1883) found by experiment on pregnant dags and rabbits that the use of opium during pregnancy produced either abortion, still-births or rapidly dying offspring. Bureau later (*Progrès Médical*, July 16, 1894) ascertained that the placenta of opium-using mothers contained morphin and that this was also detected in the funis. Long ere either the experiments of Levinstein or the observations of Bureau, Drs. Calkins and F. H. Hubbard had pointed out ("The Opium Habit," 1881) that the children of opium-using mothers would die unless they were nursed by their mothers or given opium. One of his cases which excellently illustrates the features of all such is as follows:

> "A secundipara while pregnant with her third child was given morphin to secure sleep in consequence of an agonizing neuralgia. When labor occurred the amount of morphin used was 10 grains per diem. The third day after delivery her milk was suppressed to a great extent in contrast with the previous habit of the patient, who was usually galactorrheic at that time. The babe, bright and natural at birth, when placed on the bottle, became prostrate, cried, vomited incessantly and discharged a glairy mucus with meconium. The muscles twitched continuously and the babe died six days later from marasmus and insomnia. The mother increased the drug up to half a dram daily doses, which she was taking two years when a girl was born. The milk was suppressed. The babe, bright and vigorous, took the bottle readily, but soon displayed the same ominous symptoms as the last child. The mother suspecting the cause, secretly gave it two drops of laudunum. The effect was magical, all the ominous symptoms disappeared. The mother increased the dose until when the child was 7 years old, she was taking half-ounce daily doses of laudunum. She was in excellent physical health, bright but backward at school.

Similar cases were later reported by Carson Amabile, Erlemeyer, F. B. Earle, Mattison and others (*Review of Insanity and Nervous Diseases*, March, 1891). These cases readily explain the phenomena of the opium habit in children cited so exultingly by the British Opium Commission. They also reveal how potent a factor of degeneracy opium is, even on the descendants of opium-using mothers cured of the habit before puberty but remaining "backward" children, which "backwardness" in the next generation would, by the law of heredity, be transmuted into any or all manifestations of degeneracy from hemophilia, hereditary gout, hysteria, deaf-mutism, epilepsy, insanity and moral imbecility down to idiocy. The error of the British Opium Commission is that of the unscientific mind which fails to see that a given hypothesis to be accepted as correct must not only explain all the facts but must exclude all other explanations.

THE GLANDULAR FUNCTION OF THE UTERUS.

In the *Archives de Physiologie, Normale et Pathologique* for July, M. J. H. Keiffer of Brussels devotes a rather well argued article to the glandular function of the uterus; that is, to its utility in the organism as an excretory organ, eliminating toxic products in its function of menstruation. This idea is not altogether a new one, but is practically ignored in most text-books on physiology and gynecology, and the treatment of the subject in the light of modern physiology has something in it of novelty. We are accustomed of late to think of a possible extra-generative function of some of the organs of reproduction; the testicle and the ovary are supposed, with some reason, to furnish an internal secretion that has its purpose and value in the systemic economy, but the uterus is not so commonly regarded in a similar light and menstruation has been considered as a result or attendant of ovulation and therefore purely an incident of the generative function, perhaps a quasi-pathologic result of a somewhat abnormal human evolution. The glandular structure of the uterine mucosa has been credited with merely furnishing the needed mucous secretion of such an internal cavity suited to its special reproductive function.

The disturbances noted as following disorders of the menstrual function are many of them such as would naturally suggest an auto-intoxication, but it has been customary rather to refer them to some obscure reflex influence than to poisoning by retained products, notwithstanding the fact that an actual excretion normally occurs. M. Keiffer's argument is based on an experimental study of the relations of the muscular and vascular apparatuses and the mucosa, his observations having been made both on the human female and experimentally on the dog in the condition of rut, and he finds that while the arrangement of blood vessels is such as to indicate that the nutrition of the epithelial tubes of the uterine mucous membrane is of the very first importance, the function of the latter does not seem to be exclusively limited to the production of mucous or mucin. There is, as was well known before, though its importance has perhaps been underestimated, a decided chemical alteration in the menstrual blood—it does not clot like ordinary blood, and he maintains that the uterine epithelium acts here like the kidney glomerule and that fibrin passing the one is analogous to albumin passing the other. Charrin (*Gazette hebd.*, Jan. 3, 1896) has shown that the blood is at its maximum of toxicity at the menstrual period, and that disordered menstruation has its affect upon other secretions, infants at the breast being affected by such conditions in their nurses. The menstrual process, M. Keiffer holds, acts in two ways, preparing for the maturation of germinative elements and exciting genetic activity on the one hand, and on the other eliminating from the organism certain products of secretion that failing their direct bio-chemical application in reproduction must be rapidly discharged. If this elimination fails, if these products are not utilized or gotten rid of, they acquire a toxic property and their reabsorption gives rise to the disturbances of the nutrition and the derangement of systemic equilibrium that we observe as the effect of disordered or suppressed menstruation; the vascular, secretory, digestive and psychic disturbances that are generally and rapidly relieved by the re-establishment of the function in its full normal activity. Menstruation has been called a disappointed pregnancy, and in this point of view it is easy to see how the results of such will need to be gotten rid of in the normal economy of the organism. The uterus is in that sense certainly an excretory organ during the whole reproductive life, and the disturbances of the menopause are the results of an auto-intoxication from products to which the system only gradually becomes more accustomed and tolerant, until finally, with the suppression of the genetic function, they cease to be produced. The influence of the ovarian internal secretion can not well be invoked to account for auto-intoxication symptoms, such as many of those of the menopause and those accompanying menstrual suppression and disorder seem to be. Chlorosis, with which menstrual disorders generally seem to be associated, often in a causal way, may also possibly be properly considered as, in part at least, a symptom of uterine auto-intoxication according to this theory of the uterus as an excreting glandular organ, and certain anemic disorders following parturition may possibly also fall into the same category.

It has heretofore been the custom to attribute all or many of these disturbances in the economy to a reflex influence from the genital organs, an easy but not very definite method of explanation. If we adopt the theory here proposed, that throughout the sexual life of women there is a constant contribution, it may be from all parts of the organism, of material destined for reproductive purposes, which failing its normal function must be thrown off through the process of menstruation, and which if retained causes promptly the symptoms of intoxication of the system, we have at least advanced a step beyond the mysterious and ill-defined "reflex influence" that has hitherto been invoked. The theory certainly has some merits and some facts apparently to support it, and it is, at all events, one that is suggestive and worthy of some consideration.

THE LIMITATIONS OF SERUM DIAGNOSIS.

While the preponderance of evidence thus far accumulated is in favor of the specificity of serum reactions the time is not yet ripe for a final conclusion upon this important subject. It certainly were a great gain if the diagnosis of diseases dependent upon isolable micro-organisms could be always established with certainty by this means. In many cases the test would not be necessary, but there remains a considerable number in which doubt exists from beginning to end. It is especially in these, and for hygienic and prophylactic reasons, that a reliable if not an infallible means of diagnosis would be of the greatest practical utility.

M'FADYEAN (*Journal of Comparative Pathology*, December, 1896) found that the blood serum from a case of glanders in the horse caused well-marked agglutination of glanders bacilli in bouillon culture, and FOULERTON (*Lancet*, May 1, 1897, p. 1201) has now made a similar observation in a case of glanders in man. In testing the serum a bacillary emulsion was made by adding five c.c. of a 0.5 per cent. solution of sodic chlorid to a five days old culture of the bacillus on glycerin-agar. The contents of the tube were shaken up gently and then allowed to stand for about an hour in order that any small particles visible to the naked eye might settle. The upper part of the fluid was then pipetted off and the emulsion thus obtained was found to be in every way suitable for the experiments. The bacilli used were of a stock isolated from pus derived from the patient in question. In hanging-drop preparations in which the proportion of serum to bacillary emulsion was one part to nine, large clumps always formed before the specimen could be transferred to the stage of the microscope for examination. With one part of serum to nineteen of the emulsion agglutination invariably occurred within ten minutes. The agglutinative action of the serum was equally well shown in test-tube experiments. Samples of normal human serum used in the proportion of one part to nine of the emulsion caused no change whatever in the bacilli, whether in hanging-drop preparations or in test-tubes.

On repeating the foregoing experiments with a similar bacillary emulsion, but substituting for the glanders serum antidiphtheric serum and also serum from cases of typhoid fever, equally well-marked agglutination of the glanders bacilli took place. Similar results were also obtained with bouillon-cultures of the bacilli, control experiments being carried on throughout. On reversing the experiments it was found that a certain though decidedly less active agglutination of the typhoid bacillus was caused by both antidiphtheric serum and glanders serum.

These observations, if confirmed, would render doubtful the value of the serum reaction in glanders as an aid to clinical diagnosis. In conclusion, the opinion is expressed that it is most unlikely that the unknown substance which in the serum of typhoid fever, for example, exerts so potent an influence on the typhoid bacillus should be inert as regards other bacteria. It should, therefore, not be surprising that the equally unknown but probably similar substance in antidiphtheric serum has an agglutinative action on the bacilli of both glanders and typhoid fever.

CORRESPONDENCE.

Klondike Nosology.

CHICAGO, Sept. 6, 1897.

To the Editor:—The editorial in the JOURNAL of August 28 headed "Klondike Nosology," recalls to me certain experiences in Alaska that might possibly supplement those of Dr. Rosse. His personal knowledge of the Alaskan climate appears to have been derived from summer trips upon government vessels, which in a country where winter reigns nearly two-thirds of the year, could hardly afford a perfectly adequate conception of all its phases and possibilities.

My own experience with that region dates back to a period considerably anterior to my medical education, but I can, notwithstanding this fact, recall some observations that in the light of subsequently acquired knowledge, may have some medical value. A brief summer sojourn would have given me a very different notion from that I actually obtained as to the climate and its effects.

Dr. Rosse makes but the briefest mention of the one disorder that is, I think, the most to be feared by those going into the country, at least where there is any possible predisposition to its occurrence, viz., rheumatism. I have seen both natives and whites disabled by it, and one of the worst cases of chronic rheumatism I have ever seen was in a Sitka Kaloshan Indian who had been transferred to the lower Yukon region. I have no doubt that many of those who spend one or more winters in the country will date troubles of this kind from that sojourn.

Scurvy is mainly a preventable disease, but a taint of it is likely to follow the long darkness and monotonous diet of an Arctic winter, and it is possibly from this that an exception I have noticed to Dr. Rosse's statement as to the healing of wounds, orignates. In men apparently in robust health, and conscious of no bodily ailment, I have seen the slightest scratch become a festering sore, requiring weeks for perfect healing. A slight cut of the finger would sometimes become a wide crack extending almost to the bone and this apparently without suppuration or causing severe pain, or great inconvenience to the sufferer. This occurred when what was thought to be reasonable care was taken as to cleanliness; neglected wounds followed pretty much the same course, according to my observation, as elsewhere, though I can recall no cases of erysipelas or other malignant process. Sloughing and suppuration were common enough after severe frost bites even when under good care. Among the Eskimos there certainly ought to be no lack of bacteria, and one of their common treatments of wounds was an application of a generally utilized liquid, stale urine, which from its strong ammoniacal nature seems to saponify the oily deposits upon the skin and thus tend rather to cleanliness. It should be added that they usually finished the treatment with ablutions of clean water and the general effect upon the intact skin was good rather than otherwise.

Alcohol may be one of the best antiscorbutics in summer, but I should disagree with Dr. Rosse as to its value in the far north in winter and doubt whether the quality of the liquor would have much difference on the natives. In the case of the St. Lawrence islanders, I have heard that the depopulation was mainly due, not directly to the alcohol, but to starvation following the debauches. They neglected to lay up their supplies and died in consequence, and it would have made little difference whether they were drunk from the meanest rot-gut or the best Hennessey brandy. I should say here that the Eskimo is the only North American aborigine that I have ever seen go deliberately into the retail liquor business, dealing out the drink to his fellows and abstaining himself. I doubt whether any other native would have such self-control under the constant temptation. They are born traders, however, and a keg of whisky well watered is one of the most profitable stocks in business, so one temptation probably balanced the other. They are as Dr. Rosse says, subject to colds and lung troubles and the epidemics of civilization have been especially fatal. I have heard of deserted villages from smallpox, and undoubtedly the grippe has had its run amongst them. Other disorders which they seemed especially subject to were mild ophthalmia, possibly originating in snow blindness or in their smoky huts, and various skin diseases; favus is one that I can recall. Syphilis and gonorrhea appeared to be rare at that time, but may be more prevalent now.

I can agree with what Dr. Rosse says as to their intelligence and capacity, but that has been remarked by many observers.

One thing remains to be mentioned, that is the depressing influence of the long winter darkness upon many who experience it. I have known of several cases of insanity probably from this cause, and at least three suicides. It is possible that there will be many cases of this kind in the Klondike crowds next winter, and I can say that the extreme north is not the best region for those who have a melancholic predisposition. Aside from this, and the dangers of rheumatism, scurvy, starvation, subsequent lung disorders, snow blindness, freezing etc., the far north is a fairly healthy latitude. Malaria, as Dr. Rosse remarks, has been observed on Cook's Inlet, and I have seen a Finlander suffering from what was apparently chills and fever after sleeping out in the tundra at St. Michaels in the month of May. A healthy man from a warm or temperate climate, with plenty to eat and wear, good shelter and cheerful company and surroundings and who keeps clean and who takes plenty of exercise, will generally stand his first winter well. He may find subsequent ones less comfortable, and it is quite possible that after his return to warmer latitudes he may have some reminder of his northern experiences in the way of rheumatism, lung troubles, etc. Of course this does not apply to men of especially rugged physique, but it is likely to be true of a large class of average individuals, and especially so with those who have any predisposition to such ailments.

Of the Klondike region itself I have had no experience, my personal knowledge of Alaska being mainly confined to the coast and lower Yukon district, like that of Dr. Rosse himself. But notwithstanding certain climatic differences that must exist, the perils to life and health must be in the main the same in both regions; what is true in this respect of the one is probably true also of the other.

Very respectfully, H. M. Bannister, M.D.

Dr. Upshur's Final Reply to Dr. Woodbridge.

Richmond, Va., Aug. 23, 1897.

To the Editor:—I had hoped not to trespass upon your valuable space further, but the offensive communication from Dr. Woodbridge in your issue of August 21 can not be passed unnoticed. Now, sir, it can not be possible that Dr. Woodbridge is ignorant of the fact that Messrs. Parke, Davis & Co. are advertising Woodbridge treatment of typhoid fever, and will send the literature to any one who applies for it. The pamphlet referred to contains liberal extracts from the several papers read by Dr. Woodbridge and refers to the source from which taken, therefore must be the genuine utterances of Dr. Woodbridge. Why does he permit this wholesale drug house to put him in so equivocal a position? Does he deny that the statements made in this "advertising circular" are genuine? But, sir, there is no need of examining the circular, his paper published in the July 10 number of the Journal is identical in style, statement and "*testimonials*" with the pamphlet. Now this word seems to be especially offensive to the Doctor. Let me say to him they are like the other testimonials referred to in being mere bald assertions, not proven from a scientific standpoint. The Doctor is kind in suggesting a title for my paper; had I had the honor of his acquaintance before the meeting of the Association no doubt it would have been adopted. He ridicules my quotations from the circular—it is *his circular*, or *purports to be*. The *Doctor's valuable lecture* on disinfection I will lay to heart and when opportunity occurs it shall be applied to his *manners*, which his communications show need purifying. He evidently does not know how a gentleman should con[illegible] a scientific c[illegible] that there is no justification or excuse for the utterance of a libel on the personal character of his opponent. I would advise this very progressive M.D. to buy some modern works on practice and study the pathology of typhoid fever; I think *even he* can learn something from Tyson, Osler, Wilson, Wood & Fitz and a number of other *modern* works on practice. In criticizing me he has no right to ignore the authorities I quote to sustain my position. I *had not* been a member of the ASSOCIATION only a "few hours" when I read my paper and would remind him that the cordial reception it received showed it had the approval of the Section. My time expired and a motion for its extension was unanimously carried. The statement that I have violated the written or unwritten law of the profession is in no sense true. What egotism for Dr. Woodbridge to arrogate to himself and endorsers that they are *the* medical profession. He distorts what I say to further his own argument. I do not wish it understood that good men are lacking in a true appreciation of the responsibility in the care of typhoid fever, but it is true that men trying conscientiously to do their duty fail to make accurate observations. I am glad to accord to my professional brethren all the courtesy which belongs to them in the report of medical facts or results, but I have a right to demand a reason for the hope that is in them and ought not to be required to take what is said on blind faith. No, not even from so absolutely an infallible man as the Doctor himself. I am sorry the Doctor has not the circular referred to; I have always found Messrs. Parke, Davis & Co. most courteous to the profession and I am sure they will supply the Doctor with one if he will write for it. He will then, after examining it, have an opportunity to forbid its *farther circulation*, if he desires (?).

Respectfully, J. N. UPSHUR, M.D.

The Antivivisectionists.

August 30, 1897.

To the Editor:—In your recent editorial entitled, "The Antivivisectionists and Their Little Bill," you allude to the appellation "of degenerates or perverts" being applied to those who are in favor of restriction of vivisection.

There is a larger number of the medical profession in favor of the antivivisection bill than its opponents suppose and they won't be "muzzled" by being called by revolting titles.

It is no more a convincing argument to liken humanitarians to weak-minded members of the criminal classes than it would be a just retort for them to claim that those most actively engaged against Senate Bill No. 1063 were men who simply desired to slaughter their thousands of dumb animals as a means of professional advertisement.

I beg to enter my protest, therefore, against what I consider an attempt to suppress free expression of opinion from the humaner members of our most noble profession through the creation of a false sentiment against them, as well as by the false statement of facts pertaining to the above-mentioned bill. E. O. N. K.

ANSWER:—In our remarks on the subject we were very far from saying that all antivivisectionists were perverts; we only said some of them were, and cited instances. There are no doubt many excellent persons in this movement who are simply misguided.

The Maker of a New Instrument.

AURORA, ILL., Sept. 2, 1897.

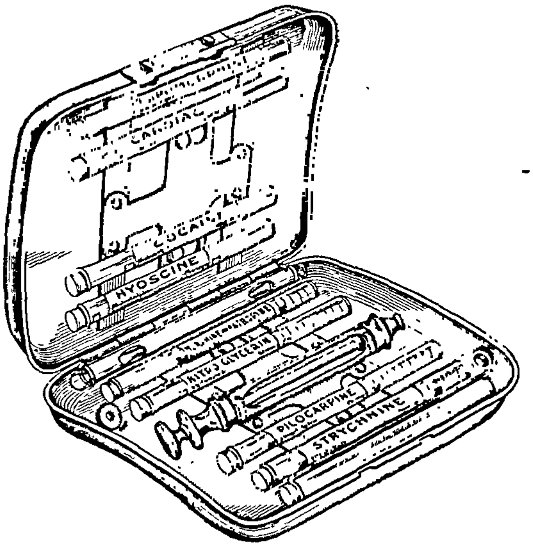
To the Editor:—Since the publication of my article in the JOURNAL on "A New Curette," I have been in receipt of numerous inquiries as to where the instrument is made. A footnote in the original article stated that it was to be made by Sharp & Smith, but, I presume from some oversight, was omitted. I shall deem it a great favor if you will make a note as to who the makers are in the next issue of the JOURNAL.

Sincerely, C. L. SMITH, M.D.

NEW INSTRUMENTS.

AN IMPROVED HYPODERMIC SYRINGE.

The accompanying illustration shows one of the latest improvements in the hypodermic syringe. The case is of aluminum and is curved to fit the body when carried in the vest pocket. It may be sterilized by boiling. The piston packing is of rubber and is greatly superior to asbestos which shreds, and to leather which has a tendency to harden. The packing may be speedily renewed by any one. This case was designed by the Mulford Company and is supplied with two reinforced needles and eight tubes of selected hypodermic tablets.



SOCIETY PROCEEDINGS.

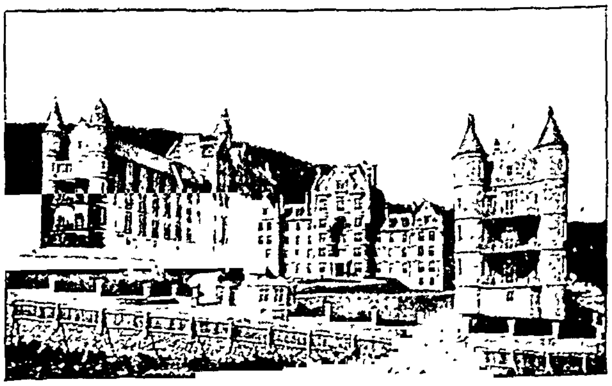
British Medical Association.

Sixty-fifth Annual Meeting, held at Montreal, Aug. 31 to Sept. 4, 1897.

T. G. RODDICK, M.D., M.P., Professor of Surgery in McGill University, Montreal, presiding.

The opening service of the Association was a sermon at the English Cathedral, St. Catherine Street, by the Right Reverend the Bishop of Niagara (Dr. Dumoulin) at noon, Tuesday, August 31.

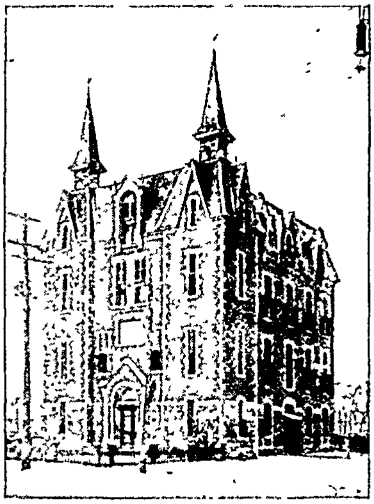
The opening ceremonies in the afternoon were held in Windsor Hall. The chair was occupied by the President of Council, Dr. Saundby, in the absence of Dr. Roddick, the President of the Association. In addition to the members of the Council of the Association; the Governor-General of Canada (the Earl of Aberdeen); the Lieutenant Governor of the Province of Quebec, Sir Adolphe Chapleau; the Mayor of Montreal; the Right Hon. Lord Lister and the Right Hon. Lord Strathcona and Mount Royal occupied places on the platform. Dr. Saundby



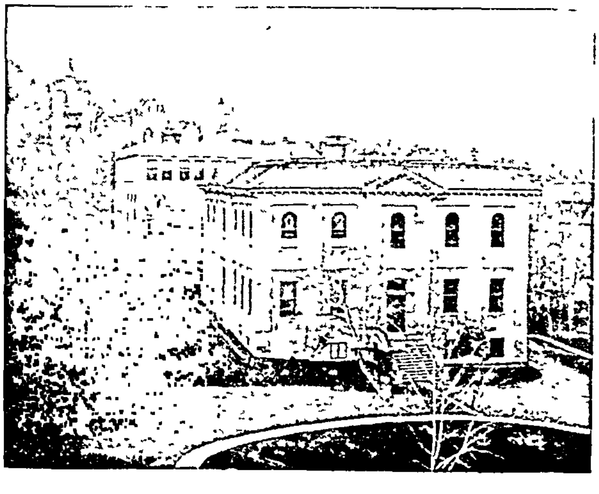
ROYAL VICTORIA HOSPITAL, MONTREAL.

spoke of the unusual circumstances of the meeting of the Association, as it had never before been held outside the British Islands, making the Montreal meeting an adjourned meeting, the first part of the annual meeting for 1897 having been held in London, July 27, in order to comply with the obligations imposed on the Association by statute and by its by-laws.

Dr. Roddick, taking the chair, introduced the Mayor of Montreal, who, welcoming the Association to the city of Montreal, spoke of the appropriateness of holding the first meeting of the Association outside the British Islands in the Dominion's metropolitan city and in a British colony under a colonial president, thus showing that the Association was not of Great Britain but of Greater Britain. He believed that nowhere in the sovereign's vast dominions had the Diamond Jubilee been celebrated with more loyalty or with more enthusiasm than in Montreal, as there, French-Canadians, Irish, Scotch, English and other nationalities, of varying creeds, vied with one another to do honor to themselves in honoring their world-honored sovereign. He spoke of McGill, Laval and Bishops Universities and other educational institutions of Montreal, and their living monuments to the names of such men as Lord Mount Stephen, McDonald, Redpath, Morris, Galt and others. Reference was made to the erection of Royal Victoria Hospital, which stands at the foot of Mount Royal, by the munificence of Sir Donald Smith and Lord Mount Stephen; Montreal General Hospital, the oldest hospital in the Dominion; Notre Dame Hospital; the Western General and other such institutions which give Montreal first rank in proportion to her population and size, so far as regards her institutions.



WESTERN GENERAL HOSPITAL, MONTREAL.

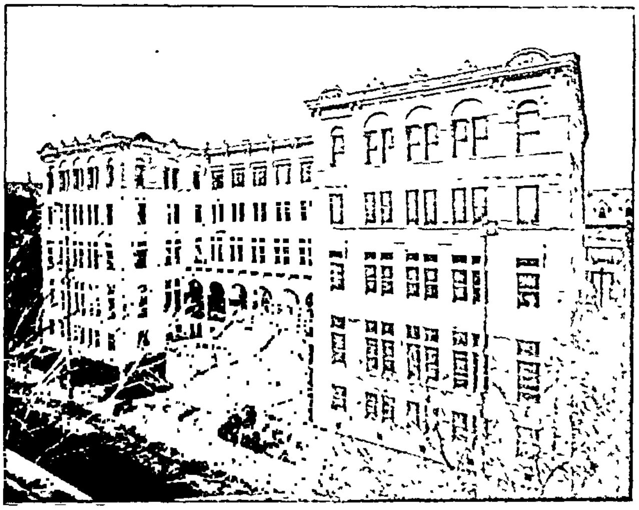


THE MEDICAL COLLEGE, MCGILL UNIVERSITY, MONTREAL.

Sir Adolphe Chapleau welcomed the Association in behalf of the Premier of Quebec, extending to them the freedom of the province, as every citizen was ready to extend to them the freedom of the country.

The Governor General of Canada (Earl of Aberdeen) gave the third address, welcoming the Association in the name of the Dominion.

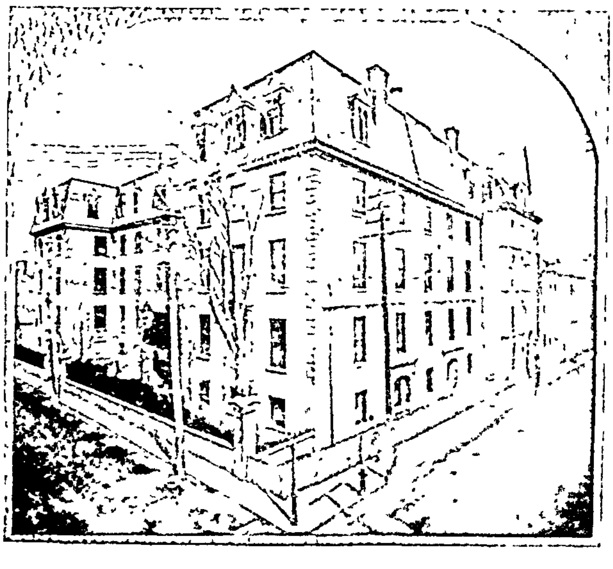
After the roll of delegates of foreign countries and medical societies was called and those in attendance were formally presented to the President and the Governor General, the presidential address was delivered by Dr. Roddick on:



LAVAL UNIVERSITY, MONTREAL.

CANADA, ITS MEDICAL LIFE AND RESOURCES.

He made many apt references to the distinguished guests; Lord Lister, the most illustrious surgeon of our generation; the representative of La Belle France, Dr. Charles Richet, professor of physiology in the University of France, and others.



MONTREAL GENERAL HOSPITAL.

He traced the history of the British Medical Association from its organization in 1832; went into detail concerning Canadian climatic conditions, the health resorts, the effect of the Canadian climate on European races, Canadian Spas, medical education in Canada, nursing, medical legislation in Canada, etc.

On motion of Lord Lister a vote of thanks was extended the speaker, after which Dr. Saundby expressed the obligations of the Association to the Governor-General, Lieutenant Governor Chapleau

In the evening a soirée was given at Laval University; an address by Professor Richet, official Representative of the French Government (to be published in the JOURNAL at an early date); and a reception by the Governor-General.

WEDNESDAY, SEPTEMBER 1.

The morning was devoted to section meetings at McGill University.

At the afternoon session the "Address in Medicine" was delivered by WILLIAM OSLER, M.D., F.R.C.P. (*vide* p. 507). The meeting was then converted into a convocation of McGill University and the degrees of LL.D. conferred on the following: The Right Honorable Lord Lister; Dr. Charles Richet; Sir Walter Foster; Sir William Turner; Dr. Henry Barnes; Prof. Michael Foster; Dr. W. H. Gaskell; Mr. Christopher Heath; Dr. Alexander Macallister; Dr. R. Saundby and Claud Wheelhouse.

The remainder of the afternoon was occupied by a garden party given in the grounds of the Royal Victoria Hospital, and the evening by a reception by Lord Strathcona and Mount Royal.

THURSDAY, SEPTEMBER 2.

The morning was again taken up with section meetings.

At 1 P.M. the Association and its guests were tendered a luncheon on Mount Royal, by the Mayor of Montreal. Following this the address in surgery, "The Surgeon of Old in War" was delivered in Windsor Hall, by Mitchell Banks, F.R.C.S., of Liverpool (to be published in the JOURNAL at an early date).

An international golf match, garden parties, and the laying of the foundation stone for the Nurse's Home at Montreal General Hospital, occupied the remainder of the afternoon. In the evening the annual dinner of the Association was given at the Windsor Hotel, and a concert at Windsor Hall.

FRIDAY, SEPTEMBER 3.

Section meetings, as usual, occupied the morning hours. The afternoon session was taken up by an "Address in Public Medicine," by Herman M. Biggs, M.D., Director of the Bacteriologic Laboratory of the Health Department of New York City. The address covered a wide field, was well received and contained much detailed information of the bacteriologic work of the Health Department of a great city, more valuable as giving the members of the Association an insight into the workings of one of our American cities.

After the address an invitation was extended the members of the Association, by the American Public Health Association, to be present at their twenty-fifth anniversary in Philadelphia, Oct. 26 to 29, 1897. The evening was taken up by a Conversazione at McGill University.

SOCIETY NEWS.

The Tennessee State Medical Society will meet next year at Jackson. The officers are W. D. Haggard, M.D., Nashville, Secretary; T. K. Powell, M.D., Dancyville, President.

The French Congress of Alienists and Neurologists was held at Toulouse in August, in honor of Pinel and Esquirol, the pioneers of the modern humane treatment of the insane in France. Esquirol's maxim was: "One must love the insane to be worthy and capable of serving them." Busts were installed in the capitol, similar to the statues already erected on the scenes of their labors, the Salpêtrière, Paris, and at Charenton. "The Diagnosis of General Paralysis" was the subject of the first address, by Arnaud, who described the dual orders of symptoms as: Physical, *i.e.*, troubles in speaking; the gradual and progressive internal ophthalmoplegia; psychomotor ataxia and cerebral accidents. 2. Mental, *i.e.*, the generalized and progressive dementia, evidenced by the lack of mental power, by the absurdity of the mental operations, association of ideas, reasoning, judgment, rather than by the absurdity of the ideas themselves; by the gaps in the memory; by the change in the moral sense, and in the conduct and actions. In certain cases of congestive insanity and pseudoparalysis it is impossible to differentiate at first, and also in the prodromic period while general paralysis may be suspected, there are no positive signs to establish the diagnosis. After 55, general paralysis is extremely rare. With a patient over 50, showing signs of arteriosclerosis, we must remember that generalized cerebral atheroma may simulate clinically general paralysis, or may be associated with it. True hemiplegia should also impose a doubt, as the probability of general paralysis is slight in that case, and some other pathologic condition certainly exists. Blindness opposes rather than favors the diagnosis of general paralysis. If the affection has developed rapidly, or after an infection (syphilitic) or toxic condition, and if there is alcoholism, it is best to wait for further developments before diagnosing. Others dwelt upon the relations between alcoholism, syphilis and general paralysis, for which they prepare the soil. Professor Mossé reported a case of an unknown disease, still undescribed; a neurofibromatosis of the cerebellum and base of the encephalon. Bézy's address on "Infantile Hysteria" is given in full in the *Progrès Méd.* of August 7. He agrees with Pitres that the hysteric child *nascitur non fit.* Neuropathic antecedents, scrofula, tuberculosis, gout, have all been signaled in the etiology. The manifestations develop according to the education, emotions and contagion. Traumatism and conditions of the prepuce requiring surgical intervention have also caused it to develop, even in very young children (Bosc, infant, eighteen months). Infective diseases have also aroused it.

The International Medico-Legal Congress, Brussels, August 2 to 7.—The following recommendations were adopted after addresses and much discussion of the subject of the criminal insane: 1, the establishment of a special asylum by the State for the criminal insane; the judicial authority alone to be the arbiter of their confinement; 2, the confinement can only be terminated by decree of the judicial authority, and only when the morbid affection is considered positively cured and free from all probability of a relapse. The judicial authority may decree the release provisionally and under certain conditions; 3, the decree of release from confinement to be revocable whenever the mental condition of the patient inspires serious fears of a relapse; 4, every convict who becomes insane to be confined in a special asylum, or at least in a special quarter of an asylum; 5, these measures are to apply also to those individuals convicted of a crime or misdemeanor whose penalty has been attenuated on account of their mental condition. If confinement is necessary when their term of punishment expires, it shall be decreed by the jurisdiction in which they were tried. Numerous telling examples showing the necessity of these recommendations were described; among them we note the case of a parricide recently acquitted in Paris, on the ground that he was an "impulsive," who at once resumed his occupation of a barber. Dr. Norman Ken's address on the "Legal Responsibility of the Drunkard" was repudiated by the Congress in so far as it admitted the excuse of irresponsibility for drunkards. "Intoxication by Carbonic Oxid" was presented by Bergé and Nobele, while Brouardel, Vleminckx and Depaire joined in the discussion. The Congress finally adopted the conclusions: 1. Death from carbonic oxid is very frequent and often fails of recognition. 2. This intoxication rarely occurs alone, but is usually associated with other gases, which accounts for the variety of phenomena observed. 3. It is rarely used with criminal intent and death from it is usually accidental, although the number of suicides from it is quite large, especially in France. 4. The duration of exposure is as important a factor as the amount inspired. 5. The smallest proportion prejudicial to health is 0.05 per cent. 6. Intoxication is possible when the gas is still not sufficiently concentrated to extinguish a lamp. Intoxication from illuminating gas is also possible when the concentration is not sufficient to produce an explosion in contact with flame. 7. Complete saturation of the blood with carbonic oxid is not possible during life. It has never passed beyond 79 to 80 per cent. 8. Death from carbonic oxid is not always accompanied with a lowering of the temperature. 9. Sugar has frequently been noted in the urine of persons intoxicated with it. 10. The diagnosis of intoxication from this cause is based principally on the spectroscopic and chemic examination of the blood, but the characteristic indications in the blood may be entirely absent if, in addition to the CO, the inspired air contained also another gas, carbonic acid for instance. 11. The time of its disappearance from the blood is still undetermined. Pouchet has observed it still present sixty hours after the intoxication. 12. The differential diagnosis between intoxication from carbonic oxid and from illuminating gas is very difficult, and neither chemic analysis nor the anatomo-pathologic changes are sufficient to distinguish these two modes of intoxication. Study of the accompanying circumstances can alone decide. 13. Carbonic oxid is unique in its action on the hemoglobin, preventing the passage of the oxygen to the tissues, and it has still another special effect, evidenced by the facts: 1. That the symptoms of intoxication from it differ from those of simple asphyxia. 2. That serious symptoms appear before the blood contains enough of the CO to allow them to be ascribed to the asphyxia. 3. Intoxication from it is followed by profound disturbances in the nervous system, also by trophic disturbances in the skin and intestines, which can not be ascribed to simple asphyxia. 4. It can also lead to chronic intoxication characterized by globular anemia accompanied by disturbances in the general nutrition. The question of medical secrecy led to long discussion, in the course of which Brouardel remarked that when there is a medical secret it should be absolute, but that many things in medicine are not secret and others only occasionally secret. He added that the physician's declarations of death in France do not reveal the name of the deceased, and that the persons who receive the declarations of contagious diseases are sworn to secrecy and keep their pledge. The question was finally referred to the next International Congress, Paris, 1900, expressed as follows: The physician should have the right to invoke his professional secrecy in regard to the facts learned by him, in the exercise of his profession, concerning a person who is, might be or might have been implicated through these facts in some legal or criminal proceedings, or affected in his honor or reputation. Other subjects discussed were "Subserous Ecchymoses," "Internal Factors in the Putrefaction of Bodies," "Docimasia Pulmonum," "Intoxication from Meat," and "Hypnotism and Criminality." The attendance was not so large as expected, but was thoroughly international and will prove to have hastened the day when the great science of forensic medicine, requiring such encyclopedic knowledge and experience, will receive due recognition and support from the state.

Mississippi Valley Medical Association.—Arrangements are now about completed for the meeting of the Association at Louisville on Oct. 5–8, 1897. The different passenger associations have granted a round-trip rate of one and one-third fare on the certificate plan. The sessions will be held at the Liederkranz Hall, and the headquarters will be at the Louisville Hotel. The following are among those whose papers have been accepted:

J. B. Murphy, Chicago, Address on Surgery; J. V. Shoemaker, Philadelphia, Address on Medicine; I. A. Abt, Chicago, The Nature of Croup following Measles; J. C. Ayers, Cincinnati, Further Observation in the Use of Hydrogen Dioxid in the Treatment of Blepharitis Marginalis; W. F. Barclay, Pittsburg, Milk, Its Production and Uses; J. F. Barnhill, Indianapolis, Regarding Hypertrophied Faucial Tonsils; J. M. Batten, Pittsburg, Report of Five Cases of Heart Disease; J. K. Bauduy, St. Louis, Some New Thoughts in the Treatment of Locomotor Ataxia; A. C. Bernays, St. Louis, Paper; A. F. Bock, St. Louis, The Surgical Treatment of Basedow's Disease; John Young Brown, St. Louis, Some Remarks on Appendicitis; Sanger Brown, Chicago, Some Anomalous Conditions of the Spinal Cord, with Report of Cases; Eug. G. Carpenter, Cleveland, Posterior Radicular Neuritis; W. Cheatham, Louisville, Of what Assistance has the Serum Treatment of Diphtheria been to the General Practitioner; Archibald Church, Chicago, The Differential Diagnosis and Treatment of Cerebral Hemorrhage and Cerebral Softening; J. W. Cokenower, Des Moines, Iowa, Neurotic Deformities in Children; A. H. Cordier, Kansas City, Ectopic Pregnancy, Clinical and Pathologic Phases; J. Homer Coulter, Chicago, Paper; Ephraim Cutter, New York, Beef—A War Paper; Richard Deway, Wauwatosa, Wis., Some Cases of Insanity in Adolescence; Arch Dixon, Henderson, Ky., To Drain or not to Drain; Kennon Dunham, Cincinnati, The Hypodermic Syringe and Its Use in Malaria; C. Travis Drennan, Hot Springs, Ark., Report of a Case of Anesthesia Produced by Mercury, with Remarks; Sherwood Dunn, Los Angeles, Mothers and Daughters; J. Rilus Eastman, Indianapolis, Diagnosis by Inspection in the Urinary Tract; A. R. Edwards, Chicago, The Diagnosis of Abscess of the Liver based upon a Study of Twenty-five Cases; Jos. Eichberg, Cincinnati, Typhoid Fever Treated Without Cold Baths; C. Fisch, St. Louis, The Antitoxic and Bactericidal Properties of the Serum of Horses treated with Koch's New Tuberculin (T. R.); F. R. Fry, St. Louis, Pressure Symptoms After Head Injuries; A. H. Goelet, New York, The Surgical Treatment of Fibroid Tumors of the Uterus; Spencer Graves, St. Louis, Appendicitis; H. Hatch, Quincy, Ill., Severe Injuries from Electricity and What Best to Do; A. G. Hobbs, Mouth-breathing in Children; discussion opened by Dr. H. W. Loeb; B. W. Holliday, Cleveland, The Civic Aspect and Therapy of Some of the Common Neuroses; A. F. House, Cleveland, Symptoms and Surgical Treatment of Perforated Intestinal Ulcers; W. H. Humiston, Cleveland, Ohio, Cocain Anesthesia in Perineorrhaphy; C. C. Jacobs, Frostburg, Md., The Treatment of Obstructive Lesions of the Urinary Tract, Anterior to the Bladder, with Especial Reference to the Enlargement of the Prostate Gland; A. C. Klebs, Chicago, Paper; E. L. Larkins, Terre Haute, Ind., Appendicitis; F. F. Lawrence, Columbus, Ohio, Hysterectomy; Elmer Lee, New York, The Elimination of Empiricism in the Treatment of Pneumonia; I. N. Love, St. Louis, The Relations of the Secular Press to Medicine and the Public; C. F. McGahan, Aiken, S. C., The Treatment of Pulmonary Phthisis; A. H. Meisenbach, St. Louis, A Plea for Early Operation in Cholelithiasis; L. Harrison Mettler, Chicago, Neuroses of Gout; Robt. T. Morris, New York, Paper; Harold N. Moyer, Chicago, Paper; A. M. Owen, Evansville, Ind., Cathartics and Constipation; A. J. Ochsner, Chicago, Treatment of Hernia in Old Men; Curran Pope, Louisville, Ky., Sanitoriums a Necessary Factor in the Treatment of Chronic Diseases; Joseph Price, Philadelphia, Paper; J. Punton, Kansas City, The Growing Needs of Medical Political Organization; D. C. Ramsey, Mt. Vernon, Ind., Municipal Sanitation of Tuberculosis; A. Ravogli, Cincinnati, Tuberculin in Dermatology; B. Merril Rickets, Cincinnati, Abdominal Incision for Ascites; Byron Robinson, Chicago, The Classification of Peritonitis; Enno Sander, St. Louis, The Carlsbad Springs of the United States of North America; E. W. Saunders, St. Louis, Therapeutic Properties of Infant Foods; E. J. Senn, Chicago; The Treatment of Suppurating Fistulous Tracts; E. B. Smith, Detroit, Experimental Surgery; J. O. Stillson, Indianapolis, Retro-bulbar Optic Neuritis; L. Strauss, St. Louis, Primary Tuberculosis of the Rectum with Report of Cases; J. A. Stuckey, Lexington, Ky., Intratympanic Surgery in Chronic Suppuration; J. B. Taulbee, Mt. Sterling, Ky., The Treatment of Wounds by the Open Method; H. M. Thomas, Chicago, Experimental Work of the Penetrability of Vaporized Medicaments in the Air Passages; K. K. Wheelock, Fort Wayne, Ind., Plastic Operation for Reforming Interpalpebral Space; Alex. C. Wiener, Chicago, Congenital Dislocation of the Hip; Frank Woodbury, Philadelphia, Paper.

Titles of papers should be sent to Dr. Thomas Hunt Stucky, President, Louisville, or to Dr. H. W. Loeb, Secretary, St. Louis.

BOOK NOTICES.

Transactions of the Medical Society of the State of New York for the year 1897. Cloth, 585 pages. Illustrated. Published by the Society, 1897.

The work is well edited, well bound and on excellent paper. The contents comprise reports of committees, of list of members in attendance at the 1897 meeting, minutes of the proceedings, obituaries, lists [illegible] the Society from [illegible] organization to the [illegible] conditions of bility to membership, county medical societies and incorporated voluntary medical societies with forty-six papers, many of them of great value to the practitioner.

Transactions of the Sixth Annual Meeting of the American Electro-Therapeutic Association, held Sept. 29, 30 and Oct. 1, 1896, at Boston, Mass. Cloth, 140 pages. Illustrated. Published by the Association.

Lists of officers, honorary fellows, fellows and associate fellows, committees and the Constitution and By-Laws occupy sixteen pages. The remainder of the text is taken up with the "Proceedings of the Sixth Annual Meeting," including many papers of interest and value. An appended chart is so arranged that the reader can instantly note the symptoms, treatment, results, etc., of the cases referred to in the various papers.

First Annual Report of the State Board of Medical Registration and Examination of Ohio, 1896. Cloth, 180 pages.

The report of the Secretary and an official register of physicians, arranged by counties, occupies the major portion of the book. There is also an index to the official register: 1. Graduates. 2. Legal Practitioners. An alphabetical list of midwives and of physicians holding one year certificates issued on examination is also given; by the appendix this is brought down to March 8, 1897. The statutes of Ohio regulating the practice of medicine and surgery, occupy thirty-two pages, including a list of colleges recognized by the State Board during and prior to 1896.

Transactions of the Indiana State Medical Society, 1897. Cloth, 500 pages. Illustrated. Indianapolis. 1897.

This volume covers the forty-eighth annual session of the Society held in Terre Haute, May 20 and 21, 1897. Besides the "President's Address" and thirty-seven other papers, the book contains reports of the various committees, stenographic report of the transactions, the Constitution and By-Laws, a list of the delegates, a list of the members and officers of county societies and an alphabetical list of members. The work is well edited and on excellent paper.

Proceedings of the Nebraska State Medical Society. Twenty-ninth annual session. 1897. Cloth, 375 pages. Illustrated. Published by the Society.

This volume contains, as the title indicates, full proceedings of the Society; a list of the officers, a list of the members, forty-six papers, minutes of the session, etc. A well arranged index adds much to the usefulness of the volume which is a credit to the Society both in contents and workmanship.

Illustrated Catalogue of Batteries and Electro-therapeutic Appliances. Manufactured by the McIntosh Battery and Optical Company. Chicago.

This edition contains descriptions of many new appliances and is fully up to the standard of its predecessors. The net prices of the articles are substituted in place of gross amounts admitting of misleading discounts.

PUBLIC HEALTH.

Yellow Fever.—An outbreak of yellow fever is officially announced at Ocean Springs, Miss., and one case has appeared at New Orleans, traceable to a sojourn at Ocean Springs. As usual the initial cases were termed cases of dengue, and the suspicions of the public if any existed were allayed, but "yellow jack," like murder, "will out," and the discovery has created something very like a panic in those places where the people were accustomed to go to Oceans Springs, Pass Christian, Biloxi and Pascagoula for the sea bathing, and gulf breezes. The usual talk of shotgun quarantines is heard, and stringent quarantine and inspections by the duly authorized State officers. In the hands of Dr. Saunders, Dr. Oliphant, Dr. Patton, Dr. Haralson, Dr. Eugene Wasdin, M.-H.S., and others the public may be assured that all will be done that can be done to prevent the spread of the disease. That their effort may be crowned with success is the fervent wish of every sanitarian, but the number of cases that is reported, makes it probable that even the best directed efforts will not avail to prevent other cases here and there. Prompt isolation of these cases, which will occur this week if at all, will prevent a further spread. It is too soon just now to say much about the origin of the epidemic, although its source is doubtless easily discoverable and was long ago pointed out.

A Yellow Fever Suspect at Boston.—At midnight, August 31, the steamer *Orion*, Captain Smith, bringing 2,058 bales of wool from the wrecked steamer *Ethel Gonda*, arrived at quarantine and was there detained several hours. One of the divers died at St. Lucia on August 12, after a two weeks illness of what might have been by liberally doubting "Chagres fever," but as during the voyage other suspicious cases were developing one of the party was taken ashore at Galloup's island to be under observation for two or three days. The culture method is to be resorted to for diagnostic corroboration. The effects of the crew however were thoroughly fumigated before the steamer was allowed to come to Boston.

A Quarantine Against Smallpox has been declared against trains from Montreal by the Health Board of Ottawa.

Cholera in Bombay now seems to be replacing the plague, and the city's sanitary condition is still far from perfection.

The Inter-State Conference on Convict Labor will meet during this month at Nashville, Tenn. What is wanted is a system under which all able-bodied convicts will be kept at work and treated humanely. There must be a golden mean between idleness and the chain-gang.

Great Britain in the Van.—A motion is to be made in Parliament, as soon as it reassembles, "that in the opinion of the House of Commons it is desirable that a Department of Public Health be constituted, and that the same be under the charge of a responsible minister having a seat in Parliament."

Health in Michigan.—The August report, as compared to that of July (*vide* JOURNAL, August 28, p. 452), shows consumption was present at 193 places; measles at 52; diphtheria at 39; scarlet fever at 28; whooping cough at 23 and typhoid fever at 56 places. Compared with the August average for eleven years (1886–1896) influenza was more prevalent, and remittent fever, dysentery, cholera infantum, intermittent fever, cholera morbus, consumption and inflammation of the bowels less prevalent.

Yellow Fever at Colon.—A news item in the New York *Tribune* (August 31) is to the effect that the Colombian authorities are striving to suppress the true condition of affairs, and with somewhat of success as the physician in charge is a government employe, Dr. Randall, reports ten cases and seven deaths in the French hospital at Colon, and adds that he knows at least six cases of yellow fever that died there whose names do not appear. He believes that there have been three times as many cases with the same ratio of deaths as stated in his report. Dr. Randall adds that there have been treated at the St. Thomas Hospital, Panama, to the above-mentioned date thirty-six cases with fourteen deaths, and at the French hospital fifty-eight cases with twenty six deaths.

Bubonic Plague Prophylaxis.—Dr. Haffkine (*Crit. Med. Jour.*) utilized the knowledge gained by Koch in his cholera bacillus experiments, namely, that the bodies of Koch's bacilli cultivated on solid media, when inoculated into persons exposed to cholera, produce a reduction of susceptibility and of the absolute mortality from the disease without affecting the case mortality. He therefore combined the bodies of the microbe with the toxins secreted in the surrounding media. The procedure was the killing of the microbes by a temperature of 70 degrees C., and then the use as a prophylactic injection of the nutrient fluid containing the dead microbes, along with the toxins produced and held in solution. From January 10 to May 6, 1897, 11,362 have been inoculated with the fluid with but twelve fatal cases. Of these, three were already sick at the time of inoculation. and three others contracted the disease within twelve hours of inoculation. The question seems to be between mitigation and cure.

Value of Antitetanus Serum as a Preventive.—Nocard reports to the Académie de Médecine of Paris, as the result of thorough investigation, that antitetanus serum is *unfailingly and absolutely effective in preventing tetanus.* He has distributed 7,000 vials since August, 1895 each containing 10 c.c., and he reports the effect on 2,727 animals (2,395 horses, donkeys or or mules; 44 bulls; 82 rams or lambs and 206 hogs. Each received two injections at an interval of ten to twelve days (20 c.c. for larger animals and 6 to 10 c.c. for the smaller). Three hundred animals received the preventive injection immediately after an operation (castration, amputation of the tail, ablation of tumor, operation for cryptorchidia or hernia, etc.), and not a single animal was affected with tetanus. A second group includes 400 animals which were injected with the serum from one to four days after an accident, a fall, bite or kick from another horse, bruise, wound soiled with dirt or manure, etc., none of whom succumbed to tetanus, and only one contracted the disease, a horse injected five days after an injury at the hands of the farrier. The disease was extremely benign in this case and the horse was at work again seven days later. A weak dose of the serum is sufficient to prevent tetanus if injected shortly after the animal has received the dose of toxin inevitably fatal for the control animals. The tests were made in localities noted for the prevalence of the disease, some of the farmers having been compelled to abandon certain operations that enhanced the market value of their stock on account of the number lost by tetanus. His sixty-three correspondents, while testing the serum, observed 259 cases of the disease in their other animals not treated (191 horses, 57 rams and 11 cattle). The *Bulletin*, July 27, contains the tabulated details.

Anthrax in Pennsylvania.—The recent outbreak of anthrax in Pennsylvania may arouse a controversy in which more than one of the National Bureaus may be involved. The Secretary of the Treasury is to report the facts to the Secretary of the Department of Agriculture as soon as he returns to Washington. The exclusion of infected foreign hides is a subject with which the Treasury Department alone has to deal, but the regulations for the disinfection of such hides before shipment to the United States were formulated in the first instance by the Chief of the Bureau of Animal Industry, recommended by the Secretary of Agriculture and adopted by the Treasury Department. The carrying out of these regulations is one of the duties of consular officers of the United States in foreign countries from which hides of neat cattle are exported to the United States. The Pennsylvania case is not a new one, except that it involved the loss of human life, that loss being attributed to the results of tanning infected foreign hides, but the subject is beset by serious difficulties. In the first place, the law itself is defective. It applies only to "neat cattle and the hides of neat cattle," whereas the skins of sheep and goats, and wool and hair also, may be infected with the germs of anthrax and other infectious or contagious diseases. The intent and purpose of the law as expressed in the statute are to prevent "the introduction or spread of contagious or infectious diseases among the cattle of the United States." In the second place, anthrax is a disease which is not uncommon among domestic cattle, the hides of which are offered for sale in the domestic markets. Moreover, according to the best authorities, it is exceedingly doubtful whether by any process of disinfection the vitality of the germs of anthrax can be destroyed. That is the opinion of Dr. Salmon of the Department of Agriculture, who has devoted much study to the subject.

Alien Rule as a Conservator of Races.—An item in an English paper, with the census of Egypt as an inspiration, points out a gain of 42 per cent. in the population during fifteen years, the greater part of which has been gained during the British occupation. By a curious coincidence a French newspaper also comments upon the French-Canadian increase from 70,000 in 1765 to 1,800,000 in 1891, and more than two million at present. At the close of the civil war in the United States an official enumeration of the population of British India, made by the British Government in 1867, put the population of that country at 144,000,000 exclusive of 47,000,000 inhabitants in districts under British jurisdiction but not under direct British control. This was thirty years ago and the population of India at that time was 191,000,000 in all. By the last imperial census made by the British authorities, the population of India was 287,000,000. The credit of the phenomena is cheerfully given to the introduction of superior sanitary regulations and to a government with a more just dispensation of rational laws as well to a greater premium on life-values in general. Dependence or even antagonistic rule does not seem to have been a factor in these conclusions. The French Canadians who have shown, during the past century, so large an increase, are exhibiting in their colonies in New England a like, if not a larger, ratio of increase, the material conditions in the United States being better than they are in Canada. Australia is another English dependency, though it is less dependent than most English colonies, which has shown a remarkable increase in population during the past twenty years, whereas those Danubian States which acquired their independence some years ago have advanced some in population though relatively little when compared with the neighboring States either left under Turkish jurisdiction or put under the rule of Austria. May not clanship with its more agreeable domestic relations, an acceptance, tacit though it be, of the caste system, and the cheerful acceptance of surroundings have more to do with these results than racial pride cares to admit. Still the subject is a most interesting one as proven by the plaudits of the press for the broad English philanthropy exhibited during the plague and famine in India.

Respiratory Manifestations of Plague.—The *Medical Press and Circular* calls attention to the fact that a very material source of error appears to exist in regard to the devastations of the plague, in the fact that some of the death losses have been charged against pneumonia and other respiratory causes. Regarding the death of a prominent English official of Bombay, the *Circular* remarks: "He exhibited none of the ordinary signs of bubonic plague, but a bacteriologic examination proved beyond a doubt that his death was caused by the specific organism of the disorder in question. A similar result was obtained in three other cases where hospital patients were reported to have died from pneumonia. In view of these facts, the mortality returns of all places where plague has been epidemic will have to be read by the statistician in a fresh light. In Bombay, for instance, there has been of late an enormous increase in the official list of deaths published under the head of 'respiratory diseases.' It may fairly be assumed that a proportion of such cases, although diagnosed as pneumonia, fever, or bronchitis, were really due to bubonic plague of an atypical or ambulant form. The danger of non-recognition of so virulent and eminently contagious a disease is sufficiently obvious to require no more than passing mention. The fact of such an occurrence has long been known to medical writers on the subject, but it may be doubted if it has gained anything like wide recognition. The reason for this local manifestation offers a problem of great interest and importance to the scientific [illegible] investig

Mytilotoxin, the Ptomain of the Mussel.—The oyster is not the only shell-fish that is dangerous to man, when obtained for food from localities that are near to sewage outlets. Dr. Ridley Bailey, medical officer of health of Bilston, England, in a recent report, records an instance in which four persons, visitors to Blackpool, were seized with symptoms of ptomain poisoning shortly after consuming raw mussels procured from the vicinity of a sewer outfall, and two of these four persons subsequently developed enteric fever at such a date after the ingestion of the mussels as to render it highly probable that the shell-fish were the means of conveying the disease. These facts were reported to Dr. Jasper Anderson, medical officer of health of Blackpool, who stated that there were at that place in October last no less than six cases of enteric fever which had apparently been caused by the ingestion of raw mussels procured from a bed where sewage contamination was a matter of probability. Dr. Anderson very properly had notices placed on the mussel beds warning the public as to the danger of consuming the fish. Ptomain poisoning as the result of eating mussels dates back, however, considerably earlier than 1883, and it is recorded that in 1827 some thirty persons were attacked with serious symptoms, which in two cases ended fatally, after eating mussels collected from the dock gates at Leith, and animals to which some of the mussels in question were given were similarly affected. Amongst other disasters of a like nature may be mentioned that of Wilhelmshaven, where the mussels which caused the mischief were procured from the bottoms of two vessels in the harbor; and in 1890 there occurred what was known as the "Seapoint calamity," in which a mother and four children died from the effects of eating mussels procured from a locality to which sewage had access. There is still much to be learned in connection with the subject of mussel poisoning, but it is obvious that there are other factors than idiosyncrasy involved. It is generally considered that the poisonous effects are due to what is known as mytilotoxin, a poison produced by the agency of bacteria which have as a rule been conveyed to the mussels through the sewage pollution of the water in which they have grown or been placed; and although there would seem to be certain instances on record in which sewage could hardly have polluted the water, a large number of outbreaks have been caused by mussels taken from places liable to pollution of one kind or another, and there is thus evident need for some control of the mussel industry. The cooking of all mussels intended for human consumption would doubtless do much to remove the risks of contracting enteric fever, but this process would not be equally effective against ptomain poisoning. In this latter connection it may be of practical utility to record that in the Wilhelmshaven outbreak, which was investigated in one or another of its aspects by numerous observers, amongst whom were Virchow and Salkowski, it was discovered by the latter that mytilotoxin became inactive when treated with carbonate of soda, and that mussels boiled for some six minutes in a solution of this salt lost their toxic properties, a fact which appears to afford indication for treatment in cases of poisoning by mussels.

Sewer Air and Sewer Gas.—It has been chiefly in England that the injurious action of sewer gases escaping into houses was insisted upon and typhoid fever was one of the principal diseases attributed to these causes. The reports of Simon on the Sherborne epidemic in 1872 and of Buchanan on the outbreak of typhoid fever at Caius College in 1873 are quoted as representative of the opinion of English experts. In contradistinction to these views, the majority of writers on hygiene in Germany maintain that sewer gases are incapable of disseminating typhoid fever or other infectious diseases; and, in support of these conclusions, allusion is made to the investigations of Flügge, Gärtner, Preusnitz, Rubner and Soyka. As early as 1881 the last named authority demonstrated by statistics at the Vienna meeting of the society that cities provided with sewers were not in any way more liable to the attacks of diseases of this type than those wholly undrained; indeed, he proved the converse of this theory and showed that in a series of towns which had recently been sewered on the modern system the mortality from typhoid fever had diminished and that in those parts of the towns where the sewerage was defective the cases of typhoid fever were more frequent and more severe than in those quarters which were well drained. Many other authorities were cited and figures given to show the condition of drained and undrained towns, among which the facts relating to Dantzig and Munich before and after the introduction of drainage are recorded, also the investigations of Baron into thirty-seven undrained towns and forty-six towns provided with a system of sewers. Passing thence to the discoveries of Pasteur and Koch and their followers it is shown that a correct knowledge has now been gained of actual disease germs and of the best means of withstanding them. It may be pronounced with absolute certainty that any given disease can only occur when the known organism recognized as the active agent of the same has acquired vitality. In the absence of the typhoid bacillus there can be no typhoid fever, and where there is no cholera vibrio there can be no cholera. The gases caused by putrefaction, however poisonous they may be, can not produce diseases of the above kind. The author points out that certain of these pathogenic germs which may enter the sewers mixed with fecal matters and soiled water do not find in them very favorable conditions for their existence, and that for the most part these organisms lose their virulence in sewage water. In order that the sewer-gas theory may be realized it must, however, be assumed that certain of these infectious germs are capable of floating in the air and thus entering dwellings. Nageli has, however, shown that this is not possible and he has proved that these germs can neither ascend into the air nor be given off from moist surfaces; and in the air of sewers, moreover, bacteria have been ascertained to be invariably present in but small numbers; indeed, frequently such air is absolutely free from these organisms. Uffelmann has been at some pains to ascertain the species of bacilli found in sewer gas and a list of these is given. It is stated that it follows from these arguments that there is no proof of there being any connection between sewer gas and the spread of epidemic diseases. On the question of the extent to which, apart from their liability to spread disease, sewer gases may prove injurious to health the author asserts that this depends mainly on the degree of concentration in which certain undoubtedly poisonous gases exist which are found in sewers and other places where putrefying matters are collected and stored. The thorough and effective ventilation of sewers and soil pipes is the best mode of combating this evil. A distinction is drawn between sewer air and sewer gas and it is pointed out that the latter can only form in sewers which contain dead ends and in other places where effective ventilation is wanting. In well-constructed sewers the contents pass away freely and rapidly without undergoing putrefaction and the air in such sewers is in no way unhealthy. The house drains and soil pipes are much more likely to engender evil smelling and injurious gases than are the sewers.—Dr. S. W. Abbott in the *Boston Medical and Surgical Journal*, April 8.

NECROLOGY.

EDWIN M. KITCHEL, M.D., assistant professor of histology and pathology in his Alma Mater, the College of Physicians and Surgeons, New York, died as a result of injuries received by falling from a piazza, in the course of a game of "blindman's buff." This occurred at the summer home of his family at Hulett's Landing, Lake George, on the evening of August 24. The patient was taken to Roosevelt Hospital, New York City, but death from the spinal injury resulted August 26 at 1 A.M. He was the only son of James T. and Irene A. Kitchel of Newark, N. J.

J. D. THOLOZAN, M.D., born in France in 1820, served in the army and as professor at Val de Grace until 1865, when he was sent to Persia in an official capacity and became in time the body physician of the late Shah of Persia, which reponsible position he filled for thirty years, and accomplished much in introducing hygienic and sanitary ideas into the country. He was an *associé national* of the Acad. de Méd. and of the Acad. des Sciences, and also commander of the English order of St. Michael and St. George, which conferred the title of Sir upon him. His best known works were on the "Bubonic Pest," "Cholera," the "Causes of the Decadence of the Mussulman Nations," and "Pulmonary Hemorrhage," with several treatises on quinin, etc., published in Persian.

A. H. Bailey, M.D., Santa Cruz, Cal., August 24.——E. L. Finley, M.D., Streator, Ill., September 1, member Illinois State Medical Society.——George Sproson Jones, M.D., Covington, Ind., August 25, aged 56 years.——F. M. Pearman, M.D., Warsaw, Ind., September 3, aged 61 years.——John A. Richards, M.D., Farmington, Me., August 28, aged 68 years.——Thomas J. Hayes, M.D., Beverly, Mass., August 26, aged 35 years, member of the Massachusetts Medical Society.——J. E. Albee, M.D., Detroit, Mich., September 1.——John M. Swift, M.D., Northville, Mich., August 30, aged 65 years.——William H. Brinley, M.D., Minneapolis, Minn., September 1, graduated from Yale Medical Department, 1881.——George W. Vogler, M.D., Philadelphia, August 26, aged 42 years, at Estes Park, Col.——H. R. O'Connor, M.D., Pittsburg, Pa., August 30, aged 44 years.——Dr. Ballue, of Paris and Arras, drowned from collision of his yacht *Priny* with the Belgian mail steamship, of Dunkirk, aged 40 years.——Benjamin R. Whitaker, M.D., University Pennsylvania, 1866, of Phenixville, Pa., died in Philadelphia, August 18, aged 53 years.——John R. Cabell, M.D., University of Virginia, 1850, was assassinated by a tenant of his farm August 26. He was a resident of Danville, Pittsylvania Co., Va.——Louis Fellows Root, M.D., College of Physicians and Surgeons, New York, 1882, died in Tarrytown, N. Y., September 3, of cardiac disease. He was born in Chatham, N. Y., Feb. 19, 1859.

MISCELLANY.

A Source of Wealth.—Last year California marketed 452,110 gallons of mineral water, valued at $249,580.

Cigarette Smoking in Japan is on the increase. Every month 13,000,000 imported and 52,000,000 native cigarettes are being consumed. Women and children smoke almost as much as men.

Carbohydrates in Leuconuclein.—Bang reports that he has succeeded in splitting a pentose from the nuclein of the leucocytes, leuconuclein, in a suppurated tuberculous pleural effusion.—*Deutsche med. Woch.*, No. 21.

Neuropathic Curvature of the Spine.—A careful study of two cases of curvature of the spine by S. J. Popow, is published in Nos. 14 and 15 of *Wratsch.* By exclusion of other pathologic relations he is forced to the conclusion that each case had a neuropathic basis.—*St. Petersb. Med. Woch.*, July 17.

Dulness on Percussion of the Apices without Pathologic Alterations.—In cases of long illness and repose in bed, the muscles become relaxed and the capacity of the lungs diminished. W. M. Kernig reports thirty five such cases in which, while the lungs were normal, there was dulness on percussion.—*St. P. med. Woch.*, July 17.

The Blood After Resort to Higher Altitudes.—The increase in the number of red corpuscles is more marked and more rapid in consumptives in the early stages than in healthy persons. An altitude of only 236 meters is sufficient to produce the increase. —Meissen and Schröder, *Münch. med. Woch.*, No. 24, in *Wien. klin. Rund.*, July 18.

Electric Conductibility of Animal Fluids.—Prof. A. v. Koranyi has continued his researches on the osmotic force and molecular concentration of animal fluid, which have led him to the discovery that the electric conductibility of the fluids can serve as a measure of the volume of serum and of the blood corpuscles, and thus has a direct diagnostic value. Full details of the investigations are to be published at once in the *Zeitsch. f. klin. Med.*, but the preliminary communication is in the *Cbl. f. Phys.*, July 10.

What Constitutes an Exploratory Operation.—The opening paragraph of an editorial in the *Medical and Surgical Reporter* (August 7) thus defines: "An operation begun for the removal of diseased organs and ending in failure to remove the pathologic conditions found should not under any circumstances be termed an exploratory operation. It should have applied to it the new term 'inoperable,' or should be designated, according to the vernacular, a 'flunk.'"

Absorption of Fats from Enemas.—Deucher has found that fat is absorbed from enemas, but never more than 10 grams at most, even in experiments lasting twenty-four to forty hours. The absorption is favored by administering the fats in the form of an emulsion, adding 6 per thousand salt solution, warming to the temperature of the body, careful cleansing of the intestines previously and long retention.—*Cbl. f. Phys.*, July 10.

Calculus in the Urachus.—The patient complained of pain in the abdomen and retention of urine appearing suddenly after twelve years of turbid, often bloody urine. A tumor was palpated in the median line between the umbilicus and the symphysis. When removed it was found to consist of a large phosphatic stone enclosed in a sac of tissue, communicating with the bladder by an opening as large as a forefinger. The calculus weighed two and three-fourths pounds.—*St. Petersb. Med. Woch.*, from *Wratsch*, No. 1.

Impermeable Gelatin.—According to the *Revue Scientifique* a company has been organized to manufacture waterproof paper for dressings, etc. The paper is dipped in a solution of 1,000 grams gelatin dissolved in four liters of water with 1,000 grams of glycerin. After it has been well soaked in this it is again dipped in a solution of 750 c.c. commercial formol, with distilled water q. s. to make five liters and dried, when it becomes impermeable, resisting even the action of direct steam.—*Nouv. Remèdes*, July 24.

Exteriorization of the Sensibility.—By this term Joire designates the condition he has observed in a few peculiarly susceptible hypnotic subjects in which the skin is anesthetic, but there seems to be a zone surrounding the blindfolded subject at a little distance, in which he feels pricks and pinches of the empty air as if they were made on corresponding portions of his person. A needle inserted noiselessly in a glass of water held between his hands, affects him like a prick, and even a pencil pointed at him he feels as if pressed against normal skin. Some interesting observations are described in the *Nord Méd.*, July 15.

Surgical Intervention in Tuberculous Meningitis.—D. Ssokolow trephined the skull in two cases of tuberculous and one of suppurating meningitis, and although the three patients died soon afterward he considers that the temporary benefit obtained justifies further attempts. He advises trephining the parietal eminence, opening the membrane first. If no fluid appears, the lateral ventricle must be punctured with the trocar. He also suggests that the introduction of air might be beneficial, as in abdominal tuberculosis; lumbar puncture made simultaneously would facilitate the introduction of air.—*St. Petersburg Med. Woch.*, July 17.

The British Association for the Advancement of Science ended its sixty-seventh annual meeting at Toronto, Canada, August 25, with a dinner given to about four hundred guests. The meeting this year was generally regarded a very satisfactory one. There were full programs, able papers, fine weather in an unequivocally clean city, and exceptionally convenient buildings for both the large and the small gatherings. The lovemaking between the two parts of the British Empire, the presence of so many Americans and the remarkable number of garden parties given in honor of the visitors were other features. Some of the over-sensitive talked about the scant mention of the Americans, without regard to the dictum that there is "no courtesy in science," and turned idly away after having seen Lord Lister. The majority, however, seemed pleased as well as edified by their share of paleontology, botany, anthropology and geology, while medicine contented itself as usual with a "Vanity Fair" exhibition of its progress.

Correction.—Through error in copy the "Response to the Address of Welcome to Delegates from the American Pharmaceutical Association," was credited to F. W. Stewart, instead of F. E. Stewart (*Vide* JOURNAL, August 21, p. 355).

Turnip Plates for Gastro-enterostomies.—R. v. Baracz contributes a review of the various methods of performing this operation, to the *Wiener Klinische Woch.*, of July 22, expressing his preference for Senn's plate method as the best in all respects; as shown also by the statistics when compared. He, however, advocates making the plates of turnip, and describes an observation that confirms his views, supplementing a previous observation of his own, one by Heigl, and two by Butz. The turnip is absorbed in a few days. He considers gastro-enterostomia antecolica simpler and easier, and advises having on hand a couple of pairs of plates, made fresh, to allow a choice when the size of the intestine is disclosed.

Lauwers' Method of Abdominal Hysterectomy with Buried Pedicle.—He performs supravaginal amputation of the uterus according to Hofmeier, Fritsch, Chrobak and others, but modifies it by detaching a large flap of the peritoneum from the anterior surface of the uterus down to the collum uteri, which exposes the uterine arteries and permits their being ligated separately. After amputation down to the collum the mucosa and musculature of the cervix are cut as necessary and sutured. The anterior peritoneal flap is then drawn over the sutured uterine stump and sutured to the peritoneum behind it. This cover over the stump prevents the slightest infection by way of the vagina. Fifty operations; mortality 4 per cent.—*Cbl. f. Chir.* July 24.

Rare Case of Hemorrhagic Bacterial Septicopyemia.—A strong, perfectly healthy young man was taken suddenly with chills, pains in the limbs and with a few ecchymoses on the lower extremities, but no other symptoms, no ulcerations nor sensitive areas. The third day delirium set in; the whole body became covered with the cutaneous hemorrhages, with albumin, red corpuscles and hyalin and granulated casts in the urine; the lungs and blood remained normal. Temperature rose to 40.5 degrees C. Death occurred the sixth day. The necropsy disclosed pus foci in the brain, eye, retropharyngeal space, suprarenals and articulations, although they had not been swollen *intra vitam;* also hemorrhages into the various organs, parenchymatous nephritis and fresh verrucous endocarditis. The presence of staphylococcus pyogenes albus in the blood was established.—J. Gwosdinski, in *Russkij Archiw* No. 3, in *St. Petersb. med. Woch.*

The Lloyd Jones Theory of Chlorosis.—A waif from the *British Medical Journal*, July 25, which in a spirit of space economy we are obliged to condense, sets forth the following: Roy's invention for weighing a drop of blood is the inspiration of the investigation, and the blood examination of 1,400 healthy persons constitutes the basis of what may even yet prove an hypothesis. The weight of blood varies with the quantity of hemoglobin and less closely with the number of cells. "Nothing," says Lloyd Jones, "is more characteristic of chlorotic blood than extreme diminution of red blood corpuscles together with an equally marked reduction in the amount of hemoglobin." This result is obtained not by counting the cells but by measuring their volume centrifugally. Chlorosis has some seeming connection with child bearing, for lighter blood indicates greater fertility and dark complexioned people are less prolific. "With these views," says the *British Medical Journal*, "it is natural that he (Lloyd Jones) should hope to explain chlorosis by some auto-intoxication from the generative organs. The ovaries have failed him hitherto and he is now examining the uterus. He has no difficulty in showing that the stomach and intestines have not yet been proven guilty. Whether he will have more success with the organ now accused remains to be seen."

Rapid Technique for the Preparation of Eyes, etc.—The enucleated eye or other small organ is placed immediately in 10 per cent. formol, from which it is transferred after twenty-four hours to the following solution: Formol, 20; sodium phosphate, 40; glycerin, 300; aq. dest., 1200. This solution is renewed every day for eight to ten days. This process preserves the coloring of the eye and its normal relations. A glass jar is then filled with melted jelly and the eye placed in it, the concavity down. When the interstices are filled the eye is turned over, care being taken not to include bubbles of air. When the jelly is set, the jar is closed with a sheet of glass and fastened with Canada balsam. The jelly is made of 8 parts of pure gelatin to 8 parts each of glycerin and water. The gelatin is dissolved in the water at a moderate temperature, the white of an egg is added and the whole boiled, then filtered through flannel and the glycerin and an antiseptic added (thymol, phenic acid, formol), which preserves the jelly without injury to the piece.—*Jour. de Méd. de Paris*, July 25.

Surgeon General J. Rufus Tryon, U. S. N., on September 7, completed the term of four years for which he was appointed, but does not reach the retiring age until Sept. 24, 1899. The Secretary of the Navy is giving the application of the Surgeon-General for reappointment his strong support so as to fulfil the unwritten law to permit him to retire with the rank and pay of the highest grade filled by him. In this respect his case is similar to that of his predecessor, Surgeon-General J. Mills Browne, and other heads of staff corps at the present time. Surgeon-General Tryon is a native of New York, a graduate of Union College and the medical department of the University of Pennsylvania, class of 1861. He served with distinction during the War of the Rebellion, and in the line of duty has visited nearly every port of the habitable globe. In 1874 he volunteered for service during the yellow fever epidemic—an act for which he was specially commended by his superior officers. His administration of the medical department of the Navy during his term of office has been conspicuous for the many changes and improvements instituted, all tending to the advancement of the Medical Corps and to the care and comfort of the sick and wounded in the Navy.

Liability for Autopsy on Dead Body of Child.—The question was raised on demurrer, in the case of Burney v. Chidren's Hospital in Boston, whether the father of a child, who is its natural guardian, and who has intrusted the child to a hospital for treatment, can maintain an action against the hospital for an autopsy performed on the dead body of his child without his consent. The sole contention of the counsel for the defendant hospital was that no such action could be maintained, because there is no right of property in a dead body. But the supreme judicial court of Massachusetts says, June 16, 1897, that the father, as the natural guardian of the child, was entitled to the possession of its body for burial. Being entitled to the possession of the body for the purposes of burial, it then asks, is not his right against one who unlawfully interferes with it, and mutilates it, as great as it would be if the body was buried in his lot and was thence unlawfully removed? That an action may be maintained in the latter case there are decisions showing; and, although it is a new question in Massachusetts, the court holds that an action may be maintained in the former case. This is in line with several well-considered decisions in other States. But it was not argued by its counsel whether the nature of the defendant hospital was such that an action against it could not be maintained for the alleged illegal acts of its officers and servants, and the court refrains from expressing an opinion upon it. Nor did it feel disposed to inquire under what circumstances an autopsy is justifiable—leaving both questions until the facts should be before it, after trial.

Resection of the Cervical Sympathetic vs. Thyroidectomy in Basedow's Disease.—Jaboulay reports three new cases in which he has resected the cervical sympathetic, raising the total to fourteen cases on record (the first in 1896), all of which have shown constant improvement. Péan, on the other hand, rejects this operation as transient in its effects, as he performed it in one case three years ago, principally to cure a concomitant epilepsy. There was at first marked improvement of both troubles, but the success was not permanent and he never tried it again. He advocates thyroidectomy for Basedow's disease, stating "that it should only be performed after medical treatment has failed and before the disease has exhausted the strength to the point of compromising existence. The operation is easy when the goiter is small, not inflamed and readily enucleated: a few minutes are all that is necessary to remove the tumor through a small median, vertical incision without any necessity of ligating the vessels if his hemostatic forceps are used, which serve also for retraction. Even in the most serious cases the operation is not difficult, but the tumor should be removed by morcellement after compressing the vessels. Consecutive myxedema is rare and transient." If the patient is troubled by hypersecretion of the laryngeal and tracheal liquids he suspends the operation, raises him to a sitting posture and removes the mucus with a mounted sponge. "Section of the cervical sympathetic and exothyropexy have not yet recorded a sufficient number of cures to be profitably opposed to thyroidectomy."—*Bulletin de l'Académie de Méd.*, August 3.

Solidity in Radical Cure of Hernia.—Lucas-Championnière has performed this operation 650 times in the last sixteen years, and his success in securing such solidity that the patient is less exposed to hernia afterward than one who has never been ruptured, leads him to raise his voice in protest against any method of cure that does not absolutely remove the serous funnel or close up the inguinal ring as inevitably superficial and imperfect, referring especially to the Lannelongue chlorid of zinc cure. He emphasized the necessity of freely opening up the hernia, excising all the omentum accessible, destroying the sac and its infundibulum and restoring and strengthening the walls by crossing the flaps, closing with drainage. With this method he has only had twenty relapses in all and five deaths (two avoidable). One relapse was a butcher who lifted a whole side of beef on the end of a pole: another relapsed during an attack of whooping cough. He slyly adds that there is not much chance of any relapse having occurred without his knowledge, as patients and colleagues are not diffident about reporting them. He has had one relapse in his last 200 cases. Rapid obesity is the principal cause of relapses, as he has already proclaimed (*vide* JOURNAL, vol. 28, p. 556).—*Bull. de l'Acad. de Méd.*, August 3.

Liability for Bodily Injury Caused by Fright.—Whether, in an action to recover damages for an injury sustained through the negligence of another, there can be a recovery for a bodily injury caused by mere fright and mental disturbance, was a question never decided in the State of Massachusetts, until the supreme judicial court handed down its decision, May 19, 1897, in the case of Spade v. Lynn & Boston Railroad Company. The court holds that there can not be. It says that it remains satisfied with the rule that there can be no recovery for fright, terror, alarm, anxiety or distress of mind, if these are unaccompanied by some physical injury; and, if this rule is to stand, it thinks it should also be held that there can be no recovery for such physical injuries as may be caused solely by such mental disturbance, where there is no injury to the person from without. The logical vindication of this rule it declares is that it is unreasonable to hold persons who are merely negligent bound to anticipate and guard against fright and the consequence of fright, and that this would open a wide door for unjust claims, which could not successfully be met. But the court takes pains to add that this decision does not reach those classes of actions where an intention to cause mental distress or to hurt the feelings is shown, or is reasonably to be inferred, as, for example, in cases of seduction, slander, malicious prosecution or arrest and some others. Nor does it include cases of acts done with gross carelessness or recklessness, showing utter indifference to such consequences, when they must have been in the actor's mind.

Paget's Disease of the Skin.—Dr. Rolleston, before the London Pathological Society, brought up the subject of dermatitis maligna, or Paget's disease. Two cases were discussed, in both of which carcinoma had resulted. The first case was that of a man aged 60 years, who had the glazed, raw condition of the skin above the pubes characteristic of the disease for eight years; two years ago nodules of carcinoma developed. The whole affected area was removed and the man recovered. A somewhat similar case, in which the scrotum and penis were affected, had been described by Dr. Radcliffe Crocker. The carcinoma probably developed from the sebaceous glands and not from the superficial layers of the skin. The sweats glands were dilated, but did not, as in Dr. Crocker's case, appear to be undergoing carcinomatous change. The growth was a spheroidal-celled carcinoma. The second case was that of a woman aged 45 years. The skin affection began eight years ago on the sinus of a mammary abscess and had spread most extensively. A year ago carcinoma developed. The whole affected area, together with glands from the axilla, was successfully removed. Microscopically the carcinoma appeared to be squamous-celled, showing a transition to a spheroidal celled type, but no keratinization had taken place. The modification was probably due to the extensive inflammatory changes, which were also thought to be responsible for the extensive vacuolation seen in the epithelial cells. The carcinomatous growth had certainly not arisen in the mammary glands or in the ducts, as is often the case. It was suggested that Sir James Paget's name would best be honored by associating it with the actual morbid lesion, a long-standing dermatitis of the nipple which he originally described, and not with analogous lesions.—London *Lancet*.

American Women Students at Zurich University.—A society has been formed at Zurich by the American women who are studying for a doctorate at that place, and a circular has been issued by it conveying information to others who are looking forward to an educative tour in Europe. It is quoted in the *Consular Reports*, and a part of that quotation is given below: The length of time required for preparation is usually three to four years, except in the case of medicine, when five and a half years of very severe labor are necessary. A diploma from an American college is accepted in lieu of entrance examination. Certificates of successful teaching may also be accepted, but should be submitted in advance, as the decision appears to be made upon the merits of each case. In addition, a certificate of good character is necessary, and for an American, a passport. In the medical school, the entire course is laid down: elsewhere, no course is formulated, but each student is required to choose one major (Hauptfach) and two or three minors (Nebenfaecher). Work is carried on almost entirely by lectures and laboratory work, with occasional quizzes. The fees in Zurich are small. For a course of lectures coming once a week for a semester, the usual charge is 5 francs: for one coming twice a week, 10 francs, and so on. Seminars and quizzes are free. Even when a good deal of laboratory work is done, fees for the entire year rarely amount to more than $60 to $75. There is no university library. It is etiquette in Zurich for a student who is intending to take work with a given professor to call on him in advance at his house, preferably between 11 and 12 o'clock, to anno[illegible] in[illegible] and, nominally, ask his advice. It is im[illegible] that no woman should come to Zurich with the immediate intention of university study, unless she has not only a reading but a speaking knowledge of German. Zurich is not the place to acquire this knowledge; the dialect which one hears almost everywhere in place of German and the number of foreigners of various nationalities in the town make it unsatisfactory for the language student. The university recognizes two classes of workers—the matriculated students and the hearers. The hearers are received without test of fitness, but are admitted to examination and receive certificates of having attended given courses of lectures only through the courtesy of the lecturers. The matriculated students have a few privileges not granted to hearers, and usually, though not necessarily, take an examination. The latter consist of the teacher, the doctor and the State examination. Of these, the second is the only one likely to be of especial interest to students who intend to return to America.

Washington.

COLUMBIA HOSPITAL.—The annual report of the Columbia Hospital for the year ended June 30, 1897, shows 55 patients in the hospital, July 1, 1896; admitted during the year 624; discharged or left during the year, 578; died, 36; remaining under treatment July 1, 1897, 47; death rate per cent. during year, 5.27; prescriptions compounded, 8,644; daily average of patients, 47.84; daily average of babies, 10.93.

PHYSICIANS TO THE POOR APPOINTED.—Drs. John W. Shaw and Rosier Middleton have been appointed alternate physicians to the poor.

DR. LINCOLN'S ILLNESS.—Dr. Lincoln, who has been seriously ill for some days past, is now convalescing and expects to be able to resume his practice very shortly.

FINED FOR ILLEGAL PRACTICE.—A colored laborer in one of the city drug stores has been engaged in practicing medicine illegally and was fined $50 in the police court.

ACCIDENT COMPANY SUED.—Suit has been entered in the district court against the Massachusetts Mutual Accident Association and the National Accident Society of New York, by the widow of the late Dr. Benjamin B. Adams to recover $5,000 from each of the defendant companies, on account of policies issued by them to her husband. The plaintiff claims that the companies have failed to pay the amount stated, though she satisfactorily complied with the rules of the company governing such cases.

Colleges.

THE MAINE MEDICAL SCHOOL may remove from Brunswick to Portland, in which latter city the sum of $100,000 has been pledged for the erection of suitable buildings. An attempt to realize $20,000 of the fund left by the late Joseph Walker to promote education may be frustrated inasmuch as the city of Portland has filed an application with the trustees of the fund for $26,000 wherewith to begin a manual training school.

Societies.

THE CANADIAN MEDICAL ASSOCIATION held its thirtieth annual meeting in Montreal, Canada, August 30, a day previous to the meeting of the British Medical Association. In compliment to the latter Association, some of whose members were present, words of greeting were expressed. After the necessary executive business, the following officers were elected: President, Dr. J. M. Beausoleil, Quebec; vice-presidents, Drs. A. M. McPhedraw, Toronto, C. S. Parke, Quebec, R. A. McKean, Glace Bay, T. R. Tuck, St. John, R. McNeil, Stanley Bridge, J. R. Jones, Winnipeg, F. C. McWheen, Lethbridge, and J. Tunstall, Vancouver; general secretary, Dr. F. N. G. Starr, Toronto; Treasurer, Dr. H. B. Small, Ottawa.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from August 21 to 27, 1897.

Capt. W. F. Carter, Asst. Surgeon (attending surgeon, Baltimore, Md.), is hereby granted leave of absence for one month, to take effect about Sept. 1, 1897.

Major Peter J. A. Cleary, Surgeon (chief surgeon, Dept. of Texas, San Antonio (Texas), is granted leave of absence for three months, with permission to go beyond sea.

CHANGE OF ADDRESS.

Behrens, B. H., from Minneapolis to Benson, Minn.

Bates, J. W. P., from 1020 E. Baltimore St. to 1830 Madison Av., Baltimore, Md.

Culbertson, Scott, from Moorefield to Vevay, Ind.

Cook, J. E., from 258 Pearl St. to 514 New England Bldg, Cleveland, Ohio.

Collins, K. R., from Philadelphia, Pa., to Alexandria, Ind.

Caldwell, C. E., from 447 Kimper Lane to 1110 Cross Lane, Walnut Hills, Cincinnati, Ohio.

Carpenter, Julia W., from Bay View, Mich., to 908 E. McMillan St., Cincinnati, Ohio.

Gould, J. B., from Minneapolis to Little Falls, Minn.

Guerard, A R., from 162 E. 114th St. to 2148 7th Av., N. E. cor. 127th St., New York, N. Y.

Gallant, A. Ernest, from 10 W. 36th St. to 60 W. 56th St., New York, N. Y.

Hardman, R. H., from Washington, D. C., to Converse, Ind.

Hengst, D. A., from 515 Penn Av. to 1005 Park Bldg. Pittsburg, Pa.

Koch, I. M., from 706 N. 20th St. to 200 S. 12th St., Philadelphia, Pa.

Lunde, C. A., from Chicago to 252 Woodward Av., Detroit, Mich.

McCurdy, S. L, from 515 Penn Av. to 1023 Park Bldg. Pittsburg, Pa.

Prentiss, D. Webster, from Haven, Me., to Washington, D. C.

LETTERS RECEIVED.

Alden, C. H., Washington, D. C.; Ashmun, G. C., Cleveland, Ohio; American Gynecological and Obstetrical Journal, The, New York, N. Y.

Bryan, D C., Omaha, Neb.; Brophy, Truman W., Chicago, Ill.; Baker, Louis B., Erie, Pa.; Bohl, J., Watertown, Ohio; Brown, H. W., Cleveland, Ohio; Bell, D. C., McBride, Mich.; Baltimore Medical College, Baltimore, Md.

Christopher, A., St. Joseph, Mo.; Crowe, J. M., Washington, D. C.; Crafts, Leo M., Minneapolis, Minn.; Chaffle, S. E., Toronto, Canada; Chapman, O. S., Minneapolis, Minn.; Creighton Medical College, John A., Omaha, Neb.; Conkling, Price & Webb, Chicago, Ill.; Caldwell & Co. (Inc'd), New York, N. Y.; Clifford, J. W., Holland, Ind.

De Lee, J B., Chicago, Ill.; Daniel, J. B., Atlanta, Ga.; Dios Chemical Co., St. Louis, Mo., (3).

Elliott, A. R., New York, N. Y.; Egan, J. A., Springfield, Ill.

Fite, C. C., New York, N. Y., (2); Fairbairn, Wm., Detroit, Mich.; Fougera, E. & Co., New York, N. Y.

Gould, M. P., New Haven, Conn.

Herdman, W. J., Frankfort, Mich.; Hummel, A. L., Adv. Agency, New York, N. Y.; Hoagland, George A., St. Louis, Mo.; Hobson, J. F., Cleveland, Ohio; Henrotin, F., Chicago Ill.; Hansen, C. C., Mosul, Turkey in Asia; Harrison, E. E., W. Concord, Minn.; Harris, L. J., Pittsford, Mich.; Houghton, Mifflin & Co., Boston, Mass.; Hoff, J. W., Pomeroy, Ohio.

Josephi, S. E., Portland, Ore.; Johnson, H. L. E., Washington.

Kress & Owen Company, New York, N. Y.

Lewis, Daniel, New York, N. Y.; Loeb, H. W., St. Louis, Mo.

Mitchell, C. W., Baltimore, Md.; Marsee, J. W., Indianapolis, Ind.; M [illegible] C.; Morrissey, J. J., New York, N. Y.; M [illegible] Minor, J. C., Hot Springs, Ark. [illegible] va; Newell & Heldman, Chicago, Ill.

[illegible]

[illegible]: Procter & Collier Co., Cincinnati, Ohio; Paquin Laboratories, Paul, St. Louis, Mo.; Pelletier, E., Montreal, Canada.

Ridgway, J., Minneapolis, Minn.; Ryfkogel, H. A. L., Oakland, Cal.; Rochelle, W. F., Jackson, Tenn.; Reed, W. W., Boulder, Colo.; Reed, R. Harvey, Columbus, Ohio; Rio Chemical Co., St. Louis, Mo.

Swain, O. A. T., New [illegible] A. D., Flint, Mich.; Stewart, F. E., Detroit, [illegible] hington, D.C.

Trelease, William, St. [illegible] Louisville.

Wyman, Hal C., Detroit, [illegible] n, Kansas City, Mo.; Wilson, Louis N., Worcester, Mass.; Wilson, Fred C., Colesburg, Iowa.

PAMPHLETS RECEIVED.

Adductor Vocal Paralysis. By Lewis S. Somers, M.D. Paper, Reprinted from the Medical News.

Annual Report of the Essex County Hospital for the Insane. Paper, 92 pages. Newark, N. J. 1897.

A Plea for a Uniform Diastase Test. By C. C. Fite, M.D. Paper. Reprinted from Journal of the American Medical Association.

Arkansas Industrial University, Medical Department. Catalogue and Announcement. 1897 98.

Clark University, Ninth Official Announcement. 1897-98.

College of Medicine of University of Southern California, Thirteenth Annual Announcement.

Etheriana. By Albert S. Ashmead. Paper, 12 pages. New York.

Eighteen Years of Personal Observation of Tuberculosis in Asheville, N. C. By John Hey Williams, M.D Paper. Reprinted from Journal of the American Medical Association.

Influence of *Diseases of the Nares and Pharynx on Aural Affections.* . . . By Lewis S. Somers. Paper. Reprinted from University Medical Magazine.

Manitoba Medical College (Winnipeg). Annual Announcement. 1897-98.

Medical Department, Tulane University of Louisiana. 1897 98.

Recitation vs. the Lecture System of Teaching Medicine, The. By L. J. Chapman, A.M., M.D. Paper. Reprinted from Columbus Medical Journal.

Studies in Temperature. By Mark A. Brown, M.D. Paper. Reprinted from Lancet-Clinic.

Tuberculosis of the Tonsils, Pharynx and Larynx. By Lewis S. Somers, M.D. Paper. Reprinted from Medical and Surgical Reporter.

University of Denver, Department of Medicine. Announcement for 1897-98.

University of Tennessee, Medical Department. Announcement for 1897 98.

Vaginal vs. *Abdominal Section for Pus in the Pelvis.* By Wm. D. Haggard, Jr., M.D. Paper. Reprinted from American Gynecological and Obstet. Journal.

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ADDRESS.

CHAIRMAN'S ADDRESS.

Delivered in the Section on Surgery and Anatomy, at the Forty eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY REGINALD H. SAYRE, M.D.
NEW YORK, N.Y.

When I returned home after the meeting in Atlanta last year, I was most pleasantly surprised to learn from the papers that I had been selected to preside over this Section. I wish to thank you most heartily for the great honor which you have done me in making me Chairman, and especially so for having placed me in this position at this meeting, the most important one which has ever been held by the American Medical Association, celebrating, as it does, its fiftieth anniversary.

The number of papers which have been offered for the consideration of the Section has been so large that I have obliged, much against my will, to decline a great many as all the available time at our disposal had already been fully occupied by papers which had been presented at an earlier date. But I trust the authors will realize that, as our time is limited and as it is impossible to do more than a certain amount in this space, my action was the result of necessity. In my own opinion, it is a mistake to have so large a number of papers as to render it impossible to grant full discussion to those of marked interest, and I think that much more benefit is had from these meetings, if we confine our attention to a smaller number of carefully prepared and thoroughly scientific papers, which enter exhaustively into the consideration of a topic, and have the same discussed by men of experience, rather than to consume our time with the consideration of so large a number of hastily written, incomplete articles, that no opportunity is left for discussion. Oftentimes, the discussion is of as much value as the paper itself, especially so if the author has taken the precaution to send an abstract of his views to various men of experience, in order that they may prepare themselves in advance on the different points which will be brought up, as it frequently happens that time is required to thoughtfully consider new propositions before they can be discussed with intelligence.

From personal experience as Secretary in this Section for two years, in addition to that which I have derived as Chairman this year, I am convinced that we can find a more intelligent way of preparing our program than that at present in force.

That part of the By-Laws relating to papers is: "It shall be the duty of every member, who proposes to read a paper or report to any of the Sections to forward the paper or a title indicative of its contents and its length, to the Secretary of the Section at least one month before the annual meeting at which the paper is to be read. It shall be the duty of the Chairman and the Secretary of each Section to communicate the same information to the Chairman of the Committee of Arrangements concerning such papers and reports as may come into their possession or knowledge for their respective Sections the same length of time before the annual meeting. No paper shall occupy more than twenty minutes. Such papers shall be referred to a subcommittee for their examination, who shall be allowed thirty days for such examination, at the end of which time they shall forward the paper to the Board of Trustees with such recommendation as they may deem proper. . . Every paper shall be the exclusive property of the Association, and be published for its exclusive benefit."

This section should be modified to require the title of the paper to be sent to the Secretary one month in advance and a copy of the paper two weeks in advance of the meeting.

The present method leaves the Chairman largely in the dark as to the amount of work which may be brought before the Section, for unless the copies of the papers to be read before the Section are in the hands of the Secretary at the commencement of the session, it often happens that the gentlemen who have promised papers fail to appear, and the regularity of the proceedings is very seriously embarrassed. The audience also is put to much inconvenience, for the members of the Association, in order to make the best possible disposition of their time, may linger in some other Section to listen to a paper which interests them, coming to this Section at a time when, judging from the program, they might reasonably expect a certain paper to be reached, only to find that it has already been finished in consequence of the absence of a number of other speakers who should according to the program have preceded the paper in question.

It seems to the Chair that the position taken this morning by our President was without question the correct one, that the county societies should be the place for maiden efforts, that those who were thought worthy of places as delegates to the State societies could there present their more mature ideas, while the time of the Sections of the National Association should not be occupied, except by papers of exceptional worth. Papers of this character are not prepared over night and those who desire to appear before this National body should be made to understand that if their papers are not of sufficient importance to justify them in preparing them two weeks in advance of the time of meeting, it is not likely that they will be of sufficient interest to the Section to justify their occupying space on the program.

Another point to which I would like to call your attention is that Article of the By-Laws which states that all papers read before the Sections are the exclusive property of the Association and to be published for its benefit. The ASSOCIATION resolved some seventeen years ago to cease publishing its Transactions in book form and to issue a weekly journal which should contain all the papers read before the ASSOCIATION and its Sections. If we do not support the JOURNAL how can we expect it to succeed. and unless it has exclusive control of the papers presented before the Sections, it is at once deprived of a most vital source of strength and, in consequence, instead of being the most potent factor in making the ASSOCIATION a power in the land, it is handicapped in its competition with other journals by the very men who should be most interested in its support and who should realize that in advancing its interests they are advancing their own, even if they are unwilling to assist from any less selfish motives.

The last few years have witnessed many notable advances in surgery and perhaps the most striking departure from the older methods is the effort to substitute prevention for cure, and following in the steps of Jenner to endeavor by means of the injection of various immunizing agents not only to arrest the ravages of septicemia, erysipelas, tetanus and surgical infectious diseases in general but even to prevent their occurrence by prophylactic injections.

The various reports on this subject are somewhat at variance and the personal equation of the observer must be taken into account. Yet it seems clear that while the successful cases reported are but few, and in some of them doubtless the favorable termination is not to be attributed to the means employed, still certain results have been accomplished and the field of the surgeon seems to be widening day by day and his ability to cope with deadly forms of disease in future will probably be enormously increased through the revival of interest in preventive surgery.

Under the head of preventive surgery come also the new antiseptics which have been brought into use, of which I will mention but a few; loretin, a dusting powder which is free from odor and has proved itself of great use; the oxycyanid of mercury, whose great advantage over the bichlorid of mercury is its noncorrosive action on instruments; calcium permanganate, which is said to be more powerful than the potassium salt, and the formalin-gelatin treatment of Schleich, which promises much in the treatment of infected wounds. This same observer has presented us with eucain, a substitute for cocain as a local anesthetic, which is safer in its effects and produces anesthesia of a more lasting nature.

In conservative surgery we have another instance of the ingenuity of McBurney, who in a case of sarcoma of the radius, instead of amputating the elbow, removed the sarcomotous radius, did a circular amputation in the middle of the forearm and sewed the biceps tendon to the base of the coronoid process of the ulnar thus giving the patient a stump over which he had voluntary control.

Our English brethren have been busy in abdominal surgery and Golding Bird and Harrison Cripps have both suggested plans for avoiding leaking after gastrostomy. Bird makes a small hole in the stomach and, dilating it with a pair of dressing forceps, inserts a rubber tube, claiming that the subsequent contraction of the stomach wall upon the tube prevents the troublesome leaking which so often follows when the opening in the stomach is made larger than the tube and afterward sewed up. Cripps plugs the hole in the stomach or intestines by a piece of rubber tissue as thick as a shilling and a good deal larger than the opening. This he inserts by means of a pair of dressing forceps, having rolled it up After it is inserted the forceps are removed, the rubber disk resumes its normal shape and is pulled tight against the opening by a thread which passes through its center and is fastened to a pin wrapped in gauze and then tied.

In this country Weir and Foote have successfully operated on a round ulcer of the stomach, showing the wisdom of interfering before it is too late for the surgeon to be of use.

The interior of the bowel has also received attention and Stephan has established an artificial anus in a case of obstinate dysentery which had resisted medication, and applied local treatment to the diseased area through this opening, subsequently closing the wound when the dysentery had been cured.

Whenever any operation or invention is good it invites criticism and is modified in various ways to meet the views of the critics. The Murphy button is no exception to this rule, and no less than three different buttons or bobbins of decalcified bone have been recently devised to take its place. The suggestions coming from Chaput, Hayes of Dublin and Jackson Clark of London.

The treatment of diseases of the intestines brings to mind the subject of hernia, and it has always seemed strange to me that we should couple the operation for curing hernia by the reconstruction of the inguinal canal with the name of a foreigner instead of with that of Marcy, who practiced and taught this operation for years without having it generally adopted until it had made a trip across the ocean and returned with a foreign endorsement. I trust that some time in the future the surgeons of this country will give our former President the credit which he deserves.

The urinary tract has also given us examples of progressive surgery, Fenwick having successfully transplanted part of a sheep's urethra to close a defect in man, while the ureters have been the site of many successful surgical procedures both at home and abroad, the chief work of this country having been done by Kelly, Roberts and Van Hook. The kidney itself is now often spared when a few years ago it would have been removed, and in place of extirpation many cases, when a large part of the kidney is healthy, are now treated by the removal of such parts as are diseased. In hydronephrosis, Fenger has been successful in the removal of valve-like formations from the pelvis of the kidney, which prevented the free egress of urine.

Brain surgery still continues to be most daring, and although the results of some of the operations speak more for the thoroughness of technique which renders them possible than for diagnostic skill and reasoning powers of the operator, some wonderful results have been achieved, as in the case of removal of cerebellar tumor from a child 4 years of age, reported by Parkin to the Clinical Society of London.

In the surgery of the vascular system distinct advances have been made. The heart itself has for the second time been sutured successfully but a few months ago as reported by Rehn of Frankfurt, Germany, while the experiments of Murphy have shown that veins and arteries can not only be sutured with success when torn, as had been done in previous years, but that injured portions can be resected and the continuity of the vessel restored by end to end anastomosis with invagination. He has also successfully carried out the same operation in man, though perhaps our scientific brethren on the other side of the water might object to accepting the later cases as the patency of the vessels has not yet been demonstrated on the postmortem table.

The antivivisectionists also might object to the series of experiments which lead up to this successful operation as they have to those of the various workers whose experimental researches have done so much to make clear the hidden mysteries of disease during the past decade, and I feel that a word of warning may not be out of place here to all of you who, relying on the intelligence of our legislative bodies and their certainty of doing the right thing at the right time, believe that the bill now pending before Congress to limit the practice of vivisection will not pass. Unless the medical profession exercises the same assiduity in opposing it that the advocates of the bill show in pushing their scheme both before Congress and elsewhere the bill is very certain to become a law and the entering wedge for acts preventing animal experimentation altogether.

Perhaps the most striking advance that has been made in surgery during the past year has been the discovery of the X rays. It is not my intention to enter elaborately into a discussion of the phenomena which were first described by Professor Roentgen of Wurzburg, in the beginning of the past year, but to deal more especially with their practical application in the field of surgery.

One of the first things that was done, simultaneously, by a number of observers in different parts of the world, was to manufacture apparatus by which the effect of these rays could be seen by the naked eye, in the shape of an opaque box fitted closely to the face, having the surface opposite the eyes coated with a flourescent substance, so that when this surface was turned toward the source of the X rays it became luminous and the shadows of the hand or any other substance could be readily observed. Barium platinocyanid, which Roentgen employed, being very expensive, various other substances were investigated, Mr. Edison having been especially active in this direction, and tungstate of calcium has been found extremely well adapted for the purpose, becoming very luminous and being comparatively cheap. The fact that these rays were capable of affecting the ordinary photographic plate has led to most sudden and widespread interest in this extraordinary phenomenon, and much work has been done in turning these scientific truths to practical account. Skiagraphs are taken with the tube distant about eighteen inches from the patient, as a rule. In some instances the patient lies on the plate, which is covered only by a paper envelope, to preserve it from becoming fogged by the daylight. In other cases a fluorescent screen of paper covered with tungstate of calcium is placed next to the film, the object of the screen being to shorten the time of exposure; but I do not think that the pictures so taken are as clear in outline as those taken without the screen. Both of these methods of observing the interior of the body are of use to the surgeon and have their separate uses.[1]

It was evident from the first that this new discovery opened a wide field in surgical diagnosis, and it has seemed to me that it might be of interest to you to dwell upon some of the conditions in which I have found it of benefit. You all have heard of the numerous instances in which needles have been located, which were otherwise inaccessible, and have heard of the case where an enormous number of bird shot were located in the hand, some in the bones, some in the soft parts, and successfully removed. Another extremely curious fact is that glass is much more opaque to the rays than are many metals, and, in consequence, that pieces of glass, which are often very hard to find when imbedded in human tissues, can be located with ease by this method.

The most obvious use to which this new discovery can be placed is in the location of uncertain fractures and in the differential diagnosis between fracture and dislocation in the neighborhood of a joint. After the fracture has been set and the dislocation reduced it is possible by means of the X-ray to determine whether the dislocation has been satisfactorily reduced, and if the broken fragments are in correct apposition; all this being accomplished while the injured member is in its plaster-of-Paris dressing, so that instead of waiting a number of weeks and removing the dressing to find that the fragments are incorrectly placed, this fact can be ascertained at once and the mistake remedied. In locating foreign bodies that have been swallowed the X-rays have rendered good service. The patient's sensations not always being a reliable guide as to the exact location, while the skiagraph tells us exactly where to operate.

In operations on congenital dislocation of the hip it is feasible, first of all, to take a skiagraph or shadow picture of the pelvis, showing the acetabulum and the displacement of the femur, and later on to take a similar picture showing whether or not we have been successful in replacing the head of the femur in the acetabulum.

In cases of old sequestra in the neighborhood of a joint, it is possible to locate these sequestra, and I believe that it is possible to locate in this manner abscesses occurring in bone, although I have not had a case on which this experiment could be tried.

The localization of foci of disease in the neighborhood of tubercular joints, before the joint itself has become involved, is a matter of much importance and may at times point out to the surgeon the mode by which such a focus may be successfully removed before the disease has invaded the joint.

Another point upon which it has bearing is the differential diagnosis between fibrous and bony ankylosis. In skiagraphs of the normal joint there is apparently a distinct interval between the ends of the bones comprising a joint, which is due to the fact that the cartilage covering the ends of the bones is so very much more translucent than the bone itself that it does not cast a shadow, whereas, in a joint where the cartilage has been absorbed and the bony surfaces themselves brought in contact, this apparent gap does not exist. In studying these pictures more can usually be seen on the negative than in the print, although this is not invariably the case, and a certain amount of practice is likewise necessary in order to permit one to correctly interpret what he sees. I remember being greatly deceived in the first picture which I saw of a child's ankle. I had not seen the child but was told it had been the subject or a railroad accident, and I at once imagined that the fissures which I saw in the skiagraph in the neighborhood of of the ankle-joint were either fractures or epiphysial separations, but on examining the picture of the other leg I found exactly the same gaps in the bone and at once saw that what I had taken for fractures were simply the epiphysial cartilages, which had not yet become ossified, on account of the youth of the subject, and in consequence failed to cast a shadow.

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[1] Since this address was written it has been suggested to the author by Dr. H. W. Frauenthal that a small fluoroscope fitted to one eye could be used in certain operations, enabling the operator to see with one eye the outer field of operation and with the other the relation of the deeper structures, after the manner of using the camera lucida in drawing microscopic fields. Practical experience with the method has shown it to be difficult to acquire the necessary dexterity of the ocular muscles, but it is believed to be a useful suggestion.

In children this same phenomenon is noticed in the acetabulum and about all joints, where the epiphysis appears as a small button of bone quite distinct from the shaft, and not touching the button of bone which forms the epiphysis composing the other side of the joint. If, however, the exposure be nicely timed the outline of the entire end of the bone can be made out, its shadow being much less dense than that of the ossified center. This same fact makes the skiagraphs of clubfeet of very little importance in children, because the bones are so largely cartilaginous that their relations to one another are rendered very indistinct and only the central parts can be discerned, large gaps apparenrly existing between all the bones of the foot.

It affords us, however, a very striking proof of a fact that all of us must realize as soon as our attention is called to it, that the feet of children are extremely cartilaginous, and that the bones are susceptible, in consequence, of very large alterations in shape, provided they are properly manipulated; and a practical deduction which may be drawn from this is the folly of removing such cartilaginous bones in young children, instead of submitting them to properly directed force, in order that their shape may be so modifed as to correct existing deformities. In cases of web-fingers and supernumerary toes, great use has been made of this discovery in planning operations, as the outward appearance of the hand does not always give a correct idea of the internal relations of the bones.

Calculi in the kidney, ureter or bladder can be detected by this means—the uric acid and oxalate of lime being most easily seen. Gallstones cast too faint a shadow to be found with certainty.

It seems to me that it may be possible, with a better practical understanding of the application of the principles in making these pictures, that good skiagraphs may be obtained of tumors and much light thrown upon abnormal conditions within the thorax and pelvis. I have, as yet, seen no good picture which confirms this view, but the more I have seen of the practical workings of X-ray photography the more I have realized the very delicate adjustment which is necessary to attain certain results.

It must not be supposed that all that is necessary to obtain practical results is the purchase of an induction coil, a battery and a few Crookes' tubes. Practical experience is needed to show the amount of current to be used, the rapidity of interruption, the proper length of a spark, the amount of exposure, and a great many tiresome failures will be necessary before good work can be achieved. The exposure which gives the best definition for bones is altogether too long to give definition for soft parts, and the operator must know in advance what he is trying to show in order to be able to regulate with exactness the conditions to produce a proper result. Again, it is necessary to familiarize yourself very thoroughly with the skiagraph under consideration, and each time that you study it new features will impress themselves on your mind. It often happens that when you return to an old skiagraph after an interval of a few days you will discover various points of interest in it which you failed to detect at the time of your previous examination. The shadows which are cast by various parts of the body are not very well known to us. It is a matter which has been investigated, very superficially, and it will require a large number of observations before we are able to put the proper interpretation upon the pictures that we see. We have to bear in mind that the nearer the plate is to the object which casts its shadow upon it the more clearly defined will be the outline. In many instances some parts of the body which are photographed are much more dense than others and the amount of exposure which is necessary to give the best results in certain places will be too long or too short to give the best results in others, and, in consequence, if we wish to examine the entire length of a bone, or the length of the spinal column, for instance, it may be necessary to take a series of plates, with different exposures, and to combine all of these in our search for information.

The time at my disposal is so short and the number of advances in surgery is so vast that it would be impossible to give a synopsis of them all. I have, therefore, dwelt in this most cursory manner on only a few of the most important advances made during the past year.

Glancing at these novel procedures we can not help being impressed with the fact that the lines along which surgery is developing show, even more clearly than heretofore, how far the surgeon of today is departing from the type of his early predecessors. The early surgeon, as his name denotes, worked with his hands, χείρ-ἔργον—the chirurgeon, the skilful, handy man—while the surgeon of today not only calls into play the dexterity of his fingers; but in addition thereto exercises his intelligence, his mastery of kindred sciences and puts into practical application the truths of physiology, physiologic chemistry and the results of bacteriologic research. The surgeon of today applies to the solution of the problems which confront him, the experience of the bacteriologist, the chemist, the physicist, and substitutes for empiric methods and for those which have been handed down from generation to generation and accepted as correct in a blind, unthinking way, newer and more scientific proceedings, based upon logical deductions from physical phenomena, and the application of abstract scientific truths to the living being. In the extremely interesting papers which will be brought before you in this meeting you will find this position amply justified.

Medicated Soaps, Savonal.—According to the *Nouveaux Remèdes*, July 24, it has been found that dermatoses are influenced more rapidly by medicated soaps than by salves and pastes, and Müller and Grube have succeeded in producing a soap base which is more stable and efficient than Unna's, etc., as there is no grease in excess. It is made by mixing cold olive-oil, potash lye and alcohol until complete saponification; the fat acids are precipitated with weak hydrochloric acid on glass, and the alkalin mother liquid added until the limpid liquid is perfectly neutralized, when it is evaporated to the consistency of a salve, light green in color, which they call savonal. It is liquefied by adding a certain per cent. of glycerin and aq. dest. and evaporating to a syrup (specific gravity, 1,050 to 1,055). Twenty-three medicated soaps made from it are given with their indications.

ORIGINAL ARTICLES.

MILITARY SURGERY IN TURKEY.

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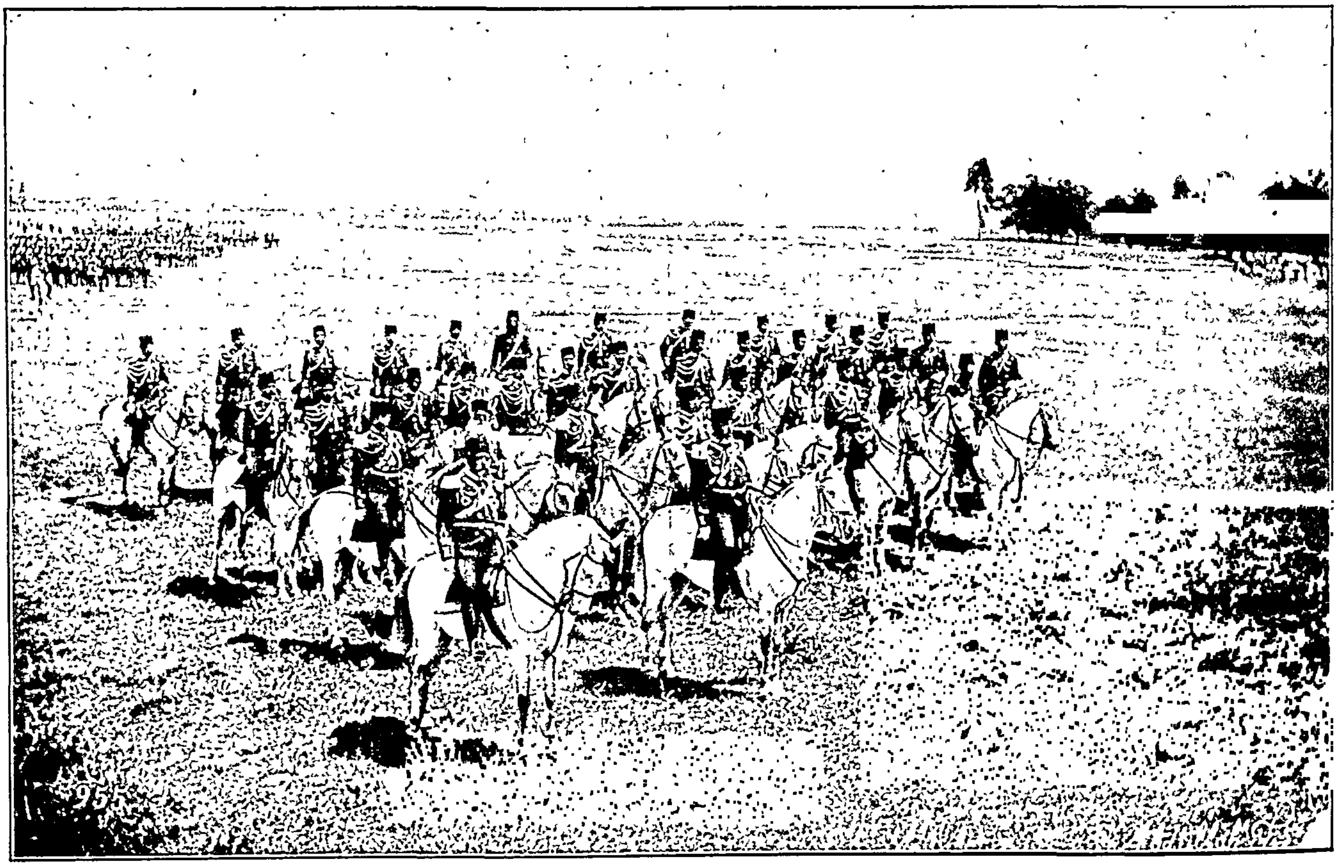
CHICAGO, ILL.

The journey from Athens to Constantinople at this time does not reveal anything that would remind the traveler that a war raged so recently between the two countries. The olive trees, which are seen everywhere, are laden with their oily fruits, and the endless vineyards promise a rich harvest of luscious grapes. The patient donkey carries his burden to the market in slow measured steps as though nothing had disturbed so recently the financial prospects and calculations of his master. In the many fatherless houses the dusky black-eyed children sing and play merrily, ignorant of the violent political eruptions which so recently threatened their lives and homes. The great caravans of camels bringing grain, fruit, spices and oil from distant parts of Asia wind their way along the narrow, crooked streets of Smyrna unmindful of the presence of armed soldiers who are arriving daily from the late seat of war. The few birds that inhabit the rural districts chirp and sing the praises of their Creator with the same regularity and devotion as before the war cry between the two angry nations disturbed the atmosphere in which they breathe and move. The Turk who has returned from the scene of war is a different man from his less fortunate opponent. He is conscious of his victory and all that pertains to it. He holds his head high and in loud and emphatic language relates to admiring crowds the story of the war, the many hairbreadth escapes, the successive victories won, and in prophetic words paints the future glory and prosperity that await his country. The haughty victorious Turk has placed his foot upon the prostrate, trembling little Greece, demanding a war indemnity that they may eventually promise but which they never will be able to pay. The Sultan, intoxicated by the effects of an easily won victory, is defiant and counts himself among the leading rulers of the world. It is impossible to predict the ultimate outcome of the war. What now appears as a defeat for Greece may eventually reflect to her permanent advantage. This faint hope is cherished by all civilized nations and by every lover of art and science.

The average Turk is opposed to innovation and progress. In many respects he resembles the North American Indian. He takes no interest in history and tradition. To him the past is a blank and the future immaterial. His mind is engaged with the present. His inborn wishes and desires are in appropriating day after day, from his surroundings, everything within reach that will satisfy his flesh, leaving his soul to die of gradual starvation. He has no sense for beauty. Turkish architecture has gone into decay. Some of the magnificent mosques erected centuries ago are neglected and crumbling into dust. Science and art never had a foothold in this country, and there are no prospects under the present form of government that they will receive attention for centuries to come. The most auspicious national trait of the Turk is his laziness. Indolence is apparent everywhere. Even the numerous dog population of Constantinople has imbibed this national vice. The miserable half-starved brutes. half wolf and half dog, lie listless and motionless on the stone pavements all day, obstructing sidewalks and streets, and if perchance stepped upon have not sufficient energy to change their position or resent the intrusion in genuine dog fashion. Over all bony prominences the hair and often the skin is worn away at points where the almost lifeless carcass rests against the hard, rough bed of stone. During the night they muster up sufficient courage to prowl about for their scanty food supply and clear their dusty throats by violent efforts at barking. These hideous nightly concerts are the trial and terror of the traveler. The scavenger duty these dogs perform is but an inadequate recompense for the noise and disturbance they create during the night. They are the property of the community and eke out a miserable existence by gathering up the bones and crumbs which fall by the wayside. They are local tramps without a single legitimate function. The fanatic Turk would revenge a wilful injury to one of these beasts as quickly as if it had been inflicted upon a member of his family. The foot passengers and drivers are very careful to walk and drive around them for their own peace and safety as well as to prevent unpleasant street scenes. The dogs know that the Turks are their friends and behave themselves accordingly. The filthy streets and the whole aspect of the business world furnish additional evidences of the widespread indolence that prevails here. If it were not for the influx of immigration from countries where indolence does not exist to the same degree as an epidemic disease, the Turks would have died out long ago from starvation. Constantinople, with its nearly a million of inhabitants, is the most cosmopolitan city in the world. In its streets representatives of all nations can be seen. A free mixture of races for centuries has resulted in staining the skin various shades from an almost pure white to an ebony black color. Similarity of dress is unknown here. From the primitive dress of the original races inhabiting Asia and Africa to the most costly costumes of the Parisian tailor, there are innumerable grades. The red fez is the distinctive headdress of the Turk, whether civilian or soldier. The white and green turban distinguish the Mohammedans in mosque and street. The green turban is an evidence that its wearer is a direct descendant of the great prophet. The Turkish women are in reality married nuns. From the time they reach puberty they are shut out from the gaze of infidels by veil and screen. The windows of every house occupied by a Turk are permanently screened. The women are seldom seen in the streets and public places. In various ways the Turk secures their isolation from the outer world. They are to a certain extent prisoners in their own homes, slaves in more than one sense of the word. The inferior position occupied by women has had its decidedly baneful influence in degrading the male population. It is my opinion that greater freedom of the women would be the very best measure to rouse their sluggish husbands to greater activity and to awaken a keener sense of domestic and national responsibility. Let the women attend the little shops and put the men to work in the fields, workshops and streets, and Turkey would soon be able to pay her debts and become one of the most prosperous countries of Southern Europe.

The Turk as a soldier.—It is not generally known that the material for the Turkish army, with the exception of the medical office, is recruited exclusively from the Mohammedan p[illegible] th[illegible] [illegible]lation.

Every Turkish soldier is a believer in the Mohammedan faith. The military schools and barracks are closed to every Armenian and Greek. The Sultan has no faith in the patriotism of any of his subjects who differ with him in his religious views, and he places his own safe-keeping and the fate of his family exclusively in the hands of the Faithful. The Greeks, Armenians and other nationalities, who are citizens of Turkey but do not confess the faith of Islam, subject to military duty, pay a special tax of twenty piastres every year for the support of the army. The Turkish soldier as a rule is larger and stronger than the Greek soldier. The Greek is temperate in his habits of life as far as alcoholic drinks are concerned. The Turk is an almost complete abstainer. Coffee is his national drink. It would be difficult to find a habitual drunkard anywhere in the country. Masticho, a mild beer, and native wines are about the only alcoholic drinks used, and always with great moderation. The use of tobacco is limited largely to cigarettes and the water-pipe. The men are physically well developed and present the appearances of robust health. Among the officers many handsome men can be seen. The greatest diversity in uniform prevails. The cavalry horses are splendid animals. They are of medium size and high-spirited. The riding equipment is plain but practical. From what I have seen I am not astonished that the Greek feared the Turkish cavalry. The mounted force brought terror and consternation whenever it made an onslaught in earnest. The cavalry and artillery are armed with Winchester rifles, the infantry with Martini and Mauser guns. The Turkish soldier is brave when led by a competent commander and when he sees victory ahead. The faith in his religion takes away his fear of death. On the Turkish side the last war was noted for the quick mobilization of troops and well planned sudden attacks, a repetition of Moltke's methods of warfare. In observing the maneuvers of the troops the hand of German drill-masters can be seen everywhere. The organization of the Turkish army is closely patterned after the German army. The Turkish fleet is in a somewhat deplorable condition, far inferior to that of the Greek fleet. A naval war between Greece and Turkey would be a more equal contest than the late conflict on land. The privates and non-commissioned officers possess a common school education, as education is compulsory in the country. The officers receive a careful military education in the military schools at the expense of the government.



A TROOP OF TURKISH CAVALRY.

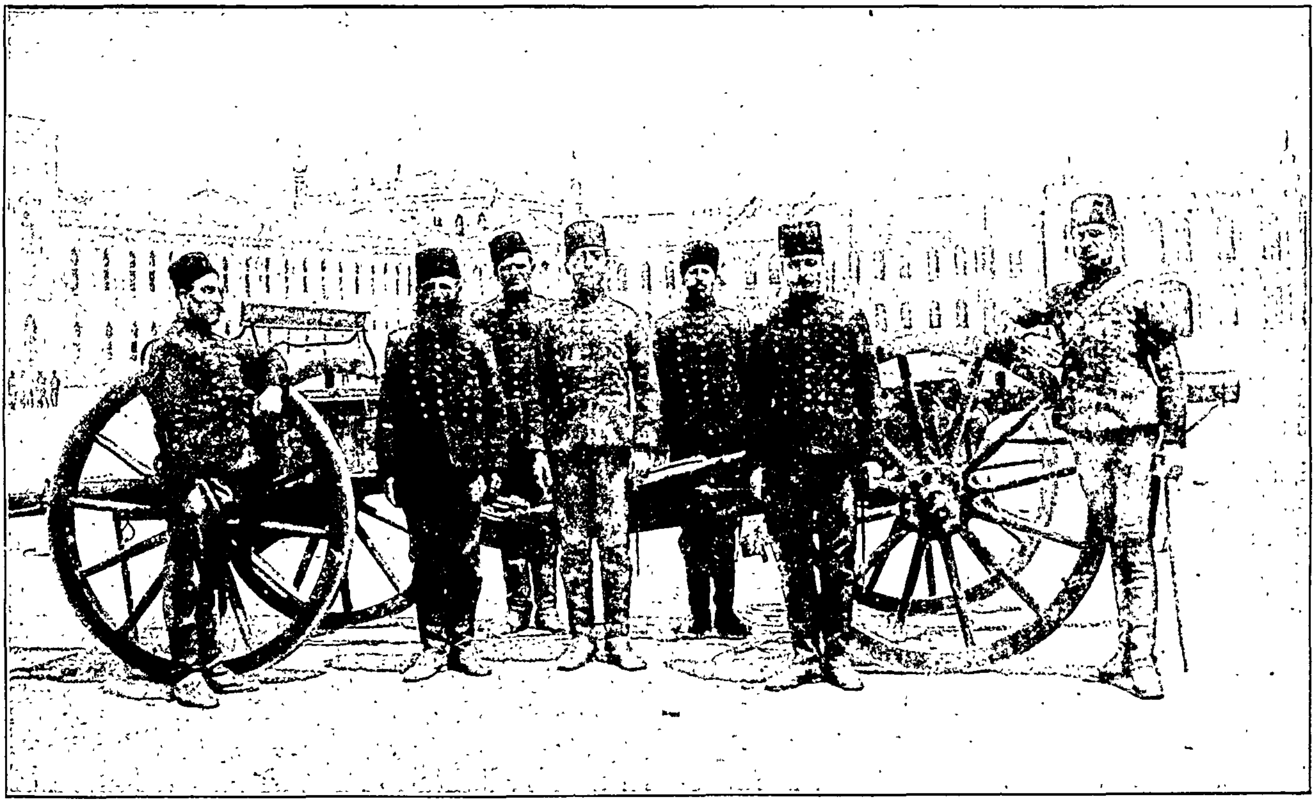
Boy soldiers.—During the late war a number of boys from 13 to 15 years of age, served as volunteers. In one of the military hospitals I was shown three of these little heroes who faced the Greeks on the battlefield. All of them received serious injuries but fortunately recovered. They were anemic and emaciated, but happy in the thought that they had contributed their share in saving their country from foreign invasion. One of the officers took great delight in praising the courage and endurance of these faithful patriots and made the remark that when they did move it was always in the direction of the enemy. Let us hope that the Sultan will recognize their services and that he will see to it that when they leave the hospital it will be with a decoration for heroic conduct, which they can show to their relatives and friends as precious mementoes of their patriotic deeds.

Red Cross societies.—The Red Cross Societies of Germany, Russia and Austria sent physicians, nurses and hospital supplies to the Turkish troops. The

German Red Cross Society was represented by three surgeons and twelve nurses. Russia sent four surgeons and Austria three. Most of the surgeons and nurses did duty in the regular military hospitals under the supervision of the medical staff. The Turkish troops were well supplied with native doctors and there was, therefore, little need of physicians from foreign countries. The English Red Cross sent financial aid. All of the nurses and doctors that remained in the city on my arrival left for their respective homes the next day. The appreciation of the Sultan, of the services rendered by the German branch of the Red Cross Society, was manifested by a gala dinner at the royal palace to the representatives of Germany and Austria the evening before their departure. A notice of this event appeared in one of the daily papers the next day. "The members of the Red Cross Missions sent by their Majesties, the Emperors of Germany and Austria, and who are about to return to their countries on the accomplishment of their task, were entertained at dinner at the Imperial Palace of Yildiz yesterday, Monday. Their excellencies, Mavroyeni Pasha, physician-in-chief of his Imperial Majesty, the Sultan; Munir Pasha, Grand Master of Ceremonies, and Dragoman of the Imperial Divan; and Marshal Shakir Pasha, Chief of the Imperial Military Household, were also present at the dinner. His Majesty was pleased to confer decorations upon his guests, who received them on taking leave after enjoying the Imperial hospitality." Although the Turk is not in sympathy with the work done by the Red Cross societies, he is beginning to appreciate the blessings which these societies bring to the sick and wounded soldiers in time of war irrespective of creed and nationality.

Red Crescent.—During the Crimean war an organization was effected in Turkey, the object of which was to bring aid and comfort to soldiers disabled for duty by sickness or injury. This movement was undoubtedly conceived and fostered by Florence Nightingale, who was then stationed here. After the war the Society remained in existence, but very little interest was taken in its work until after the founding of the Red Cross Association at Geneva during the great War of the Rebellion. The Turks, for obvious reasons, objected to the red cross as the insignia of neutrality of the new society, and adopted in its place the red crescent on a green field. The red crescent has never been popular in Turkey. Not a single member of the army has joined it. It is composed of a few prominent wealthy Turks but the bulk of the list of members is made up of foreigners. The non-combatant soldiers who serve as nurses and litter-bearers wear the red crescent on the left sleeve. The hospital flag bears the same insignia. Practically, the red crescent is equivalent to and is used as a substitute for the red cross in the Turkish Army. During the war just ended the Red Crescent expended 8,000 francs for the relief of the sick and wounded and fitted out a hospital ship which transported many of the wounded from the seat of war to Constantinople. No members of the Red Crescent attended the troops on the battle-field and in the field hospitals. A better organization of the Red Crescent Society is very desirable and should be encouraged and assisted by the Red Cross societies, particularly by those belonging to adjacent European countries.

Medical corps.—The Turkish troops are well supplied with medical officers, who are specially trained for military service. This branch of the military force is open to all nationalities, including the Greeks and Armenians. The medical officers are educated at the expense of the government. The University of Constantinople is attended by about two thousand



TURKISH ARTILLERY.

students, of which number five hundred belong to the Medical Department. The medical course extends over six years, when the candidates for graduation are examined by the Faculty. If the examination proves satisfactory the candidate is reported upon favorably to the Civil Medical Council, in whose hands alone rests the power to grant the degree or licence to practice. As the only university in Turkey is in Constantinople it is somewhat unusual and refreshing to know that the Medical Department contains such a small number of students. The medical student who chooses the military course must pursue his studies the same length of time. The department for medical officers is distinct and the final examination is conducted by a board of examiners composed of seven military surgeons. The president of this board is the Surgeon-General of the Army, who has the rank of a major-general. This board is called the Council of Hygiene and besides deciding upon the merits of the candidates for the medical corps, superintends and controls the work of the medical department of the army. The old custom of training barber-surgeons for the army is still in vogue in Turkey. This low grade of surgeons is composed of men with a limited preliminary education. The barber-surgeon is required to attend lectures and demonstrations for two years before he is permitted to come up for examination prior to his entering the army. His rank in the army is low, his pay scanty and his duties menial. He is allowed to cup, bleed and blister as in years gone by, but is always under the strictest supervision of the military surgeons. He is not allowed to dress a recent wound or prescribe. In a most humble capacity he assists the surgeons in their work. By extraordinary effort and perseverance occasionally such a surgeon is commissioned, when he leaves the barber's trade and is entitled to enter the medical service proper. Two of these surgeons are assigned to each regiment. The medical officers enter the service with the rank and pay of captain. The pay is small and promotion slow unless favored by strong political influences, which here as elsewhere, are the easiest stepping-stones to position and rank. The medical officer in the Turkish army is known by the Æsculapius staff in the center of the narrow shoulder-straps. The rank is indicated by stripes of gold braid on the lower end of the coat sleeve, the stripes running parallel with the sleeve. Officers of high rank are known by the number, color and direction of the stripes. The medical officer, when he enters the army, pledges himself to serve for twenty-six consecutive years, when he can retire with a pension. If, for any reason except disability, he leaves the service before the expiration of this time he is obliged to refund the government for his expenses incurred in obtaining his medical education. That advancement in the medical corps of the army does not always take place in the regular order was made very plain to me when I was introduced to the chief of staff of the Yildiz Military Hospital, who is a pasha with the rank of brigadier general, and is only 27 years old. I was informed later that this rapid advancement was at least in part due to his being the son-in-law of an influential politician who has great influence with the Sultan. It must have been somewhat discouraging to the many gray-haired captains and colonels who have served their country for more than twenty years, to see one so young promoted over their heads. Specialism in military practice is recognized by the Turkish Government. I met two military surgeons, with the rank of colonel, who for years have devoted their whole time and attention to ophthalmology. They attend large wards in the military hospitals set aside for this special kind of work. Both of these men appeared to be familiar with the great advances that have been made during the last twenty-five years in this branch of surgery. There are few men in Turkey who do anything like a large surgical practice. The *furor* of operations has not reached this part of the world. The ovaries and prostate gland are comparatively safe. The Turkish women are not as anxious to be operated upon as their American sisters. The proposal to castrate a Turk for enlargement of the prostate gland would mean personal danger to the would-be operator. The military surgeons are entirely conservative in their work. Unnecessary operating is universally condemned.

Dr. Marie Siebold, a graduate of a Swiss university, is the only female doctor in Turkey. Her sex prevents her from receiving a diploma from the Constantinople University. She has, however, obtained a license to practice her profession. She is an earnest student, a careful and able practitioner and, while not fully recognized by her male colleagues, she is certainly fully their equal. Dr. Siebold has seen military surgery, but during the last war took no active part.

Hospital corps.—The hospital corps is composed of 3,000 non-combatants specially trained for the transportation of the wounded and the care of the sick; litter bearers, detailed as emergency demands, and hospital stewards. The hospital stewards are graduates in pharmacy and are enlisted as such after having passed a satisfactory examination, The army is supplied with 8 ambulances and 200 litters. This equipment for the transportation of sick and wounded during the late war proved inadequate and the most of the wounded had to be carried from the battlefield to the field hospitals on mules, donkeys and rough carts. It is said that many cases of penetrating wounds of the abdomen were strapped on the back of donkeys and died before reaching the hospital. The dressing materials which I saw in the different military hospitals were either of French or German manufacture. Considering the many modern improvements which have been made in the arms and equipments of the Turkish army, it is to be regretted that so little money has been spent in bringing the hospital corps up to the high standard of the present requirements in field and hospital practice.

Military hospitals.—All of the field-hospitals were either buildings used for this purpose temporarily or hospital tents. The permanent military hospitals in Constantinople are large and commodious structures. Everyone is located on an eminence surrounded by ample grounds beautified by semi-tropical trees and flowers.

Yildiz Hospital.—This structure embraces twenty-two barracks and overlooks the palace of the present Sultan. Before the war a few old barracks furnished ample accommodation for the sick of the military force in that part of the city. When the war broke out new barracks were built, and in less than four weeks it furnished room and ample accommodations for 1,000 patients. This is the hospital to which most of the wounded were brought and in which most of the operations were performed. At the time of my visit it contained 900 patients, most of them surgical.

It is under the charge of Djemil Pasha, who is chief of the large medical staff. The surgeon-in-chief is only 27 years of age and is a graduate of Paris. He is a fine-looking man, a polished gentleman and is said to be the best military surgeon in Turkey. The oculist in this institution is Professor Behdjet, who, in the army has the rank of colonel. Colonel Behdjet has a large number of cases under his care and has made some very interesting observations on wounds of the eyeball and orbit. He has had under his personal observation twenty-two cases of traumatic destruction of the eye without a single case of sympathetic implication of the opposite organ, although in a number of cases enucleation was refused. In several cases shown the injured eyeball had been removed, the patients wearing a glass eye with most excellent cosmetic result. It is a somewhat singular circumstance that in all cases it was the right eye which was injured. One of the barracks is used exclusively for operative work. There are two operating rooms, one at each end of the building, one of which is used for aseptic the other for infected cases. Attached to each of the operating rooms is a small ward with four beds where the patients who have been operated on are taken care of until they have recovered from the immediate effects of the operation. The operating rooms are supplied with all the materials and instruments for aseptic work. Until recently two barracks were in charge of four German female nurses belonging to the German branch of the Red Cross Society. The patients are well fed. The day I visited the hospital the bill of fare for dinner included soup, rice, spaghetti, roast mutton and squash. The evening meal includes vegetables. The coffee and bread are better than in the average restaurant and hotel in the city. Wine is served only when prescribed by the attending surgeon.

Haidar Pasha Hospital.—This hospital is one of the oldest in the city. It was erected a few years before the Crimean war. It is located across the Bosphorus in Scutari, is an enormous structure with a capacity for 1,000 patients, and is surrounded by beautiful grounds extensively supplied with trees, shrubs and plants. This hospital has been made famous by the work of Florence Nightingale. It is here that during the Crimean war so many soldiers received her skilful and faithful services. I was somewhat astonished not to find a reminder of her unselfish humanitarian work. The Turks speak of her with great reverence and respect, and in many ways manifest their highest esteem for her, but have done nothing, as far as I could see, to commemorate her memory. The Turkish military hospitals are closed to the outside world. All foreigners have to obtain permission through the minister of war to visit them. The doors once open every possible courtesy is shown from the highest to the lowest officials. Coffee is invariably served at the conclusion of the visit. Soldiers, officers and visitors are expected to smoke cigarettes whenever they feel inclined to do so. As the doors and windows are always wide open this general practice does not vitiate the atmosphere. The Turkish soldier eyes the visitor with great interest and is always willing to subject himself for examination. He is especially pleased to exhibit the effects and marks of recent gunshot injuries. The Haidar Pasha Hospital is now occupied by a large number of convalescents, medical and eye cases; it contains but few cases of recent gunshot injuries. The ophthalmic department is in charge of Col. Dicran Bey Adjeinian; it now numbers 140 patients. Colonel Adjeinian is a graduate of Berlin and devotes his whole attention to diseases of the eye. He has had a large experience in the treatment of ectropium. During the last five years he has operated on forty-two cases by the use of Thiersch's grafts. The contracting scar is excised; the margin of the wound away from the free border of the eyelid is transfixed at two points with a needle armed with silk. The silk sutures are fastened upon the surface of the skin with collodium in such a way as to secure extension, thus widening the wound as far as possible. The raw surface is then covered under strictest antiseptic precautions, with one Thiersch graft. The graft is covered with a few layers of gauze wrung out of a 1 to 5000 corrosive sublimate solution, over which a thick compress of absorbent cotton is placed, the whole confined in place with an ordinary or gauze bandage. In applying the dressing, care is exercised to secure equable compression of the wound. The dressing remains for six days. He has operated by this method forty-two times with twenty-seven perfect, ten partial successes and five failures. He claims that in the cases which terminated favorably there was no tendency to relapse, and that the functional as well as the cosmetic results were excellent. The operating theater is well lighted and furnishes all the necessary equipments for aseptic work.

Formerly typhoid fever was common, but since the water supply has been changed it has almost disappeared. The drinking water is now brought in casks from the mountains. The nursing is done exclusively by male nurses.

Kumuch Sou Hospital.—This is the third large military hospital in Constantinople. It is used for medical and surgical cases. It has about the same number of beds as the Haidar Pasha. Each of these hospitals is in charge of a chief of staff, assisted by the requisite number of surgeons.

Killed and wounded of the late war.—It has been impossible for me to obtain reliable data relating to the strength of the Turkish army or the number engaged in the last war. From what I could ascertain the war footing of Turkey is in the neighborhood of 750,000, and of this number about 100,000 to 150,000 were sent to the front. At the present time Constantinople is full of soldiers. All of the barracks are crowded and nothing indicates that a large army still occupies Thessaly. Last Friday I had the pleasure of seeing the Sultan drive from his palace to the mosque, which he attends every week on the same day and at the same hour. This is always a gala day for the military. On this day at least 10,000 soldiers in full dress, representing the infantry, cavalry and navy, were drawn up to do honor to their chief and protect his person when outside of his prison palace. The officers and soldiers made a splendid appearance and the whole exercises passed off with a regularity and dispatch that would do credit to any country. The cavalry attracted special attention. The soldiers for this branch of the military service are selected with special care and the horses are the finest I have ever seen. The Greeks used large caliber guns and lead projectiles. The wounds on the Turkish side were all inflicted by large lead bullets. Although the Greeks were defeated, the victory seems to have cost many lives. The Turkish army lost 1,150 killed and 2,850 wounded; many of the latter died subsequently. The wounded were dressed on the field and were conveyed as quickly as possible by such means as could be secured to the field hospitals. A good many died here from the immediate and remote effects of their injuries. Those that could be transported were taken either by boat or railway to Constantinople, where ample room and accommodations were furnished by the regular military hospitals. I was given an opportunity to see and examine at least one thousand cases of gunshot injuries, most of them on the way to recovery. Infection was much more frequent on the Turkish than on the Greek side. A partial explanation for this difference is probably furnished by the size of the bullets in use and the difference in distance in conveying the wounded to the permanent hospitals. I took notes of a few cases of interest of which I will give brief accounts.

Case 1.—Secondary resection of shoulder joint. Bullet entered in front, passed through the head of the humerus and escaped behind. Resection of about three inches of the upper end of the bone was made, anterior and posterior incisions, and pieces of cloth removed from the wound. Infection. Fistulous opening remained in front; the posterior incision healed. Very little use of arm. Patient's general condition good.

Case 2.—Gunshot wound of knee joint. Bullet comminuted internal condyle of the femur and opened the joint. Extraction of bullet and atypical resection of joint in the field-hospital. Primary healing. Joint partially anchylosed, with leg in useful position.

Case 3.—Bullet wound of orbit. Bullet entered over the right superciliary ridge, passed backward, outward and downward, and escaped below and in front of external ear. Wound healed and patient is wearing an artificial eye with comfort.

Case 4.—Gunshot wound of knee joint. Bullet located by the use of the Roentgen ray. No suppuration. Incision of joint on both sides and removal of bullet. Primary healing of wounds. Motion of joint almost perfect.

Case 5.—Gunshot fracture of the spinous process at the junction of the dorsal with the lumbar vertebræ. Paraplegia complete immediately after receipt of injury. Paralysis remained until laminectomy at the seat of injury was performed. Operation followed by prompt improvement. Patient is now able to walk without the use of crutches. Depression of fractured vertebral arch was found to be the cause of the paralysis.

Case 6.—Typical resection of shoulder joint for comminuted gunshot fracture of head of humerus. Wounds of entrance and exit were enlarged, through which the fragments and projecting pieces of bone were removed. Wounds healed. Fair degree of motion.

Case 7.—Gunshot injury of shoulder joint. Bullet passed obliquely through joint. Anterior and posterior incisions made through which loose fragments were removed. Operation performed in field-hospital. Slight infection. Fistulous opening remains behind; anterior incision healed by primary intention. Use of arm very limited.

Case 8.—Gunshot wound of shoulder joint. Débridement in the field hospital. Rapid healing of wounds of entrance and exit. Function of arm returning gradually.

Case 9.—Gunshot injury of axillary plexus. Bullet entered below the level of the shoulder joint and on the inside of the surgical neck of the humerus, and escaped behind, half way between the scapula and the dorsal spine. Complete paralysis. Patient complains of great pain, which he refers to the paralyzed limb and caused probably by a traumatic neuritis or neuroma. Secondary nerve suture is being considered.

Case 10.—Gunshot injury of elbow joint. Bullet passed obliquely through the joint, fracturing the internal condyle of the humerus. Primary atypical resection of joint. Infection. Fistulous opening remains behind the joint. The injured parts were exposed by a posterior bayonet-shaped incision. Active motion, none: passive motion, slight.

Case 11.—Gunshot injury of spine in lumbar region. Paralysis complete from the beginning. Bullet remains in the tissues. Wound healed. Cord has probably been crushed by the bullet or fragments of bone.

Case 12.—Resection of knee joint for gunshot injury. Great comminution of articular ends of femur and tibia. Primary resection. Healing of wound without suppuration. Consolidation not complete after two and a half months.

Case 13.—Secondary resection of knee joint for gunshot injury. Slight infection. Healing by granulation. Limb in good position. Bony union quite firm.

Case 14.—Gunshot injury of right crest of ilium. Partial resection for the purpose of removing bullet and loose fragments. Wound healed. Abdominal cavity not opened.

Case 15.—Loss of right eye caused by gunshot injury; loss of a portion of the orbital arch. Wound healed. Patient wearing artificial eye with comfort.

Case 16.—Retrobulbar gunshot wound of right eye. Bullet entered orbit, passed behind the eyeball and escaped in front of the external meatus on the same side. Traumatic optic neuritis destroyed the eyesight completely. Patient refuses enucleation. No sympathetic complications.

Case 17.—Loss of right eye from gunshot injury. Enucleation of stump. Complete healing of wound. Wears artificial eye without any inconvenience.

Case 18.—Gunshot wound of right groin. Bullet entered one inch above Poupart's ligament to the under side of the large blood vessels and escaped through the perineum on the same side. Intestinal fistula remains. Use of limb not much impaired.

Case 19.—Volunteer, 13 years old. Wound of right iliac region. Infection followed the injury and resulted in the formation of a large perityphlitic abscess, which was later opened and drained. Rapid recovery. Boy much emaciated and very anemic, but able to walk about the hospital grounds.

Case 20.—Volunteer, 14 years old. Gunshot wound of arm. Bullet passed from behind backward about an inch to the inside of the surgical neck of the humerus. Healing of wound by primary intention. Little or no impairment of function of the muscles of the arm.

Case 21.—Volunteer, 13 years old. Flesh wound of leg. Healing of wound under primary dressing.

Case 22.—Gunshot injury of skull. Primary operation. Removal of depressed fragments of bone. Wound healed leaving a pulsating cranial defect.

Case 23.—Secondary amputation of arm for gunshot wound. Stump healing by granulation.

Case 24.—Gunshot wound of superior maxilla. Partial secondary resection. Wound healing by granulation.

Case 25.—Partial resection of lower jaw for comminuted gunshot fracture. Considerable deformity.

Case 26.—Gunshot fracture of humerus. Great loss of bone caused by the injury and later by an operation for the removal of sequestra. Although periosteum was saved there is no callus at the end of two months, and a false joint without further interference will be inevitable. No nerve injury.

Case 27.—Gunshot wound of right groin. Abscess formation. Incision and drainage. Rapid improvement. Fistula remains. No intestinal complications.

Case 28.—Resection of shoulder joint. Wounds healed. Arm remains almost useless. Great muscular atrophy.

Case 29.—Gunshot injury of skull. Removal of fragments of bone. No focal symptom. Wound healed leaving a pulsating scar.

Case 30.—Loss of right eye from gunshot wound. Wound healed. Wearing artificial eye.

Case 31.—Gunshot wound of nose and hard palate. Bullet entered the center of the bridge of the nose and entered the mouth through the hard palate. Patient spit out the bullet from the mouth immediately upon the receipt of the injury. The perforation in the hard palate was closed by a plastic operation. External wound healed. Saddle nose.

Case 32.—Gunshot wound of face and lower jaw. Bullet entered over the ascending ramus of the lower jaw on the right side, entered the mouth, perforated the tongue and escaped through the mouth. A suppurating fistula communicating with the jaw remained. Recently this fistulous tract was laid open and a detached tooth was removed, after which the fistula closed rapidly and permanently.

Case 33.—Gunshot wound of ascending ramus of jaw on right side. Bullet chipped away part of the bone and lodged behind near the spine, from where it was successfully removed by a tedious and difficult operation. Movements of lower jaw limited, otherwise no functional disturbances.

Case 34.—Resection of elbow for gunshot injury. Secondary operation through posterior bayonet incision. Fistulous openings and considerable swelling of soft parts remain. Muscles of arm and forearm much atrophied.

Trephining for traumatic abscess of the brain.—Djemil Pasha, of the Yildiz Hospital, informed me that trephining for abscess of the brain following gunshot injuries with lodgement of the bullet in the cranial cavity, was performed three times. In all of the cases the indications for the operation were furnished by the intracranial suppuration. In all of the cases the abscess was found and the bullet removed. Two of the cases recovered and one died.

Constantinople, Aug. 6, 1897.

THE NERVE ELEMENT IN SURGICAL PATHOLOGY.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

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The interlacing of the nerves with the different structures of the body gives energy to every vital organ in health and aggravates their disorder in disease.

To understand the correlation of the nerves and capillaries with the internal viscera presupposes a knowledge of the relation of the cerebro-spinal nerves with the ganglionic and vasomotor nerves. The outgrowth of the operation of the excito-motor, the excito-secretory and the excito-dynamic functions of the nervous system upon the different structures in their physiologic condition, prepares the mind to appreciate the great effects of vitiated actions of the nerves under their pathologic derangement.

The organic changes in nerve tissues are pre-eminently characteristic of the direct involvement of the nerve element, and the development of neuromata in the course of the nerve trunks illustrates the part taken by the nervous system in surgical pathology.

Neuralgia, in all its protean forms, is not a mere functional derangement of the nerve centers, but depends in most cases upon local modifications resulting from inflammatory action in the neurolemma or parenchymatous structure of the affected nerve. It may also exist, in a spurious form, connected with compression of the trunk, or from cicatricial adhesions after operations. The impression that contraction of nerves may give rise to painful developments has led to nerve stretching as a remedial agent, but little advantage has attended this procedure, and the idea that nerve shortening is pathognomonic is thus negatived.

Facial neuralgia has been traced to the Gasserian ganglion, and successfully attacked in some cases by operative measures involving the temporal bone, or in other cases by ligation of the common carotid artery.

Rheumatic complications of a most painful form, involving various regions of the body, are dependent upon the nerve supply to the part; and the acute sensibility of such structures renders anodynes of the greatest importance in the treatment of such disorders of the different organs.

Inflammatory processes, wherever located, are accompanied with pain, from the entrance of the sensory branches of the nerves into the organs; and the means which are adopted for the relief of the inflammation must include the control of the neurotic disturbance by combating this pain.

It is a fair inference that all agencies for the mitigation of pain have a curative effect upon the structures involved in disease.

The reciprocal influence of body and mind, in the progress of most physical disorders, depends upon their connection through the nervous system.

The psychic characteristics of neurotic patients must be taken into account in the management of surgical disorders, just as in medical cases, and much depends on the mental state of one who has undergone a grave surgical operation. The enervating influence of depression of spirits on the nervous system should be obviated by pleasant surroundings in the after-treatment. While these manifestations of the nerve influence in surgical disorders indicate the relation of cause and effect, it is to another mode of action on the part of the nervous system that I wish to draw especial attention.

In my address as President of the Southern Surgical and Gynecological Association, in 1892, the following points were presented: Observation of the changes resulting from inflammatory processes should be accompanied by a study of those modifications impressed upon the tissues by impairment or undue activity of the nerve element which enters into their composition. That many operators fail to take the nervous system into account in their surgical pathology, shows a lack of due consideration of the surroundings of a patient. It may be that a skilful operator is not qualified for the highest attainment in surgery, from lack of proper precaution in proceeding with an operation, or subsequently.

The aim of the surgeon should be a due comprehension of abnormality in the structures of the part involved, and his end be to afford relief with the least possible injury to the organ or member which is the seat of disorder.

A proper recognition of the scope of surgery and medicine assigns to them respectively the organic and functional disorders of the system; when organic changes ensue, whether demanding the use of medication or a resort to operative measures, the case comes within the field of surgery.

With our deficient knowledge of the etiologic factor in that condition known as shock, I am inclined to the view that a continuous baleful influence is propagated to the nerve centers from the disintegration of the structures involved, and that this may be modified favorably by amputation with a clean incision through sound tissues above the point of injury, very soon after such violence to the parts. A proper appreciation of the participation of the ganglionic nervous system in shock, should impress the great urgency of arresting the morbific influence by removing the cause.

The motor and sensory branches of the cerebro-spinal system of nerves are so related to the ganglionic nerves that an impression is propagated from the former to the latter by every change resulting from violence. We are therefore prepared to expect surgical shock involving the organic nerve centers from any accident accompanied by great laceration and contusion of the soft parts, or comminuted fracture of bones of the lower extremities.

To a greater or less extent the injury inflicted on the superficial cutaneous nerve fibrils is extended to the internal organs by the correlation of the nerves and capillaries with the viscera, and any extensive impression over the surface, however slight, is attended by marked vital depression. A striking illustration of this fact is presented in the grave effect of slight superficial burns extending over a large surface, and the serious consequences of the stings of wasps or bees over any considerable part of the body, though each is insignificant in itself. The notable effects observed from cups, sinapisms and blisters upon the skin are likewise due to the sympathies established through this channel of the nerves.

A dynamic element which characterizes the mutual dependence of the superficial and deep-seated structures is apparent from the fact that, under some conditions of the organism, the irritant fails to manifest its influence on the tissues. The mustard or cantharides may be applied to the surface for the ordinary period, under such a depressing modification of vitality, without producing any perceptible effect. Yet, when a change has been effected in the state of the organization, normal susceptibility is restored.

The natural sensibility returns to the skin and irritation, with the consequent inflammation, manifests itself in the parts where no effect was previously observed. A rigid investigation of the nerve element implicated in this condition is required by those who would fathom this lack of the excito-dynamic function of the nerves.

The developments growing out of the relation of certain portions of the brain to the distribution of nerves to different parts of the body, are calculated to impress the profession more than any of the other advances of surgery within the last decade. It is to Horsley especially that we are indebted for localizing the brain centers connected with the distribution of nerves, and this fact has enabled surgeons to fix upon the sites of tumors and abscesses in various fissures and in the substance of the brain, by tracing the abnormalities of the branches of the nerves back to their origin. While this knowledge has served to guide the surgeon in chronic cases, little progress has been made in acute cases attended with blood clot or with localized inflammation. It is stated, in the *Medical News*, that Oppenheim emphasizes the difficulty of differential diagnosis in traumatic brain abscesses, which may be confounded with traumatic meningitis, apoplexy, encephalitis, tumor, epilepsy, traumatic neurosis, etc.

One of the great practical questions of the day which concerns every surgeon, is the consideration of traumatic neurosis, and, notwithstanding the numerous papers written for its elucidation, the decision is still involved in great obscurity. Even in cases where there is no motive for deception on the part of a patient, there are such a variety of neurotic troubles growing out of physical injuries, that depend upon the psychic impressions of the subject, that it is difficult to determine anything from subjective symptoms. There is frequently a notable absence of definite objective symptoms, and often a strong influence for simulation, which afford obstacles to forming an opinion in a given case. In an article by Dr. A. L. Hall,[1] we learn that "a correct diagnosis is best obtained from a reliable account of the accident, the history of the previous state of the patient, the presence of surgical troubles, and the existence of a stable well defined organized symptom complex."

There is a nervous disturbance which is attributed to so many different causes and relieved by such diverse means of treatment as to leave a doubt whether it should be classed with the neuroses or considered as an inflammatory process. This is known as multiple neuritis. The symptoms, according to Gowers, are of three classes—motor weakness, sensory disturbance and inco-ordination. According to the predominance of one or another of these, we have a motor, a sensory, and an atactic form of the disease. In an article by Dr. Charles Lewis Allen, it is stated that neuropathic constitution and exposure undoubtedly predispose to an attack. It begins with tingling and numbness in the finger-tips and soles of the feet. Sooner or later this spreads up the limb, and is followed by pain and loss of power, the legs suffering earlier and more than the arms, and often exclusively. The pain is located along the nerves and in the muscles.[2]

The involvement of the nervous system in epilepsy, is of such a nature that its effects are to a large extent dependent upon a cumulative influence, which leads to periodic explosions. It is held by Hughlings Jackson, that the phenomena of epilepsy are all explained by a discharging lesion of the cells of the gray matter, and that the disease affects the motor centers and does not often have its primary seat in the medulla.

The nerve-cells are likened to so many Leyden jars which generate the electricity. Thus the explosion is due to a sudden diminution of resistance by which the pent-up nerve force is released, thus causing the epileptic phenomena. It so turned out that a similar solution of the intricate problem of the causation of this intermittent nervous disease was presented by me, before I knew anything of the theory of Hughlings Jackson, in a paper written in 1882, and read before the Medical Association of Georgia in 1884.

In illustration of my claim of originality I give the following quotation from my paper: The periodic and irregular exhibitions of nervous disturbance involves the most intricate etiologic conditions in the history of the pathology of this class of diseases.

Why the cause should be operative at one time and not manifested at another, is only capable of explanation on the basis of an accumulation of energy, which leads as it were, to an explosion, with a capacity of reproductions at certain intervals or at indefinite and irregular periods. The calm which is observed between the convulsions of epilepsy is not in any sense an absence of the disturbing cause, but an occasion for its gradual development until it shall have reached a force that breaks forth in the paroxysm, which is *sui generis*. The charge becoming completed, there is a forcible eruption of the excito-dynamic energy of the nerve centers.

Another phase of morbid development growing out of the transmission of local irritation or inflammation to other parts through the nerves, comes under the head of reflex disturbance. While the sympathies of certain local developments, especially those connected with the genitals of male and female children, with the distribution of the nerves to various organs of the body, are evident, the link of association is somewhat obscure. It is true that the practical results of surgical operations based upon this view have gone toward the confirmation of such a relation, and removal of the prepuce and clitoris, in the respective sexes, have proved successful in relieving the neurotic disturbances which are attributed to the local troubles.

The eruption of the teeth in children, and even wisdom teeth at a later period in life, are attended with neurotic disturbances of a marked character, which are promptly relieved, at times, by cutting through the gums.

These various manifestations of the intimate relations of the nerves with the different structures of the body open up the way for comprehending the role of nerve element in surgical pathology.

The development of traumatic neuritis is the most common complication of surgical cases; and there is rarely any extensive lesion which is not accompanied with more or less pain dependent upon inflammation of the nerve or its neurolemma. The irritation of the peripheral branch of a nerve may set up a train of disorders terminating in tetanus or lymphangitis, and the serious consequences of both these affections are well known.

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[1] Medical Record, p. 436, Sept. 26, 1896.

[2] Medical Record, p. 587, April 24, 1897.

In the latter condition, not only the lymphatic ducts become implicated but ganglions are involved in the inflammatory process, and suppuration is set up in the course of the lymphtics, with the characteristic features of pyemia, terminating in multiple abscesses in various portions of the body.

The subcutaneous use of simple distilled water has been resorted to with apparent effect upon the nervous system, and this proves a very delicate response of the nerves to the action of agents introduced hypodermically. The marked results of subcutaneous injections depend upon the connection of the nerve fibrils and the capillaries with the spinal and the ganglionic system of nerves.

The transmission of cutaneous modifications to the internal organs becomes, in numerous instances, simply the expression or delivery of a dynamic influence which operates through the nerves. Instead of a local irritation, as might be anticipated from the topical application, there is a general influence upon the organism corresponding to the special property of the agent employed, and we must attribute the effect to the conduction of medicinal powers from the point of introduction through the various channels of communication with the dependent structures.

To summarize the chief features of practical importance in the relations of the nervous system to other structures involved in surgery, we make the following deductions:

1. The cutaneous development of the minute branches of the cerebro-spinal system of nerves and the ganglionic ramifications of the gr[illegible] are so related to the capillaries, as to [illegible]rocal action and reaction between them and the great nerve centers.

2. The vaso-motor nerves are so intimately linked with the excito-motor, the excito-secretory and excito-dynamic system of nerves that impressions made through the superficial afferent nerves are conveyed to all the corporeal structures and tissues so as to produce their effects upon the different organs.

3. Reflex phenomena depend on a complex interchange of local pathologic conditions with the nervous ramifications to remote parts of the body.

4. The fountain head of energy for all the functions lies in the nerve centers; and by controlling emanations from this source of power, the vital forces will be propagated, with regularity and uniformity, to all the remote parts of the physical organization. On the contrary, a harmful influence disseminated from the nerve centers entails disease in the different organs.

5. The means to be adopted for averting injurious impressions on the nerve centers, and the measures to be used for the correction of their derangement, make up the whole prophylactic agency of hygiene, and include all the therapeutic appliances in the treatment of diseases, as well as the application of surgical measures.

6. Close observation of the various modifications of the nerve element on the physical organism should reveal its direct influence in surgical pathology, and lead the surgeon to the adoption of proper means of relief.

Odol.—Alcohol 97 grams, salol 2.5 grams, saccharum .004 gram, essence of peppermint 0.5 gram, and traces of essence of cloves and caraway.—*Nouv. Remèdes*, from *Pharm. Ztg.*, 1897, No. 43.

THE OPERATIVE TREATMENT IN OCCLUSION OF THE JAWS.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

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At the meeting of the American Surgical Association June 1, 1883, I read a paper on this subject and endeavored to collect all the information which then existed with regard to the procedures which had been in use from the first, for the relief of a condition which may at least be described as one very distressing to the patient. Mr. Christopher Heath of London in the "Jacksonian Prize Essay" of 1867 recorded cases in which he had performed operations for the relief of jaw-closure, and in a chapter devoted to the subject collated the work of others up to that date. According to Mr. Heath's statements, English text-books on surgery were remarkably barren of any information on the subject. He alludes to a reference of Mr. Cooper in his Surgical Dictionary, to a case treated by Dr. Valentine Mott in 1831, in which an operation was performed for closure of an opening in the cheek caused by sloughing and accompanied by closure of the jaws. In the edition of Cooper's Dictionary issued in 1861, closure of the jaws is described as occurring "after sloughing of the cheeks and gums from profuse salivation, the cicatricial bands being so rigid as scarcely to allow of the separation of the teeth." By far the most complete account is given in the first edition of Gross' "Surgery." This eminent surgeon had a favorable opportunity for studying the affection during his residence at Louisville, Ky., where, in college and hospital clinics, he was enabled to acquire a large experience owing to the prevalence of this condition due to the administration of calomel in excessive doses in the southwestern sections of the country.

The affection occurs in two forms—the spasmodic or temporary, and the chronic or permanent. The former usually occurs in connection with some condition which affects the motor filaments of the third division of the fifth nerve, causing spasmodic contraction of the elevator muscles of the lower jaw. Among the causes may be enumerated the delayed or difficult eruption of the third molar or wisdom tooth of the lower jaw, the development of tumors from the external surface of the ramus and body of the lower jaw, alveolar abscess in connection with the posterior teeth, necrosis of the jaws, suppurative tonsillitis, and I have observed the condition to follow operations on the lower jaw when performed in the molar region. It may be proper to include under the temporary form of jaw-closure the condition which occurs in connection with attacks of tetanus. This form differs from those described above by reason of the fact that the jaw-closure is one among other symptoms which are present.

The treatment of the temporary form of jaw-closure consists in the removal of the causes. When dependent upon the impeded eruption of the wisdom tooth, the mouth should be opened by levers, the patient being placed under the influence of an anesthetic, and the second molar tooth should be extracted so as to afford space for the third molar, or as the latter is not infrequently found to be an imperfectly developed tooth, the offending organ should be removed. Where tumors, necrosis and alveolar abscesses exist as causes, the treatment is obvious. For the relief of trismus, which is so prominent a symptom of tetanus, remedies which are efficient in controlling the general condition will afford relief.

Permanet jaw-closure may be due to conditions which attach the alveolar processes of the jaws firmly together, or to those involving the temporo-maxillary articulation. Union of the processes of the jaws may be accomplished through the formation of cicatricial tissue or of an osseous band. The formation of the cicatricial tissue is due to inflammation attacking a portion or the entire buccal mucous membrane. In these cases the inflammation may be due to ordinary causes or, as was most frequently the case in former years, be created by the excessive use of calomel producing severe ptyalism, and, as a rule, it occured in children. As a result of its occurrence at an early period of life the growth of the lower jaw and the associated structures is very markedly interfered with. I have observed this condition in many of the cases which have come under my observation. The formation of the osseous band may depend upon injury to the parts or arthritic inflammation leading to a a deposit of plastic matter and the conversion of this substance into fibrous, cartilaginous or osseous tissue. This bridge of bone may extend from the lower to the upper jaw or from the lower jaw to the temporal bone.

Closure of the jaws due to anchylosis of the temporo-maxillary articulation may occur as a result of inflammation attacking the joint, or of injury leading subsequently to inflammation which results in the formation of fibrous or osseous deposits. Very frequently the inflammatory action which is responsible for the obliteration of the function of the joints is rheumatic in character, and the condition is found to exist largely in those who suffer from rheumatic affections. It may also occur as the result of inflammation due to blows or concussions. The most frequent cause, according to my observation in traumatic cases, is the occurrence of fracture involving the neck of the condyle and which has been unrecognized. Such condition shortly leads to closure of the jaws, and this finally becomes permanent.

The pathologic conditions which produce jaw-closure may exist on one or both sides, that is, it may be unilateral or bilateral. In cases of closure due to the presence of cicatricial tissue or osseous band the diagnosis may be readily made by inspection of the parts and the introduction of the finger into the buccal spaces. When the temporo-maxillary articulation is involved the diagnosis may be somewhat more difficult, by reason of the inability of the surgeon to decide whether the joint is at all affected, the closure being possibly due to a contracted or rigid condition of the levator muscles of the jaw, and also, when the affection is unilateral, to decide on which side the fault rests. As complete a history as possible should be obtained in every case and both inspection and palpation of the joints should be practiced. The index finger of one hand should be passed into the mouth and carried as fas as possible on the inner surface of the ramus of the jaw toward the joint, and the index finger of the other hand should be placed over the joint externally. The patient should then be requested to make an effort to move the jaw so as to ascertain whether any motion exists in the joint. This manipulation should be made on both sides in order to determine in which joint motion may exist. The history of the case, in the event of the occurrence of injury to the joint or fracture of the neck of the condyle, may give information as to the joint involved, but this can not always be depended on. Deviation of the lower jaw to the affected side may sometimes exist, especially when anchylosis has been preceded by some inflammation. In such cases this condition aids diagnosis.

Under the improved methods of treatment the prognosis of jaw-closure may be regarded as favorable. Even in the most inveterate cases, in which the entire buccal spaces on both sides have been obliterated by masses of nodular tissue, operative treatment promises relief.

The treatment of jaw-closure due to the formation of cicatricial tissue has claimed much attention and has taxed the skill and ingenuity of surgeons from the beginning. At first, efforts were directed simply to the division of the tissue and the use, subsequently, of levers varying in power, by which the jaws were separated. The rapid reformation of the nodular tissue, with augmented induration and contractile power, rendered this method futile. Excision of the mass was then practiced with the hope of securing normal membrane in place of the tissue removed. This plan was not successful and was followed by a suggestion, if not the practice, of excision and transplantation of mucous membrane or of integument into the denuded buccal space, taking the flap of integument from so distant a point as the arm. Failure attended these efforts, and in 1851 Professor Esmarch of Kiel read an essay before the congress at Göttingen on the "Treatment of Closure of the Jaws from Cicatrices," in which he advocated the formation of a false joint in front of the cicatricial mass by the excision of a segment of bone of such size as to prevent union of the divided end and the operation was performed by an external incision along the base of the jaw. Professor Rizzoli of Bologna, in 1857, operated for permanent contraction of the jaws by a simple division of the lower jaw in front of the cicatrix, using for that purpose powerful forceps applied within the mouth. In order to prevent union a piece of gutta-percha was inserted between the cut surfaces of the bone, which procedure, it is stated, was accomplished successfully. By these two methods of operation one half of the mouth could be opened slightly, and thus far the operation was regarded as successful. The manifest objections to these methods were: 1. The slight extent to which only a portion of the mouth could be opened. 2. The formation of a disfiguring cicatrix, especially objectionable in females, when the external incision is employed. 3. The fact that this method could not be employed when both buccal spaces were occupied by cicatricial tissue.

Having failed, as others before me had done, by the employment of the different methods in vogue, I was led, in a study of the character of the pathologic structure which existed and of its marked tendencies to union after section as well as its reproductive power, to the adoption of a method by which normal mucous membrane should form behind the cicatricial mass. It was evident that if such a line could be formed the pathologic tissue in front could be severed without fear of union occurring, and the divided portions could be kept separated and their nutrition modified. In performing the operation a long-handled, slightly curved needle armed with a strong aseptic twisted-silk ligature of sufficient length is introduced at the angle of the mouth on the inner surface and carried carefully into the space between the cicatricial mass and the buccinator muscle and the point made to emerge at the position of the last molar tooth of the lower jaw—at which point the posterior border of the cicatricial tissue can usually be felt. The ligature is now seized with the toothed forceps, the needle withdrawn and the ends tied, the ligature lying loosely in the channel thus formed. As the intention is not to divide the mass by the ligature it is permitted to remain without traction, the formation of the canal lined by normal mucous membrane being facilitated by drawing the ligature backward and forward, and thus destroying any adhesions which may form. The introduction of a probe curved so as to easily take the direction of the canal is also of service, and gives the surgeon information as to its condition. When the probe passes readily and smoothly and without provoking bleeding, it may be assumed that the canal is lined by normal mucous membrane.

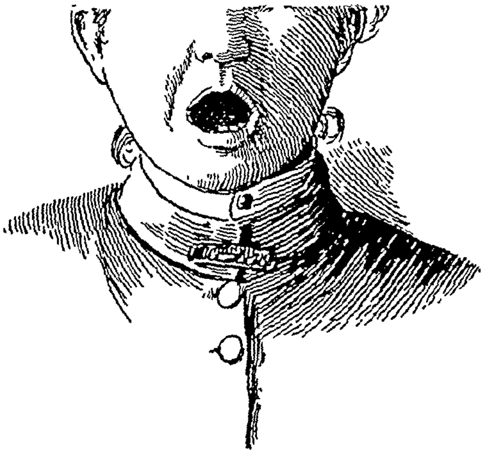

Fig. 1.—Closure due to cicatricial tissue. Operation by introduction of ligature and division of cicatricial tissue.

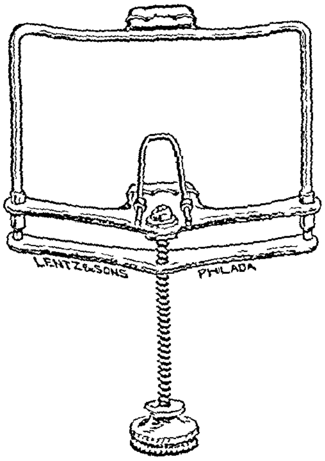

Fig. 2.—Author's gag.

When this condition is established beyond a doubt, in my experience usually at the end of three weeks, a grooved director curved in proper manner, is introduced into the canal and a blunt-pointed bistoury is carried along the groove dividing the tissue as it advances. This being accomplished a gag is placed between the teeth and the mouth forced open to its widest extent. The buccal space is then packed with 5 per cent. iodoform gauze, which is replaced the third day, the cavity being thoroughly cleansed with a disinfecting solution at each dressing. At the expiration of the second or third day the gag should be used, opening the mouth to its widest extent, and each day this should be practiced until there is evidence of the formation of normal membrane lining the buccal spaces, and the patient can without the aid of the gag open the mouth freely, the iodoform packing may be diminished as the reparative process advances. In some instances I have provided patients with a gag and advised its use from time to time, in order that the newly formed membrane may be kept pliable. In a few months, three to four, its use may be dispensed with. My experience with the method above described has demonstrated its value. It overcomes all the objections to the plan which involves the creation of a false joint in front of the cicatrix, and secures as perfect a result as possible.

As the result of jaw-closure which has occurred at an early period of life; dentition is seriously interfered with. In some cases in which I have operated I have found the teeth projecting in all directions, crossing the oral cavity at various angles and forcing the tongue to rest on its edge. In such cases I take advantage of the anesthetic state of the patient at the time of operation to extract all of the teeth and roots which require removal, and thus prepare the alveolar borders for the adaptation of artificial dentures.

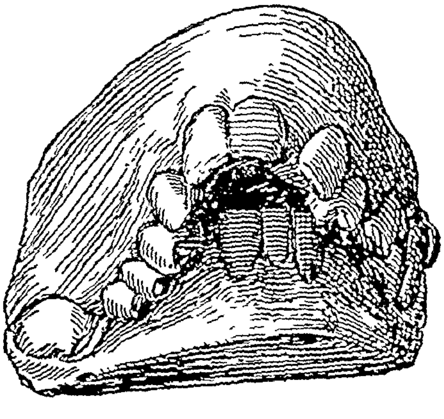

Fig. 3.—Impression of mouth before operation.

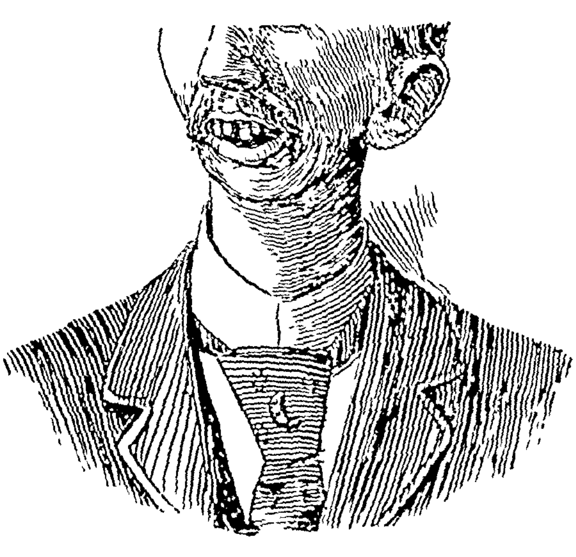

Fig. 4.—Showing condition of non-development of lower jaw.

I referred above to the interference with the development and growth of the bones and soft structures of the face which sometimes occur in cases of jaw-closure. I exhibit a photograph of a case in which this condition occurred to a [illegible] extent [illegible] patient being at the time of operat[illegible], and had suffered from jaw-closure in its severest form for a period of twenty-seven years.

The relief of jaw-closure due to the formation of an osseous bridge is easily accomplished by section of the bridge, a metacarpal saw being introduced and division effected from within outward. If the space between the teeth does not permit introduction of the saw into the oral cavity, section may be made from without inward from the buccal cavity. The disuse to which the temporo-maxillary joint has been subjected by reason of the closure frequently renders the joint rigid and motion painful; the use of the gag for a short time overcomes these conditions. More or less absorption of the divided bony bridge occurs after a time. If the mass is large it may be necessary, in order to overcome deformity, to remove the segments with the chisel or dental saw or burr.

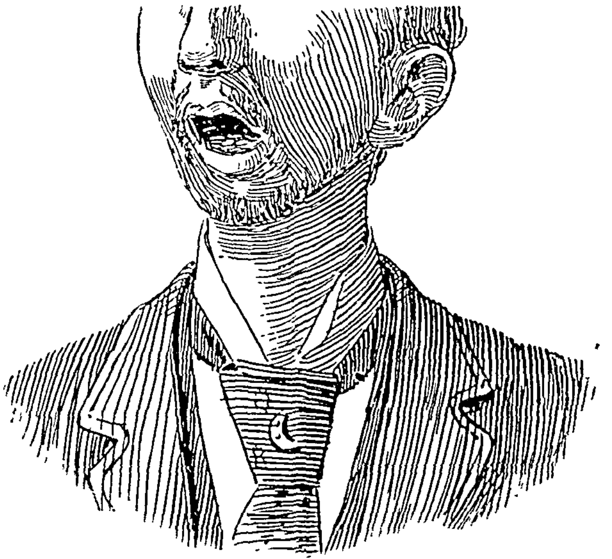
Fig. 5.—One year after operation.

Various methods of operative procedure have been resorted to for the relief of closure due to anchylosis of the temporo-maxillary articulation; these have differed from each other in the selection of the ramus or the condyle as the point at which an effort has been made to establish a false joint. Fibrous anchylosis can be removed by forcibly breaking the adhesions by movements as in the case of any joint.

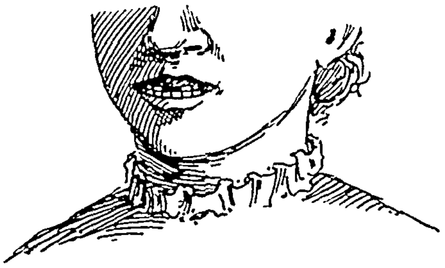
Figure 6.

To Dieffenbach is due the credit of having first practiced division of the ramus of the jaw, and by this operation creating a false joint for the relief of synostosis. Accompanying this method section of the masseter and temporal muscles has been performed. In 1863 Grube, as stated by Professor Gross, formed a false joint by dividing the neck of the bone with a straight chisel introduced through the mouth. Excision of the condyle by external incision in front of the ear, was practiced by Professor Gross in 1874 with excellent results in a case of complete synostosis of the lower jaw on the left side in a girl 7 years of age.

A review of the results obtained by these methods shows that neither accomplished all that was desirable. Section of the ramus was frequently inadequate and as frequently failed entirely by reason of reunion of the bone. Exsection of the condyle, while affording greater motion than section of the ramus, did not secure the establishment of as freely movable a joint as desirable, and moreover was performed by an external incision, which is always an objection by reason of the cicatrix formed on the face.

In order to secure a more freely movable false joint I have practiced excision of the upper half of the ramus, removing both coronoid and condyloid processes by an incision within the mouth. The operation is performed by introducing a tenotome beneath the masseter muscle and forming a opening into which an Adams saw is passed, and dividing the ramus. The upper segment of bone is seized by the lion-jawed forceps and a probe-pointed bistoury is carried through the wound to the position of insertion of the temporal and external pterygoid muscles. The tendons of these muscles are severed and the segment twisted out of its position by the forceps. It may happen that the bone is broken in this effort and the coronoid portion alone removed. When this occurs the chisel is used to remove the remaining portion, including the condyle. In all events enough should be removed to insure ample space for the formation of a large joint, and also prevent, what is not likely to occur, reunion of the bone. The cavity formed is packed with 5 per cent. iodoform gauze for the purpose, not only of separating its surfaces and expanding it, but also for its service in controlling hemorrhage. The position of the inferior dental and the

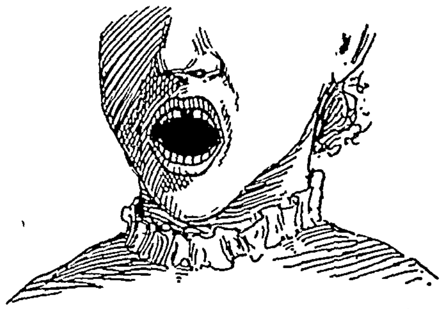
Fig. 7.—Closure due to formation of bridge of bone. Operation by section of bridge by Law. Four years after operation.

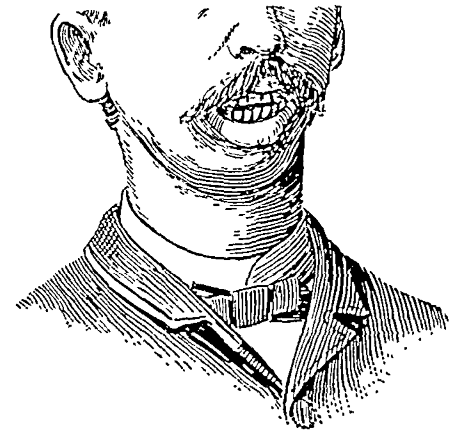
Fig. 8.—Closure due to fracture of the neck of the condyle.

internal maxillary arteries are to be borne in mind, and injury to them avoided. In the event of their being wounded the hemorrhage may be controlled by the gauze packing. Repacking of the cavity should be made on the third day, and then every other day, the cavity being cleansed by the injection of a disinfecting solution. The mouth should be opened by the gag, which should be used daily for the purpose of overcoming the rigidity of the opposite joint and of the muscles, occurring as the result of disuse. At the same time its use facilitates the formation of the false joint. Lateral displacement of the jaw does not follow this method as might probably be expected, as may be seen in the photograph exhibited. In one case it is seen but it will be observed that the deviation existed before the operation and was caused by the inflammatory action which accompanied the necrosis from which the patient had suffered and which produced the anchylosis.

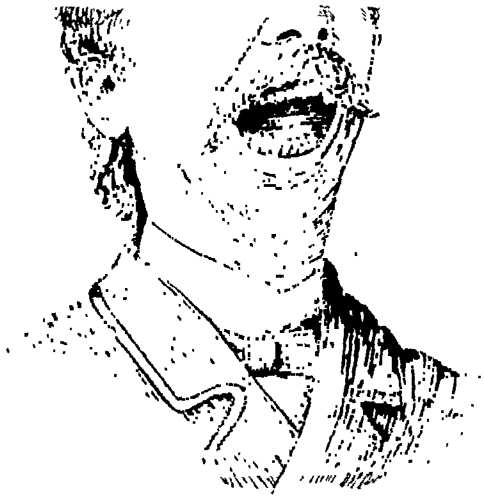

Fig. 9.—Operation by section of ramus and removal of upper segment of bone. Condition 2½ years after operation.

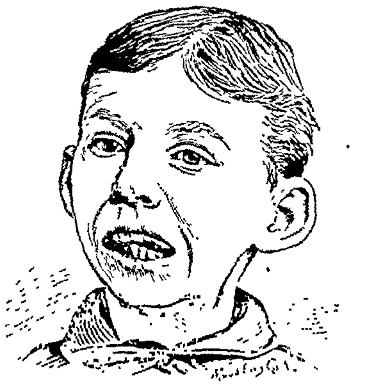

Fig. 10.—Lateral deviation due to necrosis preceding operation.

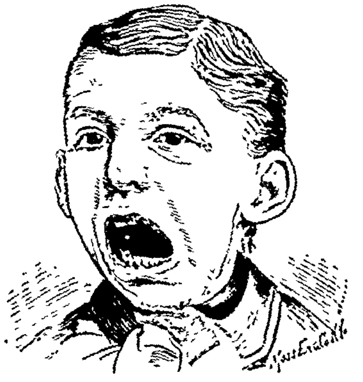

Fig. 11.—Ten months after operation.

The conclusions which I present are:

1. Jaw-closure due to the presence of cicatricial tissue in the buccal spaces can be most efficiently relieved by the formation of a canal lined by normal membrane, by means of a ligature passed behind the cicatricial mass. Reunion of the divided tissue and reformation of the nodular tissue not occurring after division when this canal has been formed.

2. Synostosis of the temporomaxillary articulation, producing jaw-closure, can be best relieved by removal of both coronoid and condyloid processes with the upper portion of the ramus, thus affording ample space for the formation of a freely movable false joint. The operation should be performed through the mouth, thus avoiding disfiguring cicatrices.

DISCUSSION.

Dr. D. MacLean of Detroit—This is a very interesting paper on a specially important subject, particularly on account of its comparative rarity. My experience with these cases has been similar to that of Dr. Mears, and it is difficult to imagine anything more annoying to the patient than this affection. I remember this very well from a case I had some years ago, in which there was synostosis of the jaw occurring after scarlet fever. I believe statistics would show that the disease occurs more often after scarlet fever than after any other disease. In the case I refer to the patient could not move the jaw and I endeavored to relieve the condition by what I thought was an entirely original operation. I dissected off a part of the muscles of the jaw at the angle and resected a V-shaped incision on each side. I kept up passive motion for a long time until a complete false joint was formed on both sides, and I had the satisfaction of securing a useful joint. Dr. Mears has presented a larger view on the subject and I consider his paper a very practical and important one.

Dr. Lewis A. Sayre of New York—I would like to refer to an operation performed for this same condition by Dr. Schmidt of New York. My own son had a case of a similar nature, and by daily prying it open he got a useful joint. Schmidt was one of the first to operate this way, and he did so by dividing the masseter muscles.

Dr. I. N. Quinby of New Jersey—I know that passive motion will sometimes do a great deal, but occasionally a slight division of muscles is first important. We usually see these cases before bony ankylosis takes place and daily movements will enable you to succeed without any more severe operations.

Dr. Montague of Troy—I had a similar case some years ago in a girl 17 years of age, whose jaws were firmly locked and teeth had grown fast. I used wedges to open the jaws and secured a good result.

Dr. R. H. Sayre of New York—The case referred to by my father was one of those where there is some contraction of the soft parts. As Dr. Mears has said, each case must be dealt with on its merits, just as it would be in any other part of the body. Bony ankylosis must be treated on different lines, however, if it is due to cicatricial contraction. The child was in bad shape because the condition had gone on for six years without its parents noticing anything wrong. His playmates laughed at him and teased him and his parents then thought it was worth while to have something done. He ate through a very small hole where some of his teeth had been dislodged. The wedge I used was the one introduced by Dr. Meyer of New York, and consists of two parallel plates. By turning a screw the plates are separated. The plates are lined with lead so as to catch the teeth. A narrow edge was first inserted and later on, when the jaw was further wedged apart, the wedge could be used in another way, and the action of the screw could then be reversed so that wider separation is secured.

Dr. Mears—All of my [illegible] after attempts [illegible] been made by other met[illegible] them had [illegible] for many years, but [illegible] It has be[illegible]manent.

VAGINAL HYSTERECTOMY, A REVIEW OF SIXTY-SIX CONSECUTIVE CASES.

BY CHARLES GILBERT DAVIS, M.D.
CHICAGO.

Whatever adds to the health of woman tends directly to increase the happiness of the human race. On her physical condition hangs the destiny of nations. The truthfulness of this assertion is instinctively recognized by the medical world. Hence, volumes have been written, and a controversial warfare has been waged for centuries in an endeavor to elucidate her diseases and relieve her suffering. So bitter have been these conflicts in regard to the pathology of her ailments and their treatment, that the pelvic cavity may well be called the battle-ground of medical science.

Every generation, every decade, sees new triumphs in the direction of truth. The last quarter of a century has witnessed a revolution in the surgery relating to the pelvic region. While general surgical methods have made a very decided advance, it must be conceded that some of the greatest triumphs have been achieved by improved operative measures employed to relieve many of the various pathologic conditions of the uterus and the adnexa. In the ablation of the uterus, ovaries and tubes much controversy has existed and still continues as to whether the abdominal or vaginal route afford the best results for equal conditions. The discussion, pro and con, has been extensive for the last three years and has augmented to the extent of many volumes. As with all subjects of like nature, there are a few salient points upon which the question hinges. My own observations are made after having witnessed these operations performed by some of the most skilled gynecologists of

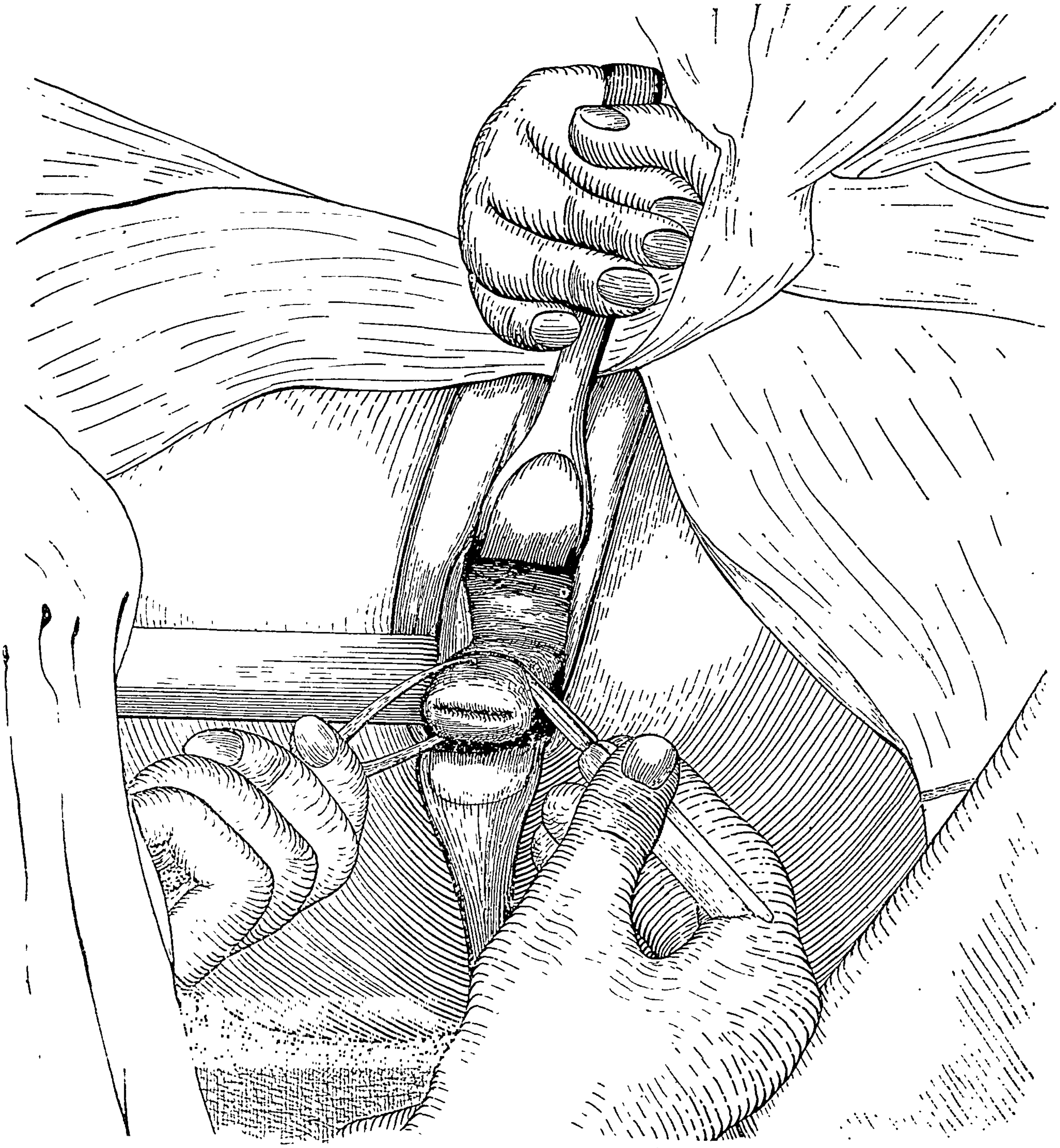

Figure 1.—Beginning of First Stage.

Europe, and then verifying their methods by personal experience. I am satisfied that each of these methods has its sphere of usefulness, and the broad-minded, unprejudiced surgeon will not be slow in making the application. The general of an army who relies at all times and under all circumstances on a single plan of battle, will ultimately meet a most inglorious defeat. The successful man knows that frequently, on the instant, it becomes necessary for him to change his method of operation. Taking all things into consideration, I am satisfied that for most pelvic operations the vaginal route offers by far the best results. With the statistics that we now have, I should regard it as unsurgical and unwise in the extreme to perform any operation on the pelvic viscera abdominally, when there are no logical reasons or indications why the same could not be done by the vaginal method. There are growths, solid and cystic, of the tubes, ovaries and uterus, which we find impossible to remove *per vaginam*, but even here, in many instances, when the uterus has to be removed, I believe the percentage of deaths will be less if we begin or finish the operation through the vagina.

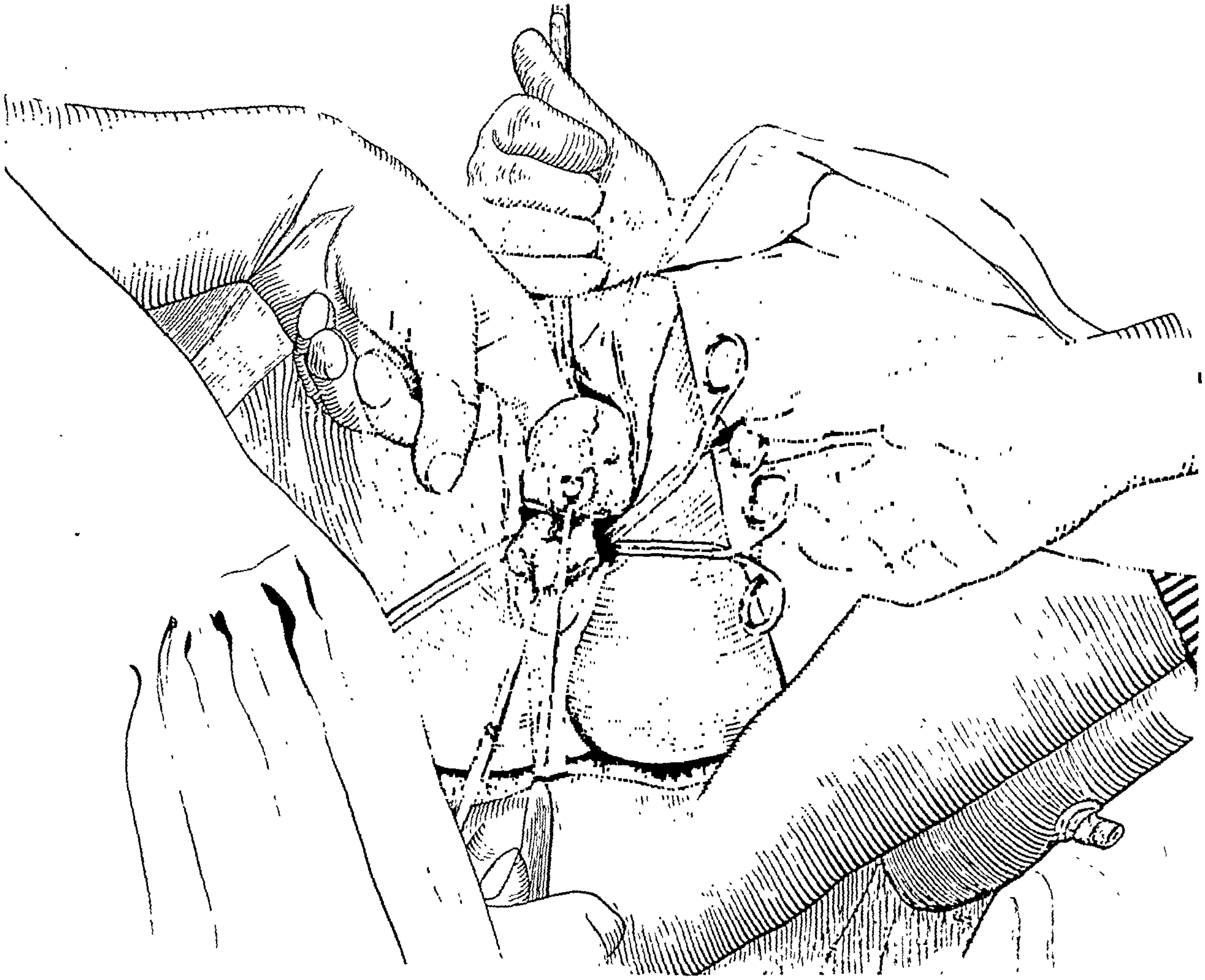

FIGURE 2.—SECOND STAGE.

The question as to the advisability of allowing the uterus to remain when it becomes necessary to remove both ovaries, seems to me to have but little argument in its favor. We know full well that in a majority of instances the inflamed conditions that lead to the necessity of most of these operations have their incipiency in the lining membrane and other tissues of the uterus. If then we stop at the removal of the ovaries we leave behind the real center of disease as the nidus or hatching place of diseased germs, which are liable to prove disastrous in the future. In my opinion, much nonsensical argument has been wasted on this subject. The uterus is simply serviceable in the process of child-bearing. After the ovarian ablation, its usefulness as an organ terminates and it becomes a superfluous and foreign body. I have no sympathy for the sentimentality that weeps over the removal of a permanently diseased uterus. It is far better to make these operations thorough, speedy and complete, than to remove a portion and leave the remainder to cause years of suffering or perhaps necessitate the ordeal of another operation.

I have never removed a uterus for which I felt regret. I have allowed several to remain that I am sure ought to have been removed. I have never known vaginal hysterectomy to be followed by hernia. The vaginal vault seems as strong or stronger than when occupied by the weighty and diseased organ. The sexual function in the mature woman is certainly not immediately diminished. I know of several instances where the removal of the diseased organ has caused an augmentation of the sexual sensibility. As a rule it is therefore safe to say, when we have to remove the ovaries, remove also the uterus, and do it *per vaginam*. The operation may be divided into three stages: 1, The cervix is encircled by an incision and the entire organ is denuded anteriorly and posteriorly, as far as practicable; 2, the uterine arteries are clamped and the uterus is enucleated, or if that is [illegible] removed by morcellation; 3, the ovarian arteries are secured and the uterus together with tubes and ovaries is cut away. The technique of the operation I have described in my article in the Journal of Feb. 8, 1896, where I reported the first twenty-two cases of this series. After observing the German method of operating with ligatures and then witnessing the operation with clamps by Péan, I have not hesitated to adopt the latter method and have never deviated from it.

In my sixty-six cases I have never had occasion to tie a single ligature. Only once has hemorrhage followed the removal of the clamps at the expiration of forty-eight hours. This was from the right uterine artery, and was easily clasped by a clamp which was allowed to remain on forty-eight hours longer. In another case hemorrhage occurred during a dressing on the eighth day, caused probably by too great distension of the vagina with speculum by the nurse. It was not severe and yielded to hot douches. In another case an intestinal fistula manifested itself on the ninth day. This continued for about six weeks and then healed spontaneously. I am satisfied that many accidents of hernia, fistula, secondary hemorrhage, etc., are caused by unnecessary distension of the vaginal walls with dressings. Now, after the removal of the clamps, I never allow a speculum to be inserted until the wound is entirely healed. The cavity is douched once daily, taking care not to allow the fluid to enter the abdominal cavity, and the mouth of the vagina is distended lightly with two fingers and the parts dusted with powdered iodoform, and a small strip of gauze inserted to the depth of two inches. The external genitalia are again dusted with the powdered iodoform and a strip of gauze folded over the parts. A T bandage is adjusted and the dressing is complete. An early evacuation of the bowels expedites the progress of the case. This is usually done by an enema the day following the removal of the forceps. Menstrual storms are certainly modified by an early and prolonged administration of ovarian extract. The patient usually makes rapid recovery. There certainly is no other capital operation known for women to which we may so conscientiously and truthfully after our treatment apply the term "cure." There is not a

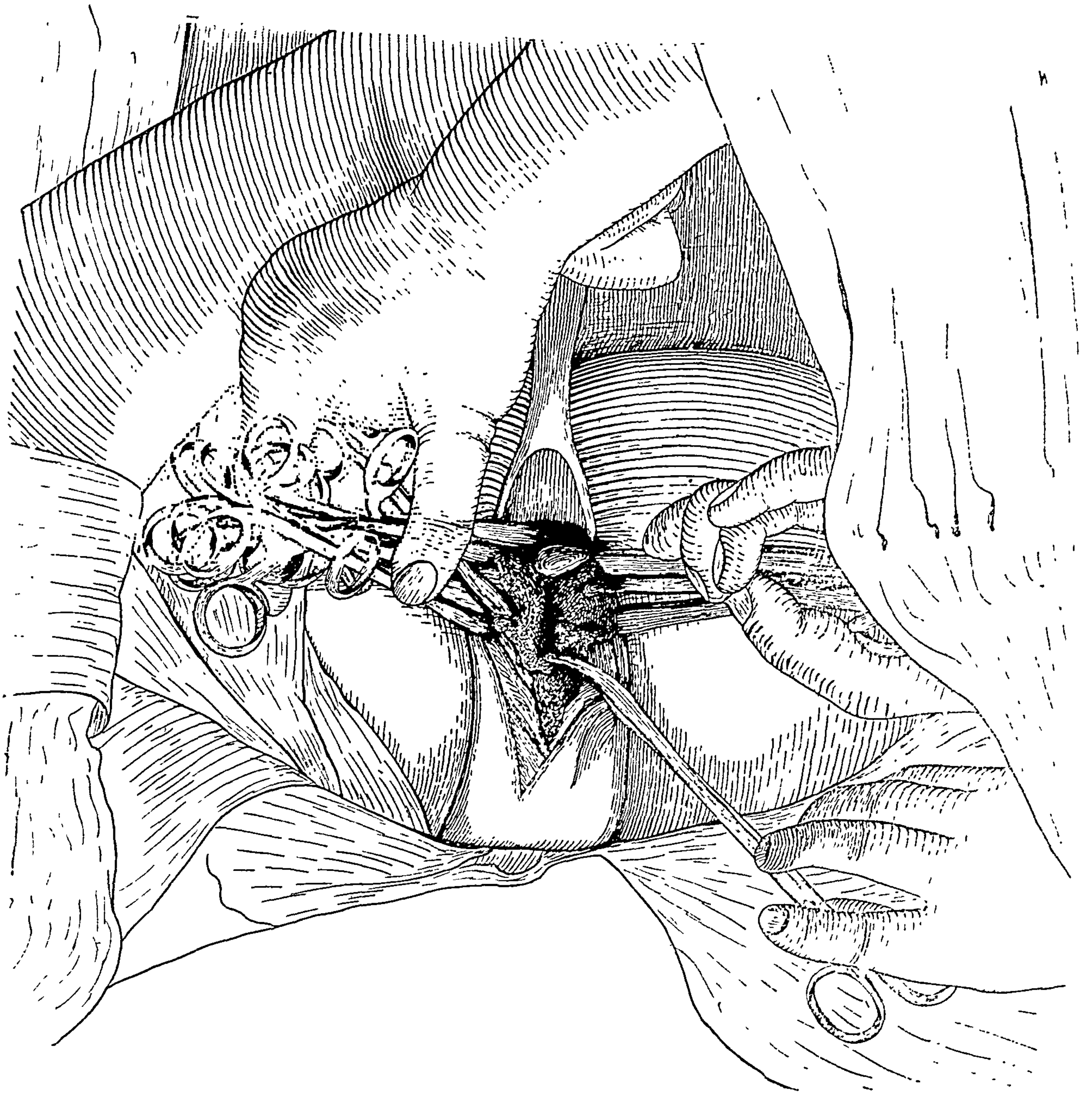

Figure 3.—Operation Complete.

day or a week that by letter or conversation I do not hear expressions of gratitude for complete relief from suffering following the operation.

How often we all have been chagrined and disappointed by the opposite expressions that so frequently come to us after having done our best to relieve the patient by removing a tube, an ovary, or both, through the abdominal route. In many of these cases the removal of diseased structures was not complete and disease still lingered. If I should formulate the rules indicating the operation of vaginal hysterectomy, they would be somewhat as follows:

1. In all cases of malignant uterus where the disease has not advanced too far in the pelvic walls.
2. In maturely developed women where we determine to remove both ovaries or tubes.
3. In removal of one ovary when also the uterus shows evidence of long standing inflammatory action.
4. In all cases nearing the menopause suffering from chronic painful displacement.
5. In all cases of fibroid not to exceed the size of a child's head and involving seriouly the integrity of the uterine walls.
6. In double pyosalpinx and in single if uterus is badly diseased.
7. Whenever from any cause, specific or otherwise, the uterus has been chronically diseased, has long resisted other treatment and proved a center of serious reflex symptoms.

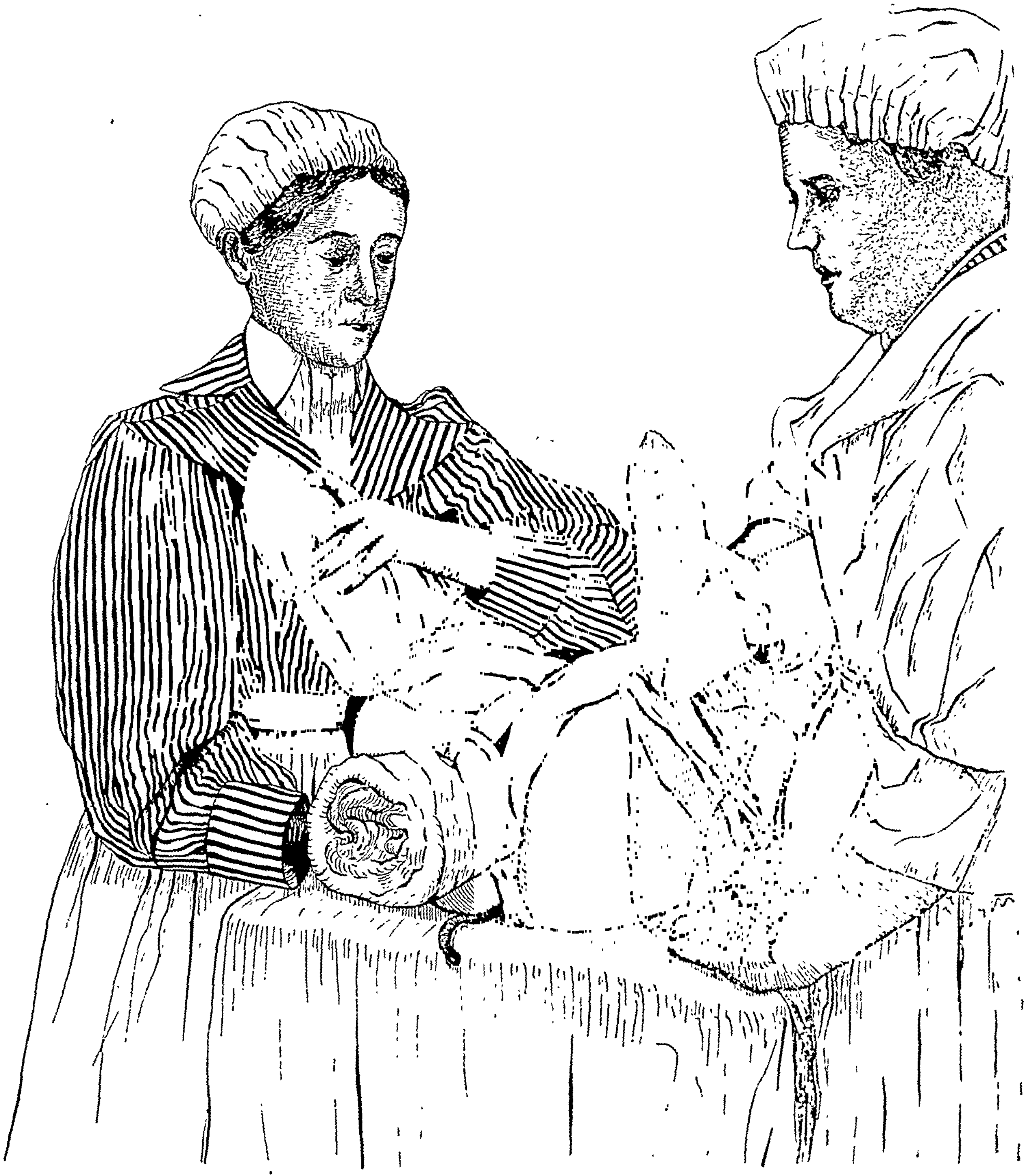

FIGURE 4.—DRESSINGS.

It is not infrequently the case that we begin a vaginal hysterectomy and, owing to adhesions or other causes, are compelled to abandon this method and finish the operation through the abdomen. But it is certainly not detrimental to have made this beginning. In fact, whenever we perform abdominal hysterectomy the most rational procedure is to begin or terminate the operation by clamping the uterine arteries and removing the cervix through the vagina. Twice I have attempted the vaginal operation and been compelled to open the abdomen. In one case the entire pelvic viscera were cemented in a mass of chronic inflammation. I removed a greater portion of the mass with the uterus *per vaginam* and ruptured the bladder, which I subsequently closed by producing occlusion of the vagina. Again, I attempted to remove a myoma the size of a child's head through the vagina. I took away by morcellation the cervix and greater portion of the body of the uterus and clamped the uterine arteries, but the hemorrhage from above became so profuse that I was compelled to finish through the abdomen. I only had to ligate the ovarian arteries, dissect the anterior and posterior flaps and then close the opening into the vagina with catgut sutures. The clamps remained, as usual, forty-eight hours. Neither of these cases is numbered in this series of vaginal hysterectomies. Both recovered. In these sixty-six cases there was but one death.

Number.	Name.	Pathologic Condition.	Hospital.	Ether.	Ether and Suggestion.	Result.		Subsequent history.
						Recovered.	Died.	
1	Mrs. E. E.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery Complete.
2	Mrs. T. D.	Fibroid	Chicago Baptist.	. .	1	1	. .	Pelvic symptoms disappeared; suffered heart disease.
3	Mrs. J. S.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
4	Mrs. W. K.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
5	Mrs. F. J.	Cystic ovaries	St. Mary's Polish.	1	. .	1	. .	Hemorrhage at end 2d week. Recovery complete.
6	Mrs. A. F. M.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
7	Mrs. C. L. M.	Fibroid with cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
8	Mrs. C. H.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
9	Mrs. W. M. N.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
10	Mrs. E. W. C.	Salpingitis with metritis	Chicago Baptist.	. .	1	1	. .	Recovery complete.
11	Mrs. B. L.	salpingitis	Chicago Baptist.	. .	1	1	. .	Recovery complete.
12	Mrs. E. A. S.	Ovaritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
13	Mrs. J. O. P.	Carcinoma	Chicago Baptist.	. .	1	1	. .	No return of disease. Health perfect.
14	Miss M. S.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Health improved, but still nervous.
15	Mrs W. N. M.	Salpingitis	Chicago Baptist.	. .	1	1	. .	Recovery complete.
16	Miss L. P.	Metritis and salpingitis	Chicago Baptist.	. .	1	1	. .	Pelvic symptoms relieved; nervous.
17	Mrs. M. L.	Carcinoma	St. Mary's Polish.	1	. .	1	. .	Recovery complete.
18	Miss D. M. K.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
19	Mrs. J. L.	Cystic ovaries	St. Mary's Polish.	1	. .	1	. .	Hemorrhage on removal clamps, 48 hours. Parotiditis. Recovery complete.
20	Miss M. B.	Pyosalpinx	Chicago Baptist.	. .	1	1	. .	Recovery complete.
21	Mrs. M. M. G.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
22	Miss M.	Fibroid	St. Joseph's	1	. .	. .	1	Vomiting. Death from exhaustion 36 hours.
23	Miss L. H.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
24	Miss L. H.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
25	Miss C. P.	Metritis and large cyst of right ovary.	Chicago Baptist.	. .	1	1	. .	Recovery complete.
26	Mrs. F. C. C.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
27	Mrs. C. G.	Carcinoma	Chicago Baptist.	. .	1	1	. .	Recovery complete apparently.
28	Miss L. M.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
29	Mrs. W.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
30	Mrs. J. V.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
31	Mrs. M.	Fibroid and large cyst of right ovary.	Chicago Baptist.	. .	1	1	. .	Recovery complete.
32	Mrs. S.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
33	Miss W.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
34	Mrs. J. L.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
35	Mrs. S. K.	Pyosalpinx	Chicago Baptist.	. .	1	1	. .	Recovery complete.
36	Mrs. J. B.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
37	Mrs. F.	Prolapsus of twenty years	Waunita, Colo.	1	. .	1	. .	Recovery complete.
38	Mrs. G. N. F.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
39	Polish woman	Cystic ovaries	St. Mary's Polish.	1	. .	1	. .	Recovery complete.
40	Mrs. L.	Cystic ovaries, large cyst right ovary.	Chicago Baptist.	. .	1	1	. .	Recovered slowly. Fistula discharge; fistula tract, 2d *operation, removed small section fallopean tube.*
41	Miss G. W.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
42	Miss E. S.	Large cysts of both ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
43	Mrs. M.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
44	Miss L. D.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete. Still nervous; pelvic symptoms entirely relieved.
45	Miss E. P.	Metritis, cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
46	Miss F. F. B.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
47	Miss M. B.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
48	Mrs. E. C.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
49	Mrs. M. R. S.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
50	Mrs. P. M.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
51	Mrs. C. D. F.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
52	Mrs. L.	*Cystic ovaries*	*Chicago Baptist.*	. .	1	1	. .	Recovery complete.
53	Mrs. C. G.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
54	Mrs. G. L.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
55	Mrs. A. M. H.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
56	Mrs. S.	Fibroid and cyst of right ovary.	Chicago Baptist.	. .	1	1	. .	Recovery complete.
57	Mrs C.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
58	Mrs. J. F.	Fibroid	Chicago Baptist.	. .	1	1	. .	Recovery complete.
59	Mrs. S.	Salpingitis	Chicago Baptist.	. .	1	1	. .	Recovery complete.
60	Mrs. J. S.	Metritis, chronic	Chicago Baptist.	. .	1	1	. .	Recovery complete.
61	Mrs. V.	Cystic ovaries	Chicago Baptist.	. .	1	1	. .	Recovery complete.
62	Mrs. W.	Multiple fibroma of uterus. dermoid cyst left ovary and broad ligament.	Chicago Baptist.	. .	1	1	. .	Recovery complete.
63	Miss M. C. L.	Fibroid tumor	Chicago Baptist.	. .	1	1	. .	Recovery complete.
64	Mrs. L.	Large hydrosalpinx right side, cystic ovaries and chronic metritis	Chicago Baptist.	. .	1	1	. .	Recovery complete.
65	Miss S.	Anteflexion, fibroid degeneration of fundus of uterus, cystic right ovary.	Chicago Baptist.	. .	1	1	.	Recovery complete.
66	Mrs. A. J. M.	chronic metritis	Chicago Baptist.	. .	1	. .	. .	Recovery complete.

No alcohol was allowed to any of these patients either before, during or following the operations. My experience during the last twenty years, both with and without alcohol, leads me to believe that when other anesthetics are available surgical cases do far better without its administration. It will be noticed from the table that hypnotic suggestion was used in most of these cases as an aid to the anesthesia of chloroform and ether. I regard suggestion as one of the most powerful fortifiers of the nervous system, and I strongly believe there is no one single thing more calculated to insure the successful termination of a surgical operation than the employment of suggestion as the patient passes into the sleep of anesthesia. It is interesting to note that in the case of the one death occurring in this series, and the other cases of post-operative accident no suggestion was employed. Every surgeon should be thoroughly impressed with the fact that faith, hope, expectancy and belief, when aroused by suggestion, are most powerful aids to insure his patient against collapse and death. With this clearly before him and a determination to observe every minutia and care, he is in the best possible way to operate successfully.

240 Wabash Avenue.

EYE INJURIES PRODUCED BY BLOWS WITHOUT PENETRATION OF OCULAR TISSUES.

BY ALBERT B. HALE, M.D.
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I have just been favored with the usual medical triplet of similar cases, this time all being due to our Fourth of July celebration. Our lack of civic control in such matters suggests the necessity of a more direct education of the people in regard to the danger of slow explosives as commonly found in the so-called giant firecracker, for it will be a pity to wait till every family has had personal experience in the matter, before we conclude that promiscuous noise is a necessary token of exuberant patriotism.

My three cases all involved the right eye, two were due to firecrackers thrown from the hand of another person; and while two will end in greatly restricted usefulness, one eye has completely lost its function and may probably have to come out, within the not distant future.

M. H., male, 27 years old, tailor by trade, was sitting quietly at a table in a saloon near an open window, on the evening of July 4, when some public spirited boy threw a large firecracker through the window and on the table. The cracker exploded and the man jumped, put his hand to his eye and exclaimed that he had been hit! The neighbors kindly bathed and bandaged the injury for him, and the next day I was consulted. The powder must have ignited close to his face, for the picture was that of a typical burn of the third degree, where the ocular conjunctiva, *including the epithelial layer on the cornea,* was completely charred. There was some chemosis though no real secretion, but the wound looked as if a cautery (as I have seen its effects when used to destroy lupus of the lid) had passed thoroughly over the surface. The cornea was a remarkable sight; it transparency was lessened, though the iris could still be detected through it, but instead of being a regular, smooth, reflecting surface, it was now rough, covered with most minute protuberances, and looked to me like closely shorn velvet, or something like the cover-glass that has just been pulled from its bed of old Canada balsam. There was not much pain, and a minimum of vision remained. By energetic application of vaselin (cocainized and atropinized), ice, and afterward heat, and by constant watching and continued movement, anything like adhesion between lid and eyeball was prevented, although I ascribe this success rather more to the intactness of the palpebral conjunctiva than to any great influence of treatment. The cornea however, was lost—not that any ulcer formed, but the gradual restoration of epithelium was accompanied by the growth of the most absolutely leucomatous tissue I ever saw, the whole cornea being involved, so that it looked as if a circular piece of very white tissue-paper had by some marvelous means been nicely pasted over the iritic area.

Nothing could be seen through it, either by the doctor or by the patient, and while I have no means of knowing whether or not the other tissues were intact, I judge they were, because soon after the injury vision had to some extent been preserved, while there had been no subsequent symptoms of inflammation. I wanted to tattoo the scar, but the patient failed to keep his appointment, and soon after passed out of my control.

The second case was that of a little girl of seven who, while playing with her neighbors, allowed her curiosity to conquer her caution and was, therefore, too close to a giant firecracker when it was dismissed from the hand of its owner. Here there was a slight laceration of the cheek just below the outer canthus, a decided bruise of the tissue around the orbit and a severe concussion of the whole eyeball. The cornea escaped, but the iris was thoroughly lacerated and the lens substance disturbed, while the hyphema was at first so severe that an exact diagnosis could not be made. When the blood had finally become absorbed, the lens (anterior segment at least) was found to be completely opaque, the iris had been detached at several places from its ciliary insertion, and downward and outward a long thick adhesion was firmly established between iris and capsule exactly in the center of the pupil, so that but a small area of pupil was left above, the remainder of the aperture being occupied by a mass of iris and exudate. Nothing could overcome this adhesion, and with the progress of the cataract vision was gradually reduced to nothing, although light perception was well retained. This patient will soon be operated on, but of course the eye will always be unlike the sound eye and I dare not now promise the restoration of thoroughly good sight.

The third case was that of a boy 13 years old, who let a giant firecracker explode in his fingers while blowing the fuse to see whether it was alight. Here, also, there was no laceration, but intense swelling and some ecchymosis, with severe hemorrhage into the anterior chamber. After the swelling had subsided the iris was found to be torn from its ciliary attachment, there was a large fibrinous band stretching across the aperture caused by the rupture, the pupillary edge of the iris was inseparable from the anterior capsule, while at this spot (nowhere else in the anterior capsule) and to the whole extent of the posterior capsule there is a cataractous formation, which will soon become total, reducing the vision to the barest counting of fingers at one or two feet. Here there must be one operation at least, perhaps several, and though I have great hope of restoring vision by making this an aphakic eye, yet it will always be unlike its fellow and the boy has probably lost some of his commercial usefulness.

The lesson from all this is so obvious that I must restrain my reportorial ardor to sermonize from either a social or scientific point of view. Traumatisms cause about 10 per c [illegible] blir [illegible] ss in Germany and 8 per cent. in Franc [illegible] dents may [illegible] given as due to industrial occupations. Certainly such misfortunes as these can not be classed as industrial and we ought, therefore, to enter in our list of causes of blindness in America, "the Fourth of July."

INTER-COMPLICATIONS OF NEURASTHENIA.

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Neurasthenia is an old term applied to a long recognized condition whose relations however have only been cleared of obscurity of late years. The older clinicians described it under the term "nervous adynamia," a peculiar condition of the entire organism most obviously improved and benefited by tonics. The nervous system is the first part visibly affected, the heart the second; the contractile heart fails not from want of blood as in anemia, but more directly as from a shock or some toxic influence. The capillary activity seems impaired, the metabolism and nutrition thereby declined, the contractile power of the heart and blood pressure being much diminished. This condition, which is essentially one of exhaustion, finally fixes itself, whatever be the primary cause, on the central nervous system and finds expression in a nervous instability taking the line of least resistance. It has been claimed that the condition is essentially one of auto-intoxication. It is true that such a condition exists in neurasthenia and is an expression at once of excessive fatigue and its results on the nerve-centers. As Cowles[1] has shown, neurasthenia or pathologic fatigue presents itself in two aspects: 1. In normal fatigue with the discharge of energy the toxic products of exercise are always formed in nervous and muscle tissues. From this and other sources toxic elements may accumulate in the blood and tissues; in pathologic fatigue these contribute to a local or general inanition and auto-intoxication. Visible changes in nerve-cells attending normal fatigue go to support the inference of a molecular and chemic variation in pathologic fatigue manifested as a condition of exhausted or changed nutritional power. These changes bear a direct relation to the etiology and pathology of neurasthenia. Habit, diathesis and idiosyncrasy have an important influence in causing "dispositions to repeat organic processes," both normal and abnormal.

The study of the mental elements in normal and pathologic fatigue shows that the mental symptoms furnish a ready index of the "fatigue": *a*. The emotional tone is either one of well-being or ill-being, and the latter, with mental depression, indicates changes in the "sense of body," or common sensation, due to deficient energy, inanition and auto-intoxication; *b*, special disorders of intellect and will are shown by a neurasthenic weakening of voluntary attention or the mental power of inhibitory control and of memory, etc.

Analysis of normal and pathologic fatigue shows that the mental symptoms of the latter may be readily recognized, that they correspond with the physical events in neurasthenia and that all these phenomena, as far as they go, are in unity with the like conditions of melancholia. (More particularly with acute confusional insanity.[2]) The symptoms are objective and subjective, mainly the latter, which include the mental symptoms. These fall by analysis into four distinct groups relating to: 1, mental depression and a sense of ill-being; 2, diminished power of voluntary attention and mental control; 3, introspection and worry, with attention acting in its attracted form; 4, changes in the "sense of body," irritability and hyperesthesia, languor and anesthesia. Two consequent conditions become prominent and are of the highest clinical importance, morning tire and anesthesia of the sense of fatigue. This summary of symptoms leads Cowles to define neurasthenia (including both the physical and mental elements as expressions of the inanition and auto-intoxication of pathologic fatigue) as a morbid condition of the nervous system with as underlying characteristics, excessive weakness and irritability, or languor with mental depression and weakened attention.

From the inanition and auto-intoxication result the numerous conditions of uncertainty underlying the states which finally become the various obsessions or morbid fears. The cerebral basis of these was many years ago pointed out, as Spitzka remarks,[3] by Meynert, who called attention to the presumptive physiologic rôle of certain arched fibers which are known to unite adjoining as well as distant cortical areas with each other. I should, if asked to point to the chief factor on which the higher powers of the human brain depend, lay stress less on the cortical development as such than on the immense preponderance of the white substance due to the massive associating tracts. Although the projecting tracts are also larger in man than in any other animal, yet so great is the preponderance of the associating mechanism that the elimination of the former would not reduce the white substance of the hemisphere by one-half its bulk. Both projecting and associating fiber masses increase in a nearly geometric progression as we pass from the lower animals to man, but the ratio of progression of the associating fiber masses exceeds that of the projecting tracts. There are certain convolutions which are almost exclusively connected with *fibræ arcuatæ*, that is, with associating tracts, and which enjoy but little direct connection with the body periphery. It is reasonable to believe that such cortical areas so connected play an important rôle as a substratum of the abstractions. Such cortical areas and their subsidiary associating tracts, bound into the still higher unity of the entire hemisphere, constitute the substratum of the metaphysician's *ego*, or may even render an *ego* an impossibility. It is on accurate connection of projection areas with projection areas, and of these with "abstraction" areas that the faculty of logical correlation must depend. The correction of the countless errors made during a lifetime is possible only by an influence analogous to inhibition exercised by the association fasciculi, and the proper aim of every really educational system is to develop this control of the various cortical screens on each other; a correction which with approaching maturity is delegated to the "abstraction" field.

Ordinarily the functions of the "abstraction field" are performed in what, may be termed an automatic manner.[4] Physical exhaustion and other states of constitutional disturbances may destroy this automatism and the individual becomes actively conscious of the will-power needed to control conceptions constantly received from sense impressions. Upon the degree of weakening depends whether simple uncertainty, the morbid analysis of "grubelsucht," or the well marked imperative conception with its transformation into the imperative act result.

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[1] Annual of the Universal Medical Sciences, 1892, vol. ii.

[2] See JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Dec. 28, 1894.

[3] Alienist and Neurologist, vol. viii.

[4] See article by myself, Alienist and Neurologist, 1890.

It is usually assumed that the *ego* is a centralized entity, when in reality, as Ribot points out:

"The *ego* is a co-ordination. It oscillates between two extreme points, perfect unity and absolute incoordination, else it ceases to be and all the intermediate degrees exemplified without any line of demarcation between normal and abnormal, health and disease; the one trenching upon the other. Wherefore the *ego* in the physiologic sense is the cohesion for a given time of a certain number of clear states of consciousness accompanied by others less clear and by a multitude of physiologic states which though unaccompanied by consciousness are not less but even more effective than the conscious states"

From these conditions result, in addition to the obsessions (imperative conceptions) or morbid fears, the anxious states which express themselves in respiratory or cardiac nervous disturbances, as well as the "helmet" sensation so often mentioned. With these occur the usual evidences of emotional instability which find their expression in the alternations of exaltation and depression that Oddo has called "circular neurasthenia." Like hysteria, the mixed neuropsychic state of neurasthenia may express itself in localized symptoms simulating other neuroses. Some of these of the spinal type have already been pointed out editorially in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Vol. XXVIII. One case which came under my observation was said to present even the eye symptoms of locomotor ataxia. The case proved to be one of neurasthenia with predominating spinal symptoms and with certain eye disorders correctable by glasses. Not merely in the spinal cord or in the brain is the line of least resistance in neurasthenia to be found. Very frequently the condition effects the medulla and produces secondary visceral symptoms.

Aside from these, temporary conditions of lithemia, oxaluria and glycosuria are produced, as has been shown by L. C. Gray of New York, Vigoroux and others. Nearly always there is present in neurasthenics an hydro-adipsia, at times amounting almost to a hydrophobia. In all the temporary conditions just described this hydro-adipsia appears, which adds to the difficulties of the treatment of the original state as well as of the complications resulting from these states and the states themselves. Balneotherapy was an old and in many instances beneficial prescription for these states. It however necessitated certain accessories which were injurious to the hyperesthetic nervous system of the neurasthenic, and which to a certain extent tended to undo whatever beneficial effect the balneotherapy might have on the hydro-adipsia. As a large number of cases were best treated by a modified system of rest cure which implied a certain amount of intellectual stimulus to train the will against the already formed or imminent obsessions or morbid fears or emotional instabilities, carrying out of measures against hydro-adipsia is somewhat of a problem. In many instances the addition of lime water to the milk, which forms of necessity so large a portion of the diet of neurasthenics, will introduce sufficient water to combat the effects of the hydro-adipsia. This however does not combat a metabolic instability evident in the lithemia, oxaluria and glycosuria. Among the agents which I have found peculiarly valuable in the treatment of these states and the general condition of neurasthenia has been the ozonate lithia water. This positively creates a thirst hitherto deficient in the patient as a rule; he complains (a complaint hitherto absent) that the water does not seem to satisfy his thirst. Hitherto the thirst itself has been absent and in this case appetite seems to grow by what it feeds on. The water exercises a peculiarly beneficial influence on the helmet-like sensation, on the dull pain complained of at the nape of the neck as well as that in the lumbar region. The water is taken with peculiar avidity just before resting after massage. It seems to exert also not immediately, but after some days, a beneficial influence on the gastro-intestinal manifestations of neurasthenia. Aided by an occasional mercurial it corrects the annoying intestinal atony which is so often present even after evidences of improvement in the general neurasthenic state.

As to dietetics of these complications, nothing need be added to what I have elswhere stated.[5] Each individual case will require special analysis, as Bremer of St. Louis has most forcibly shown. The condition can not be treated purely as an auto-intoxication since, as C. H. Hughes of St. Louis[6] points out, the auto-intoxication often is an expression of the nerve exhaustion and aggravates this; hence both the auto-intoxication, its results and its cause need treatment.

In dealing with the morbid fears, ridicule is most injudicious, since this tends to make the patient reticent and thereby weakens an already feeble co-ordination. Ridicule will not introduce a healthy conception checking these fears, but will increase the patient's morbid distrust of himself and thereby increase the general pathologic fatigue. The same is true of medical examinations which lay undue stress on certain manifestations of the general disorder. The evil effects of laying undue stress on the utero-ovarian manifestation has been emphatically pointed out by Goodell, but the same evil effects are observed in cases treated by ophthalmologists, who recognize only the eye side; by rhinologists who recognize only the "catarrh" side; by dyspepsia specialists, who recognize only the gastric side; or by spermatorrhea specialists and by others who concentrate the patient's attention entirely on one symptom, thereby affording him new material for morbid anxieties. I have not dwelt on the use of either faradic, galvanic, or static electricity, because each of these has its indications in the particular case and, like all other procedures, is apt to be abused when used on general principles. The neurasthenic must be treated as a patient, not as a disease label, bearing in mind that his condition is due to pathologic fatigue and its consequences.

IS IT ETHICAL FOR MEDICAL MEN TO PATENT MEDICAL INVENTIONS?

Presented in the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa, June 1-4, 1897

BY F. E. STEWART, M.D., PH.G.

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I use the word patent in the sense commonly accepted by the medical profession, viz, "restrained from general use," and, by medical men I mean physicians, surgeons and apothecaries, for they are all practicing medical arts.

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[5] Therapeutic Gazette, April 15 1897

[6] Alienist and Neurologist, Vol xviii

In his primitive state man lived on the fruits of the field without being obliged to till the soil, but as people multiplied on the face of the earth, agriculture was one of the first arts which man practiced. The inventor of the plow may have named it, or the name may have been given it by some one else. At any rate, the name plough was given by somebody who coined the title for that purpose, and it was afterward modified to plow. Here we have an original invention of the purest kind, and a coined word given to it as a title. I can not conceive any reason why the inventor of the plow should have desired to prevent others from using it, but, for the sake of argument, suppose the inventor of the plow had concluded to prevent others from using the trunk of a tree for scraping up the soil. Theoretically, his every neighbor was as strong as he, and combined they were stronger, and therefore he could not have maintained the exclusive use of the plow if he had so desired. It is evident therefore that the inventor does not possess a natural right to the exclusive use of his invention. In other words, he has no property in it *per se*. How did it ever come to pass that inventors acquired property rights in their inventions? After a time improvements were made in the plow, and it became more complicated and required a greater amount of skill for its construction. Certain men made better plows than others, and their neighbors desiring to possess the improved article, and recognizing the peculiar ability of some men to make plows, commenced to employ them for that purpose, exchanging commodities of their own for plows. Every improvement in the plow devised by one man was carefully concealed from others engaged in the manufacture of plows, so as to obtain commercial supremacy thereby. As the world continued to grow and competition became more general, inventors of those improvements now commenced to quarrel with each other, each one saying that no one had a right to copy their inventions. What applied to the art of manufacturing plows applied also to every other art, as soon as it was invented. The government finally intervened to stop the quarrel, and passed laws for that purpose. These laws are known as patent and copyright laws. They are designed to promote progress in science and the useful arts. They do so by granting to authors and inventors for limited times the exclusive use of their respective writings and discoveries. They recognize the value of authors and inventors to the community and encourage authorship and invention. They are designed to secure the publication of knowledge and not to lock up knowledge to trade secrecy, or to protect inventors in the exclusive use of the knowledge of their inventions. The moment an invention is patented full knowledge of it is divulged, as the application for patent must contain full knowledge of the invention in language sufficiently plain for any one skilled in the art to duplicate the invention. A copyright on a book, while restraining the writing itself from general use for a limited time, does not in any way restrain the use of the *knowledge* contained in the book from the public. While under the copyright and patent the book and the invention are restrained from general use for limited times, both become free to the use of the public after the right has returned to the public who gave it. Commerce as well as science is thus benefited by these laws.

The medical profession has for many years past permitted its members to copyright their books. Is there any reason why they should refuse to sanction the patent which restrains a medical invention from general use for a limited time in exchange for the publication of exact knowledge of the invention for the benefit of science?

The arguments which have been used against medical men patenting medical inventions are as follows:

1. Every substance used for the treatment of the sick should be left free from all control by secret processes and patents, so that they may be manufactured and dealt in at the least expense to the consumer, *i. e.*, the sick; and be open to free investigation by all who desire knowledge concerning them.

2. For the purpose of creating a demand as articles of commerce medicines must be advertised, and the advertisements being worded for the purpose of selling goods creates a fictitious demand for the products advertised, thus displacing older and well-tried drugs by medical novelties.

3. The only object in patenting a medical invention is to utilize it for money-making purposes, which can only be done successfully by the adoption of trade methods. Physicians who patent medical inventions or offer medicines for sale enter the domain of trade thereby, and cease to be professional men. The liberal professions, viz., theology, law and medicine, deal exclusively in advice, not in material substances. This differentiates them from the trades, and if medicine is to remain one of the liberal professions it must not adopt trade methods.

4. The medical inventor who has a material substance for sale will unconsciously use his best endeavor to promote the sale of his goods, rather than make it his chief object to benefit his patients who may purchase his goods. This would change the nature of medical practice from a beneficent one to a distinctly commercial one, and while all legitimate business is beneficent, in one sense of the term, the physician's vocation is pecularly philanthropic, having as its chief end the relief of human suffering, not the acquisition of money.

The physician who copyrights his books is not tempted thereby to do anything contrary to beneficent and professional liberality because it would not be profitable for him to do so. Does not the same thing apply to the patenting of surgical instruments? What object could a surgeon have in misrepresenting his instrument? Could there be a fictitious demand created for an instrument by advertising it? Could he displace the use of better instruments by publishing extravagant claims concerning it? If so, it would not be public policy for the profession to allow a surgeon to patent has instruments.

How about the pharmacist? Should he be allowed to patent medical inventions? It seems to me that the same arguments apply to him that apply to the physician and surgeon. If he is allowed to patent medical products he is at once tempted to resort to misrepresentation for the purpose of creating a demand for them, that he may displace older and tried methods of treatment by therapeutic novelties which may, or may not, be improvements on what are already known. Moreover his vocation is that of preparing medicine for therapeutic use, and he has no right whatsoever to practice therapy, unless he is educated and trained for that purpose.

I admit that there is a trade element in pharmacy which does not pertain to the practice of therapy.

The physician deals in advice only, while the apothecary has material substances for sale. The apothecary is obliged to carry a large stock of goods which he deals in as merchandise, and is obliged to serve the public at large as well as the medical profession. To do business successfully he must adopt some business methods; but there are some business methods which may be adopted with propriety by the dry goods merchant that can have no place in pharmacal practice. On account of this trade element in the practice of pharmacy, and the necessity of investing capital which must be protected in the conduct of his business, I believe that the pharmacist should be permitted to patent, not medical products, but medical processes, apparatus and machinery employed to prepare medicine. But secret processes and methods are a hindrance to progress in the knowledge of pharmacy, and an open door to fraud. There may be trade secrets the divulging of which for the benefit of competitors might cause serious injury to perfectly legitimate trade interests. If a commission of competent medical men, removed entirely from trade, and outside of politics, could be appointed to act as a board of control in this connection, so that the interests of science, the professions and the public, could be protected from all danger of fraud, I can see no reason why such trade secrets should not be permitted to continue for limited times. But, in the long run, they must be published for the benefit of medical science, and the arts of pharmacy and therapy, which are dependent upon this publication for progress.

There is a business known as the "patent" or "proprietary" medicine business which stands right in the way of the proper understanding of the patent and trade-mark laws by the physicians and pharmacists. It should be described as the secret nostrum business, for the products which it has for sale are rarely patented, but are monopolised by secrecy of composition, secret processes, or in other ways in which secrecy forms a part. While secrecy is the rule there are other medicines which belong to the same class, for while their nature may be known, the advertisements concerning them are purposely worded to create a fictitious demand far in excess of their merits. The name "patent" for a secret medicine is a misnomer, for, as the *Scientific American* says, a thing patented is a thing divulged;" and the name "proprietary" is a misnomer also, for, as already shown, there are no property rights in a medicine to be had, without patenting it. This business is characterized by misleading names, misleading methods, and an abuse of the trade-mark in which the only titles by which the compounds are known are made the subject of monopoly.

According to all authorities on trade-marks which I have consulted, the commonly accepted name of an article can not be a trade-mark. Everything must have a name given it, and whatever name is given a thing becomes its proper appellation. Referring to the origin of the trade-mark, Browne, in his comprehensive work on the subject, says, "trade-marks had their origin in a general ignorance of reading the combinations of cabalistic characters that we call writing. A written certificate of the genuineness of any article of merchandise could not be understood by the nomadic peoples who desired to barter natural products for something made by the hands of skilled artisans. A simple emblem, as a crescent, a sun, a star, an animal, or other object copied from nature or devised by fancy, when once associated with a particular class of goods, or the handicraft of a certain man, would readily be understood."

The only possible use for which a trade-mark can be legally put is to indicate ownership or origin. A trade-mark and a patent have nothing in common, and yet it is the object of the nostrum trade to make it appear that the trade-mark creates a monopoly. This is done in the following manner: A fanciful name is devised and applied as a title to a medicine, and the title is registered in the Patent Office as a trade-mark. Then the nostrum manufacturer says, "you can not manufacture my nostrum, for I have a secret process which prevents you from duplicating it, and even if you can find out how I make my nostrum, you can not deal in it under the title which I have registered as a trade-mark."

The absurdity of this claim will become perfectly apparent to anyone who will take the trouble to study the meaning of a trade-mark. A trade-mark is a thing of natural right and common law. The government has no power to grant anyone the use of a trade-mark. Registering a title as a trade-mark does not make it such. A title can not be a trade-mark and a title at the same time. The name of a thing belongs to the thing itself, not to the one who names it. Because the name was coined or invented makes no difference. Every word in the language was invented or coined at some time or other. No man has a right to monopolize part of the common language even though he may add a contribution to it by coining a name to represent a thing or an idea. The trade-mark system, so-called, is not a system of trade-marking at all, but an attempt to defeat the patent law by a misuse of law, and to obtain privileges of monopoly which that law will not grant, and which the public would seriously injure itself by granting. It is a system of secrecy and unlimited monopoly, and a cloak to fraud and deceit.

Taking all these facts into consideration, it is apparent that the patent, trade-mark and copyright laws should be so interpreted and administered by the court that they will secure the greatest good to the greatest number, and aid in attaining the end of government, viz., "moral, intellectual and physical perfection." It is not the object of these laws to create odious monopolies, to throw a mantle of protection over fraud, to enable quacks and charlatans to encroach on the domain of legitimate medical and pharmacal practice, or to support an advertising business designed to mislead the public in regard to the nature and value of medicines as curative agents. The morals of the community are injured by some of this advertising, intellectual vigor is impaired by the use of many things advertised, and physical as well as moral degradation frequently results. Crime is often inculcated—even the crime of murder, that the nostrum manufacturer may profit thereby. Cures for uncurable diseases are promised and guaranteed. Every scheme that human and devilish ingenuity can devise to wring money from its victim is resorted to which can be employed without actually bringing the advertisers into court. All this wicked quackery parades under the guise of "patent" medicines, and asks the protection of our courts. It is time for the medical and pharmaceutic professions to unite and unmask this monster, and show the public its true nature. And this can be accomplished in no better way than through a study of the object of the laws which the secret nostrum manufacturers are now endeavoring to prostitute for their own advantage, and the teaching of the public what these laws were enacted for, and how they should be applied for the benefit of the country.

I do not wish anyone to take what I have said as a reflection on individuals or concerns. The secret nostrum business in some of its phases has assiduously found its way into the medical arts, and physicians, pharmacists, and manufacturing houses seem to have forgotten to a certain extent the obligations which they owe to the public. Medicine, in all its departments, must be practiced in accord with scientific and professional requirement or it will sink to the level of a commercial business. The end of medical practice is service to suffering humanity, not the acquisition of money. Money making is a necessary part of the practice of medical arts, not however, its chief object. This fact must be kept in view always. Once lost sight of, and trade competition substituted for competion in serving the interests of the sick, medical and pharmacal practice will become an ignoble scrabble for wealth, in which the sick become victims of avarice and greed. Better set free a pack of ravening wolves in a community than to change the end of medical practice to a commercial one, for physicians and pharmacists would soon degenerate into quacks and charlatans and take shameful advantage of the community for gain.

DISCUSSION.

Dr. J. V. Shoemaker—I have been recently almost a victim of a trade-mark firm who brought suit against me to the extent of a hundred thousand dollars, if I did not retract certain statements with regard to two words which were joined together in my text-book on "Therapeutics and Materia Medica." The words had been well known to the profession for years, but they had appropriated them as a trade-mark and denied every one else the right to use them. One of the greatest evils which the medical profession is suffering from is the use of coined words in medicine. I say this after corresponding with two law firms in Western cities, and I was obliged to get legal advice to prevent them from interfering with the sale of my book. They objected to the use of this compound word because they claimed that they had a secret method of combining these two substances, which no doctor or other pharmacist could use. This shows the evil effects of doctors using drugs which are not official.

In the last few years, during which it has been my privilege to teach materia medica, I have taught the student to prescribe official remedies. I have alluded to this subject merely for the purpose of adjusting the fraternal relations between the druggist and the busy doctor, who should see that every drug used in his practice could be obtained from every pharmacist. They should both unite to prevent the sale of those remedies which wring millions of dollars from the pockets of our patients. At the time I referred to I made a little study of the matter and went to several hospitals, and found that more than half of the drugs were trade-mark preparations. That is to say, that instead of spending one hundred dollars, they were spending four hundred dollars for proprietary medicines which were slowly absorbing the resources of the institution. If I had my way I would not have any remedy used in a hospital, which could not be found in the pharmacopeia, or could not be purchased in every drugstore. The physician who prescribes proprietary remedies is simply driving his patient to self-prescribing. I hope that the time will come when our committee will drive all proprietary medicines from our exhibition rooms.

Dr. Eccles—I may say that the last speaker has not been the only victim. I have been vilified by the trade-mark people, and threatened with prosecution. I have taken the ground that all secret preparations are detrimental to medicine, and the better a preparation it is the greater harm it does to medicine. If every manufacturer had followed the course of one firm in Brooklyn, Dr. E. Squibb, it would have been a splendid thing for medical science, for then everything would have been left open to the profession. As regards patents there are two sides to the question. There should be some reward for these original investigators in order to stimulate invention. As regards antipyrin of Dr. Knorr, it is not a secret preparation and it is well known; it might not have been invented had it not been for the fact of the reward offered by the patent laws. The inventor may labor for years, and spend money in experimenting, and if he succeeds in discovering something useful and valuable, he should have his reward. I think that there should be some way arranged by which he could surrender the patent and the government buy it outright. As it is, some inventors are paid too much.

Dr. Hoff of Pomeroy, Ohio—To illustrate the improvement in the sentiment of the profession toward secret or trade-mark medicines, I may say that, in 1845, when I was a student at Jefferson College, one of the faculty gave permission to a manufacturing firm to exhibit his preparations to the class. The Professor stated that he would not recommend them but the students could use them if they saw fit.

Dr. Koenig—I hope that the time may come when no secret or patent preparations will be allowed to be exhibited at these meetings. I may cite the recent meeting of the Pennsylvania State Medical Society as a precedent that we would do well to follow. The Committee on Entertainment resolved to abandon the usual exhibition and they went to the State Pharmaceutical Society and invited the pharmacists to use the exhibit hall in a display of legitimate pharmacy. The exhibit was a great success. Physicians need to have their attention directed to official preparations as there are a great many preparations in the pharmacopeia which physicians never use.

Prof. Remington—I have much admiration for the devotion of Dr. Stewart, who has been pegging away at this subject for twenty years, and I am glad to see that his work is at last beginning to tell. I only want to say that, if the American Medical Association would only do something on this subject it might do good. The physicians are more to blame than the pharmacists. I was present at a meeting of the Pennsylvania State Medical Society, fifteen years ago, and I was asked to present the "National Pharmacopeia and Formulary." I made some suggestions then which were received enthusiastically by Dr. Howard A. Kelly and others, and the exhibition which Dr. Koenig has referred to is a result and an outgrowth of that discussion at that meeting.

The Committee on Revision, in 1880, refused admission to cosmolin, a proprietary article, but admitted the same product under the name of petrolatum. The result is that it can be bought now at seven or eight cents a pound, although, as a proprietary article the price was fifty cents per ounce. The public really does not know how much money has been saved by this action of the Committee. I approve highly of the interest and co-operation of the general profession in the work of the pharmacist and especially in that of the Committee on Revision.

Dr. Haines—The Medical profession has the reputation of being the most liberal profession on the face of the earth. This came up at Atlanta, where a delegate was refused permission to register because he had applied for a patent; he had not even obtained a patent. The Association set its stamp of disapproval upon the holding of a patent by a physician. It has been said that a man should be rewarded for his labors by giving him a patent, but our fathers demanded nothing of this kind. They contributed everything freely for the sake of science and humanity, and we should emulate their high aim and not stoop to commercialism by holding patents.

Dr. Squibb—I agree with Dr. Stewart in most points, but I think that his final statement conflicts with points that he made earlier in the paper. He gave me the impression, at first, that he believed a physician should patent his inventions and discoveries, but later he reverses this. I do not myself think that anything should be patented by either physician or pharmacist; I am sure that the patient would not be benefited thereby. I may say with regard to the sale of patent medicines, that the medical journals themselves are largely responsible for the existence of this class of remedies. If the journals would cease to distribute their advertisements the sales would fall off 75 per cent. If editors of journals would use their influ*ence to discourage the publication of such testimonials*, it would be of great advantage.

I would like to say something about what Dr. Stewart has done in previous years; I have agreed with him in the main and do not care to discourage his good work any longer.

Dr. F. E. Stewart—With regard to patents, my idea is that the present trade-mark and patent laws, if properly applied and carried out, would do more than anything else to restrain the sale of this class of preparations, and end the patent-medicine business. When I appeared before the Committee on Patents, at Washington, and they agreed with my views and asked if I wanted to modify the law. I said, no, only enforce the law.

The trade-mark proprietary medicine purveyors do not want any analysis of their preparations to appear in the journals or text-books, and threaten prosecution to those who publish this information.

To show their animus toward pharmacists, I may refer to articles which they have had published in the public press, stating that the druggists are unreliable and not to be trusted, and will put up their own drugs, which are inferior, the only reliable product being the proprietary preparations.

REPORT OF THE COMMITTEE ON PHARMACOLOGIC INVESTIGATION.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY H. H. RUSBY, M.D.

CHAIRMAN.

This committee was appointed in August last, immediately after the naming of the delegates from the American Pharmaceutical Association to attend this meeting, and proceeded at once to arrange for the investigation of several problems, selecting phytolacca, virburnum and strophanthus as the drugs to be studied.

The design was to secure the separation in a pure state from each of these drugs of all those constituents upon which its activity might possibly depend, to ascertain by physiologic examination which of these were the active constituents, to determine the percentage in which they existed naturally in a sample of average good quality and to fix methods for the selection of a drug meeting this requirement. In the case of phytolacca it was desired to determine the differences in composition between the drug in a fresh (that is, undried) condition and after drying and how, if at all, such difference affected its medicinal properties. In the case of viburnum it was desired to ascertain how, if at all, the v. prunifolium and v. opulus of the pharmacopeia differed and whether the other viburnum barks found in the market under these names shared their properties and to how great an extent. In the case of strophanthus it was desired especially to determine whether the use of the so-called "brown seeds" is justifiable, and in a general way to fix the comparative value of the other varieties on the market.

The results of the committee's efforts on this occasion illustrates the importance of this method of organizing such work considerably in advance of the time when the reports are to be presented. It has been found, in spite of the utmost diligence, that the year has not afforded sufficient time for the completion of more than one of these problems. The determination of the composition of poke-root has progressed satisfactorily, but the examination of the constituents has not yet been made. It is believed that the active constituent of viburnum has been discovered, but its isolation has presented remarkable difficulties and a sufficient supply is only just now being prepared for study. The complete report on these two drugs will therefore of necessity be postponed until another year. The results of the study of strophanthus are indicated in the program for this meeting. Prof. Smith Ely Jelliffe of the New York College of Pharmacy has made a study of the seeds in their crude condition. Dr. Alfred L. R. Dohme has made a thorough chemic study of the different seeds and is able to draw conclusions as to their comparative value based on such examination. Dr. R. W. Wilcox of the New York Post-Graduate School of Medicine has studied clinically the preparations put in his hands by Dr. Dohme, and has thus completed the series of studies, so that the Revision Committee of the United States Pharmacopeia will now be able to define and describe this important drug on an intelligent basis.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

CHAPTER XII.—FRENCH AND ENGLISH WAR SURGERY.

(*Continued from page 542.*)

In order to have as much *fresh air* as possible, the minister of war of the republic instructed the commissioner of health to provide the necessary means. He decided upon the following: "Upon his admission every patient was to have his hands and feet washed; in the wards which the attendants were to sweep twice a day, there must be basins with pure water; facilities for bathing must be provided in every stationary hospital; twice a year the wool in the mattresses must be renovated and the wards must be whitewashed at least once a year, and the bedsteads and tables be frequently washed. For every ward a certain number of beds was allowed, and this number was never to be exceeded; they stood from two to two and a half feet apart and never in more than two rows. The basins were oiled, outside and inside, and after use were immediately cleaned. In order to admit fresh air into the wards doors and windows were opened, the latter being provided with rollers and ventilators. The heating was done by fireplaces or stoves, with funnel-shaped draft-pipes. More than 15 to 16 degrees of heat was not permitted in the rooms and when the weather was very warm the floors were sprinkled and fresh green leaves strewn about. All fumigation was forbidden as it only concealed bad air without creating fresh air. Neither stagnant water, manure heaps nor rubbish were tolerated in the neighborhood of the hospital.

Gradually the system of the *transportation* of the wounded in the French army developed. In the war of 1758-59, even on the second and third days after the battle, Colombier saw the wounded lying on the field half dead, naked and trod upon, and indeed, this was on the side of the victorious army, and it must have been much worse on the side of the enemy. The ambulance wagons were very poor; the sick lay close together upon the straw without sufficient covering. Colombier, therefore, proposed to construct wagons in which the wounded should be suspended in a kind of bed, in order to protect them from too violent jolting. In each wagon, which should be fourteen feet long and five feet wide and drawn by four horses, were four hanging berths with straw-sacks and covers for four patients, besides two seats for the surgeon and attendant. It could be entered from the front as well as from the rear. For the sake of lightness, the wagon was made of wicker and covered with painted linen. The cover could be opened and had two windows for the admission of air. Four-wheeled wagons were first introduced for transport in the year 1788, one wagon being allowed to about a thousand soldiers. These were so cumbrous and unwieldy, that the soldiers preferred to be carried from battle on guns, boards, [illegible] desired that every wounded soldier who had been carried to the depot on the day of battle should bring with him a bulletin (une note), concerning his wound and bandage, which when there was a sufficient surgical force could very well be carried out (l. c. ii, p. 314); another idea which by no means belongs to our time as one might suppose. It is well known that in the beginning of the campaign of 1866, in the Prussian army, diagnosis tablets of parchment were distributed and pinned upon the breast of the wounded soldier; an arrangement which later the Berlin Conference acknowledged to be very much to the purpose. This military physician also required that a sufficient force of men be at hand to transport the wounded, so that they could be operated upon and bandaged as soon as possible; for he had already had the experience that a much greater proportion of those who were operated upon on the battle field recovered, than of those who were treated two or three days later when swelling and fever had set in. Every transport train was accompanied by a number of surgeons, attendants and a detachment for escort. The republic stipulated those injuries which transportation would aggravate, and forbade the conveyance of all wounded about the head, with a broken limb, with a large blood vessel ruptured or with a badly inflamed wound. On the decampment of the army no one could be left behind in the field hospital. Transportation by water was given the preference. During Napoleon's wars, many improvements were made by Percy, the chief of the medical department. He introduced new ambulances (chairs de chirurgie), which were drawn by four horses, accompanied by surgeons and attendants, and contained bandaging apparatus and litters. He also organized a corps of litter bearers to carry the wounded out of the battle to the place of bandaging, and to serve as attendants on the ambulances. They were armed with lances, which served at the same time in carrying the wounded, for with two lances, pedestals and canvas which the litter bearers carried in their haversacks, a litter could readily be constructed. Larrey introduced a new wagon which, d by surgeons on horseback, moved with great pidity under the fire of the enemy and picked up e wounded. In Egypt he transported the wounded in baskets suspended on each side of a camel.

Among the *French military* physicians of the last century were some excellent practitioners, most of them members of the Collège de St. Côme in Paris. There was scarcely a prominent surgeon who had not served a long time in the army; among them were J. L. Petit, Maréchal, La Peyronie, Le Dran, Arnaud, Louis, Morand, Garengeot, La Faye, Sabatier, Pelletan and others. *Ravaton*, chirurgien-major in Landau, was an eminent military surgeon who, after an experience of thirty-six years in the wars, wrote a "Chirurgie d'armée ou traité des plaies d'armes à feu," 1750 (2d Ed. 1768), the most exhaustive work of his time on gun-shot wounds. This work, in which were given many conservative cures of gun-shot fractures, and in which amputation was recommended above the malleolus with two flaps instead of below the knee-joint, created a great sensation in the Académie de Chirurgie. It excited such violent debates, that it was proposed by several that the book be burned in the court yard of the academy as unworthy of French. surgery. However, this proposition appeared too intolerable and was rejected by the president, Le Martinière. As a medical writer on military subjects *Colombier*, who had participated in the wars in Germany, became known by his five volume "Code de Médecine Militaire" (1772), a counterpart of Pringle's Observations. All that pertained to the well or the sick soldier, in the field or in the garrison, and to hospitals, army diseases, duties of the military physician, etc., were exhaustively treated. To the military surgeons of a later time belonged *Bagieu* and *Trecourt*, who like Ravaton, approved of amputation above the joints and pointed out the evil consequences of too long continued strict diet in surgical diseases. Then came the quarrelsome, impatient *Lombard* of Strassburg, who, in 1792, as chirurgien en chef, accompanied the army of the Rhine to the field. His service consisted in showing the necessity of purgatives in various surgical diseases, and in contending against the hasty and frequent bleedings practiced by French surgeons in injuries. In the "Remarques sur les lésions de la tête" (1796), he protested against the abuse of trepanning. At the close of the century French military surgery reached its highest development under Napoleon, who through his new plan of war, made new demands upon surgery and had the good fortune to be supported by the great talents of a Percy and a Larrey. Their personal example as well as the high respect and dignity which Napoleon accorded to them awakened among the military physicians an extraordinary zeal. Baron *Percy* († 1825), inspector-general of the French military medical system, had participated in the wars in Germany and Spain, and had distinguished himself by his operative skill and had eminent executive ability. Besides his improvements in methods of transportation, during a battle, he visited on horseback all the surgeons, and had them carry their instruments in cases from their shoulder belts, and lint and bandage material in their pistol belts, so that they could render assistance as quickly as possible. Later, he invented light wagons for conveyance. His prize essays on the use and form of scissors and on the extraction of foreign bodies from shot wounds, have been already mentioned. In his "Pyrotechnie chir. pratique" (1794), he taught the use of the cautery, especially in cases of hospital gangrene, and recommended moxa in cases of inflammation of the hip and knee-joints and vertebræ. He also advocated resection of the joints. *P. F. Moreau* deserves the highest credit for the introduction of this operation ("Observations pratiq. relat. à la résection des articul. affect. de carie," 1803). The Frenchman, *Boy*, appears to have been entirely forgotten; under the republic he was chief surgeon of the army of the Rhine, and also made a reputation for himself as an orator and poet, but died young—a martyr to his profession. His work on gun-shot wounds, which was distributed to every hospital in the army, is in the highest sense worth the reading (1795; in G. Wedekind's "Reports of the French war hospital system" I. p. 294–366, 1797). *Larrey's* principal activity falls within this century.

In *England*, military surgery fared badly. Most of the army surgeons were uneducated quacks, frequently given to drunkenness and practicing their profession in illegitimate ways. When a soldier had served for a little while with a regimental surgeon as an orderly, preparing plasters, then it might happen that he would be appointed assistant, and later successor to the surgeon. Each regiment had a surgeon who was at the same time apothecary, and an assistant; the former received four shillings daily, the latter three shillings, sixpence. Properly, each regiment was to have a hospital, for which the crown provided thirty pounds; yet there was frequently so great need that the sick soldier had to be sheltered in public taverns. There they lay in dirty beds and were badly cared for by their comrades. The hospitals left much to be desired, and were frequently smoky and so narrow that several patients shared one bed. The soldier paid one penny monthly for the purchase of medicines. This money was handled by the surgeon who sought to supplement his own meagre salary out of it, so that in many regiments, the necessary medicines were lacking both in quantity and quality. This lack of money had the direful consequence, that in the middle of the century the surgeons in the field amputated without scruple, because they received £5 for every amputation. Only a few of them possessed good instruments. Sections were seldom made, as anatomic knowledge was too scant and the people had a prejudice against that operation. The station of the regimental surgeon, in accordance with his culture, was contemptible. He was subordinate to the ensign and quartermaster, and had to take much abuse and indignity from the officers when the latter thought that a soldier had remained too long on the sick list. There prevailed also, in the country, the improper custom of allowing the regimental surgeon to fill an officer's place, so that, for instance, he would be sent as a captain with his company upon orders. In the regular troops the surgeon could be sentenced to prison like a common soldier by the youngest officer, and could be subjected to corporal punishment for an offense against the officer.

A few words as to this. Although the discipline in the English army was very mild in comparison to that of other nations, for the Prussian soldier was punished severely if the wind blew the hat from his head, yet the *whip* was much in use. The regimental surgeon was present at the execution of a sentence, and could order a cessation if life was endangered. The flogging was usually about the neck and shoulders; deserters were sentenced to three hundred, sometimes to a thousand stripes, which were given at different times. When the soldier had received a few hundred he was taken into the hospital, and when his wounds were healed he was flogged again. The executioners drew the arms of the delinquent above his head, fastened his wrists to a wooden spike, suspended him in the air and then laid the stripes about his thighs. In the meantime the surgeon saw that the lashes of the whips were sufficiently flexible, for they were very much more painful when they became bloody through long use, and they instructed the executioners to strike chiefly upon the shoulders and not on the neck and ribs. To increase the punishment, they used whips on which the blood was drying. In a few regiments running the gauntlet was in use. The men were placed in two rows and with rods struck at the delinquent who, naked, had to run between them (Hamilton, "Duties of a Regimental Surgeon," 1789). In Austria, under Joseph II., the soldiers were beaten upon the thighs with rods, instead of upon the back as formerly; they also condemned a man to run the gauntlet through three hundred men ten times or more, back and forth; this sometimes resulted in inflammation of the lungs. The Prussian soldier of the Seven Years' War was beaten upon the back with a rod or sword, sometimes contracting "a lung disease in consequence of the considerable concussion."

Among English military surgeons, *John Hunter* stood at the head. His short treatise on gunshot wounds was epoch-making, because it for the first time treated the art of healing, etc., on a physiologic basis. He discussed principally the general surgical questions, and entered less into the different gunshot injuries. He also wrote on the diseases of the troops in Jamaica. In addition to Hunter, *Jackson* of Dublin alone deserves mention; he collected in the American war some good notes on gunshot wounds. On the other hand, there were several illustrious physicians in the English army: Pringle, Don. Monro and Brocklesby. Although the military activity of the English nation could not be compared to that of France and Germany, and the organization of their military medical system was far behind that of France, yet we owe to England a few of the most important innovations, which only came to be fully appreciated a hundred years later. *Pringle first taught the value of fresh air and ventilation in hospitals, Brocklesby first introduced barracks, and Earl Stair made the first specific agreement with the enemy for the protection of the wounded.*

J. Pringle, court physician and physician general of the English army, wrote "Observations on the Diseases of the Army" (1752), a book which has no equal in European literature; he includes in it his researches into the nature of putrefactions and ventilation, and rich experiences in hospital fever. He valued *fresh air* as the chief essential to the cure of diseases, for nothing is more injurious, nothing involves greater danger than infected sick rooms, but this is not believed to its fullest extent. Neither diet nor medicine is of any use, so long as the air is impure and foul. This comes about through stagnant water, heaps of refuse and moldering straw, and through the overcrowding of the hospitals. Such is the case in full, ill-kept barracks and on ships where the people have too little room and are kept on board too long. In order to avoid the diseases arising from such conditions, Pringle recommended that the army change its camp oftener, and in camping in swampy regions to overflow the fields entirely with water. Upon the outbreak of dysentery they should move the camp. In the vaults of the closets, which should be very deep, a thick layer of earth should be thrown every day, and any one should be fined who made use of any other place than the closets. During the progress of a contagious disease, too many patients should not be sent to the hospital, lest the contagion should spread there; the lighter cases of dysentery should be kept in the camp and the others, as far as possible, remain in the regimental hospital. Without this *dispersion of patients* the main hospital would become too greatly overcrowded. The best hospitals were the most airy and roomy houses, barns, stables, granaries and churches. Since fresh air and not warmth was necessary, a large barn should be preferred to a little warm farmhouse. Besides this, Pringle recommended that the regimental hospitals be scattered through several villages, instead of crowded together in one, wherein the maintenance and attendance on the patients were more difficult. He desired that the regiments take their sick with them, so far as the transport wagons could comfortably accommodate them and the diseases would permit it. We have described, in chapter IV, his suggestions for the continual renewal *of fresh air in the hospitals by means of ventilation.*

Don. Monro and *Richard Brocklesby* served under Pringle. They both took part in the Seven Years' War and wrote on hospital fever and field diseases of the English army. Brocklesby has the great honor of having first introduced *barracks*. With the utmost earnestness he recommended these buildings, thrown together out of planks, provided with openings for the admission of light and strewn with straw, for hospitals, on account of the free passage of air. To prevent contagion he had the straw and sand on the floor changed frequently, and in these light board houses he saw many more patients recover than in the low rooms.

October, 1758.—"There was a great crowd of sick brought to the Isle of Wight, and all the little out-buildings, granaries and miserable huts which could be procured for money or for the love of God, were insufficient to accommodate all the sick. In this necessity some of the gentlemen of the hospital advised that a few huts be built in the woods for that purpose, that the floors be covered with planks and the roof with new straw, which would keep out the wind and rain, and that these huts be large enough to accommodate 120 patients or more; the mechanics who undertook the building demanded £40. These huts were actually built, and indeed so badly that they seemed utterly inadequate to their purpose. It was afterward found that the patients who were taken there were obliged to endure extraordinary cold and much dampness, yet the number of deaths was far less than elsewhere, although the patients had the same diseases and were given the same medicines, diet and care. They also recovered more quickly than in the warm, close huts that had been hired about Newport, where they appeared to have usually had better care."

September, 1760.—" . . . I sought back of the camp, in the adjoining field, the spot which was driest and most exposed to the free air, and had the place hollowed out. About the edge of the excavation I had stakes set upright and extending about six feet above the surface of the earth, while between these stakes planks were placed, which I had covered on the weather side with fresh straw; over the planks I had beams laid, which were likewise covered with straw, and in this way I made a hut which was almost large enough for my purpose, where I had sufficient air and where it was warm and dry. It cost 10 guineas to build a roomy and comfortable hut which would hold about forty patients. The straw, which was worth about £5, was upon the order of the general taken from the public stores; in addition the masons of the regiment were ordered to build a fireplace and chimney. . . . But what most deserves attention is, that although many patients were brought to this house who lay sick of the genuine putrid spotted fever, yet only one or at the most two have died of it. I ascribe these fortunate recoveries more to the pure, fresh air which they breathed in this house, than to all the medicines which they were obliged to take every six hours or oftener."

Campaign of 1761.—"As in the Gloucestershire regiment alone nearly a hundred men a day were taken sick, I took occasion to bring to the attention of Colonel Berkeley how easily we could help or overcome this difficulty, if he or the regiment would expend the little money necessary to build such huts, each of which could accommodate some twenty-four or twenty-six men, and should be made by digging five feet below the surface of the earth and covering the planks and beams with a good layer of straw, so that the rain could not get through. As Mr. Berkeley exhibited on every occasion a rare humanity and generosity, I found no difficulty on account of the expense. The carpenters of the regiment were immediately ordered to make the foundation, and he commissioned me to give directions for the building according to my pleasure. In a few hours the solid ground was excavated thirty-one feet in length, eighteen or nineteen feet in width and some five feet in depth. In place of walls, I had the stakes fitted with boards and a roof made above, which was all covered in some way. So I had a roomy, airy, yet sufficiently warm dwelling, into which one could go by means of six steps which I had cut into the earth in order to prevent slipping in wet weather. At one end a fireplace was made of bricks, and out of his boundless humanity the colonel had that part of the ground covered with boards on which the patients could lie very near the fire. In various places in the roof air holes were made, which served for windows and could be opened at pleasure. In a short time three such hospitals were prepared. . . . All the patients received there, with the exception of three at the most, were cured completely, and the number of sick had never been so small as at the end of this campaign."

1762.—"They improved these field hospitals by having a somewhat large, airy porch built at each door, so that the patients who were able to move about somewhat could get fresh air and eat their meals there."

"I am convinced that such huts as I have described above could be built at any time and without difficulty; and since the arrangement of the ordinary hospital can in many respects be so very injurious to the patients, I trust that the measures which I have recommended above will in future receive the approbation and acceptance of those in authority."—("Œconomical and Medic. Observations" from the year 1758-1763, 1764. Trans. by Selle, Berlin. 1772).

He was the first who insisted on placing at the head of a field hospital a physician or a surgeon instead of an officer: "The power of the physician in the hospital should be just as great as that of the commanding officer in the field." (A hundred years were spent in convincing men of the justice of this maxim, for only in the North American war of our own time was the physician the absolute ruler of the hospitals.) The French military hospitals pleased Brocklesby better than the German, in which he especially condemned the crowding together of patients, and the negligence and unskilfulness of the physicians. But far more of the sick and wounded died in the French field hospitals than in the English. Brocklesby indicates the reasons for this in the following words: "As the French surpass all the nations of our time in the knowledge of surgery, so it is well known that they are the most miserable and unskilful physicians in all Europe, especially since their surgeons have sought to impress upon the world that the knowledge of anatomy comprised the highest and most perfect degree of medical science."

The most important step toward the protection of the wounded, which can be regarded as the *precursor of the Geneva Convention*, we also owe to England. The wounded and the sick were for the first time considered, in the year 1689, in a treaty between France and Spain, when each country paid for the care of its wounded in the hospitals of the other, and since that time care has been taken that those from the side of the enemy should have all necessary treatment and nursing. They agreed upon the nature of the attention to be given in the hospitals and each country was to pay for the maintenance of its own soldiers (Gurlt). But it was still customary to transport the patients great distances, by reason of which many of them died. And it was necessary to move the hospitals frequently for the sake of safety, and this also had evil consequences. When, in the year 1743, the English and French were arrayed against each other on German soil, the English Earl Stair, before a battle had taken place, made the proposition to the Duc de Noailles that the hospitals on both sides be declared neutral and be protected by both sides. Noailles agreed to this; it was concluded on June 27, at Dettingen. The soldiers lay upon the damp ground and eight days after the battle about five hundred were taken with the dysentery. The English established a hospital in the village of Fechenheim on the Main, in which, aside from the wounded, about five hundred, mostly dysentery patients, were accommodated. When the Duc de Noailles established his army on the other bank of the Main, opposite this hospital, he notified the English that his soldiers had been expressly ordered not to disturb the hospital in any way. They conducted the whole campaign in this way. Pringle, the physician-general, thus relates it.

Very soon after the battle, on July 18, in Frankfort-on-the-Main, the envoys of the two leaders concluded the actual treaty. The chief provision in this was that the wounded who had fallen into the enemy's hands were to be most carefully treated. Neither physicians, surgeons nor apothecaries were to be held as prisoners of war, but were to be returned as quickly as possible. Each side cared for the wounded and paid the expenses. They could not only receive back the physicians when they desired, but could send them wherever they pleased provided with letters of protection, only they were not allowed to serve again prior to the exchange of prisoners. Sick and wounded were safe in the hospitals and were not considered as prisoners of war. It is seen that these stipulations could scarcely be improved on, although in later wars they were frequently and everywhere violated.

In order to preserve the connection, we will here notice what they *thought in Germany and France of barracks and neutrality agreements.* Colombier considered barns excellent for hospitals, and better than churches, provided sufficient fresh air could be secured. When in the year 1774 a wing of the Hôtel Dieu in Paris burned, Le Roi, a member of the Academy of Sciences, submitted to that body the following proposition: That the number of patients in each hospital should be kept as small as possible, and that in the construction of hospitals special regard should be had for ventilation. As wards abutting directly on each other were unserviceable, he devised a plan by which the wards should stand some distance apart like the tents in the field or the pavilions in the gardens at Marley (standing isolated among the trees). Every ward should be like an island in the open air, so that when the external air was set in motion the air inside the ward would be renewed, without passing through another sick room. There should be several openings in the vaulted roof and also in the floor, communicating by pipes with the outer air, so that a renewal of the air would be constantly taking place; stoves were also to be provided. He anticipated a possible objection to the expense of wards covering so much ground, and asserted that the highest possible cleanliness and the purest air possible should be the only true ornament and glory of a hospital. His propositions were well received but nothing was changed. (Hunczovsky, Med. surg, notes on his travels through England and France, 1783, p. 96.) Bilguer, in Germany, knew the successful experiments which Brocklesby had made with barracks, in the war, and appeared to appreciate their advantages, for he said that they were easily built by the carpenters of the army, they allowed a better supervision of the regimental stewards and avoided the injurious transportation to the hospitals by which so many wounded died. He also shared the view of the English concerning the absolute authority of the physicians and surgeons in the field hospitals. Nothing is said of the fact that Bilguer introduced barracks. The Prussian decree of the year 1787, ordered great sheds to be built for summer use, but the first practical application of barracks in Germany was due, it appears, to Joseph II. In 1789 he had "movable, wooden, adjustable hospitals" built, and found them serviceable. In the War of Liberation several barracks were built. The chief surgeons Görcke and Völtzke, assisted by a very meager force, built three large barracks in the year 1807, when after the battle of Prussian-Eylau, more than eighteen thousand wounded Prussians, Russians and French were crowded together at Königsberg. In the summer of 1813, also, various wooden sheds with 300, 400 and 500 beds were built, and in the autumn were walled up with brick and provided with stoves. Bischoff at that time strenuously opposed the barracks because they were not so healthful and clean as other buildings and were in greater danger of damage by fire.

In regard to the agreement for the protection of the wounded, this idea of Earl Stair, which guaranteed perfect safety to the hospitals, met with perfect approval in Germany during the Seven Years' War. Similar and often literally copied treaties were concluded from that model, between the Austrians and Prussians, in 1757, and between the French and Prussians in 1759; but in practice they were by no means so far advanced. At the end of that war, Baldinger asserted that the misery would be unspeakably diminished if all the princes were in harmony on this one point. Schmucker also expressed the wish that the warring powers would, at the beginning of a war, unite to guarantee safety to the hospitals, so that the latter could be established after the battle in the nearest convenient place. The patients should be allowed to remain here free and until they had completely recovered or, at least until they could be transported without disastrous consequences. Many wounded of both sides would be saved in this way, who under existing conditions perish miserably during the long transportation. It appears to have been an exception in the Seven Years' War, for an Austrian commander to leave a guard and a physician with a wounded Prussian officer when the army advanced. The rule was to take as prisoners the hospital, its physicians and equipment, and to hold them, although the enemy always took the very best care of wounded soldiers, as Theden observed. In France, Colombier contended for neutrality treaties and desired that the generals of both armies should mutually agree never to take the sick as prisoners; and that the defeated army should recover from the victor permission to immediately seek out their wounded upon the battlefield and have them bandaged by their own surgeons. Pourquoi ne pas faire une convention entre les deux armées, qu'on ne prendra jamais les malades, ni les hôpitaux? C'est un acte d'humanité digne de ce siècle. . . On doit respecter l'asyle des blessés et des malades. Il est d'usage qu'on ne les maltraite pas; au contraire les généraux ont une attention singulière à ce qu'ils ne manquent de rien.

When our own time wishes to boast of the humane sentiment of the Geneva Convention it must be remembered that for a hundred years the warring powers, in international agreements have been solicitous of the welfare of the wounded who have fallen into the enemy's hands, and of the protection of hospitals.

With this chapter we close the history of the surgical profession in order to enter more into surgical science. A glance at "German Medicine" may be allowed by way of transition.

(To be continued.)

Senile Heart.—Balfour's rules *(Hospital Times and Medical Gazette)* are in substance as follows: 1. Not less than five hours between meals. 2. No solid food between meals. 3. For all those with weak hearts, the principal meal in the middle of the day and their meals as dry as possible.

SOCIETY PROCEEDINGS.

British Medical Association.

Proceedings of the Section on Medicine at the Sixty-fifth Annual Meeting, held at Montreal, Canada, August 31 to September 4, 1897.

WEDNESDAY, SEPTEMBER 1.

The Section was called to order by STEPHEN MACKENZIE, M.D., who at once delivered his address,

ON THE INFLUENCES THAT HAVE DETERMINED THE PROGRESS OF MEDICINE DURING THE PRECEDING TWO AND A HALF CENTURIES.

It dealt with a history of medicine since the foundation of Canada to the present day, this being suggested by this being the first Meeting held out of Great Britain.

Concerning the improvement in medicine during the past 200 years, the most prominent was the study of anatomy. Physiology is based primarily upon this branch; morbid anatomy too follows it closely. Due prominence was given the microscope in the development of medicine, as one of the connecting links. Due homage was paid the workers in the various branches of medicine for their part in the development of practical medicine, especially Harvey; Laennec, for his development of auscultation in the diseases of the chest; Jenner, Pasteur and Koch and others in carrying out the protective inoculation idea.

Mention was made of the advancement in education, the development of the university idea. The history of modern medicine is largely the history of scientific methods. Great strides have been made in clinical medicine, the greatest being the separation of enteric and typhus fevers; the development of the micro-organism of malaria and the proper classification of the pathologic conditions of the kidney; the opening of the closed book of the nervous system is very prominent. Addison's discoveries of the connection between suprarenal bodies with asthenia, gastric irritation and cutaneous pigmentation; the thyroid gland and its pathologic importance; and the importance of the integrity of the ductless glands of the economy. The development of medical societies and associations is gratifying.

ARTHRITIS DEFORMANS

(rheumatic arthritis), more especially its relation to rheumatism, nervous diseases and tuberculosis, was the subject for discussion.

Dr. JAMES STEWART of Montreal—The remarks were founded on some forty cases under observation in Montreal, viz., twenty males and twenty females. Family history of rheumatism in eight cases; tuberculosis in five cases; history of gonorrhea in the majority of the males, in the females absent in all but one; exposure to cold in five only; worry in four cases; alcoholism in five. In 15 per cent no cause could be ascertained: in 50 per cent. some acute infectious disease was present. Rheumatoid arthritis and nervous diseases; similarity between joint troubles and tabes dorsalis and of rheumatoid arthritis; supposed to be disease of cord; changes in joints; atrophy and sensory disturbances; changes in joints found in tabes, atrophy and hypertrophy, there being little difference between this and syringomyelia, clinically or pathologically, there being polypoid growths and intracellular changes; these intracapsular changes are found early in rheumatoid arthritis; pain is found in the latter, but in the nervous joint troubles not found. Early atrophy of muscles in rheumatoid arthritis probably explained by joint changes, but no loss of sensation is found in this atrophy. The evidence pointing to nervous origin is meager. In the forty reported cases, three cases only had history of tuberculosis. There is an inheritance of arthritic tendency, and history of tuberculosis may lead to rheumatoid arthritis by lowering vitality. History of acute rheumatism often found, viz., four cases of the forty; history of acute attacks, often history of subacute form. In 30 per cent. onset was either like acute or subacute rheumatism. No recognized well-marked dividing line between subacute and chronic rheumatism and rheumatoid arthritis; they are at two ends of scale, the intervening forms it is difficult to classify. It is to be hoped that further bacteriologic examination may develop the infectious nature of rheumatoid arthritis.

Summary.—It is a disease prone to occur in persons of rheumatic tendency. No sharp distinction between various forms of rheumatism; recent investigations point to infectious nature.

Treatment.—Medicinal treatment is unsatisfactory; the most successful is the Scotch douche: dry baths more effectual, sand and superheated dry air; copper cylinders used, the temperature 240 to 300 degrees, inducing perspiration; increased frequency of pulse; twenty cases treated; pain caused in several; gain in weight follows; increase of mobility in many.

Dr. SHINGLETON SMITH of Bristol—The name chosen, rheumatoid arthritis, stamps the whole discussion. The disease is not a rheumatism at all, but an arthritis. One case has developed this idea. A young lady 16 years of age, of good history and family, acute polyarthritis followed in two years by entire and complete crippling. What is gonorrheal rheumatism? A form of blood poisoning, and certainly there must be a source of infection from other parts of the body; we should have some positive evidence of the bacteriologic cause. Some such cause as this, however, will serve better than rheumatism, but until we have this the cause must be held *sub judice.* In the very acute stage during the arthritis, the very active antiseptic treatment may stop it short.

Dr. LINDSAY of Belfast—We all agree that there is a great deal of obscurity hanging over this disease. I have seen no connection between this disease and tuberculosis, but I believe there is a connection between rheumatism in its various phases and this disease. We often see chronic rheumatism slowly develop, in months or years, into rheumatoid arthritis. Cold, exposure, privation are much the same as lead to ordinary rheumatism. Salicylate treatment is ineffectual in rheumatoid arthritis. The tonic line of treatment, cod liver oil and suitable diet, is most often successful.

Prof. ABRAHAM JACOBI of New York—Prof. Stewart did not tell us what arthritis deformans is. What are we to mean by rheumatism? No cases can we conscientiously call rheumatism except the acute articular rheumatism. In rheumatism we have to deal with membranes; in rheumatoid arthritis with the cartilages. This is the real clinical difference.

We have not any coccus localized as a cause, and we should not let this enter into a discussion of this subject.

The only treatment that is of any use is directed toward the nervous system. Arsenic in increasing doses, continued for months and months.

Dr. T. C. WILSON of Philadelphia—I believe that advance of knowledge of disease of joints is hindered by use of the term rheumatism. Rheumatism should be perhaps limited and called rheumatic fever. Senile mono-articular arthritis is really a form of rheumatoid arthritis and not chronic articular rheumatism. Arthritis deformans perhaps can be applied to a wide group of cases. Rheumatoid arthritis of rapidly developing kind resembles clinically the ordinary type of rheumatic fever, but convalescence is not progressive and a series of subacute attacks leaves the joints permanently crippled; all suggest some agency affecting the joints, probably microbic.

Dr. F. C. SHATTUCK of Boston—We know almost absolutely nothing of this disease; we only know it is something like rheumatism. It is one of the opprobria of medicine. As to the presence of micro-organisms in this condition, Dr. Goldthwaite of Boston has been unable to confirm findings of an English observer, who reports findings of micro-organism in arthritic inflammatory fluid. In all cases coming under observation I have tried to discover some concealed source of suppuration, but this connection was traced only in one case.

Dr. MOOREHOUSE of London, Ont.—I have seen quite a number of cases, both multiple and single joints. The latter chiefly of the hip-joint. Two cases, same family: One, boy eight years old, had "ordinary" rheumatism, leaving him with valvular lesion, followed by general arthritis deformans, and he lived to be 22 years of age, and died probably of asthenia; general and complete muscular wasting.

There is a distinct relation between rheumatism and the subject under discussion. The wasting seen to such an extreme extent I believe due to lack of exercise and malnutrition due to the disease.

Dr. J. E. GRAHAM of Toronto—We must have distinct ideas of the pathologic condition, but we clinically have trouble in making diagnosis. There is much advantage from administration of arsenic, more than from any other drug.

Dr. T. D. GRIFFITHS of Swansea—We should try and find out if it is a disease *per se*, or a symptom. Look on it as a symptom of disordered economy, a development of various conditions as the result of various causes: Shock to nervous system, cold, bad nutrition, etc. It is not like gout and smallpox, due to specific causes. The treatment is general, tonic, arsenic, cod liver oil, good diet and fresh air. Find out in the early stage whether it is gout, rheumatism or arthritis deformans; a very difficult thing oftentimes.

Dr. V. P. GIBNEY of New York City, said in his remarks on treatment: Since last fall I have used superheated dry air, a modification of Montreal apparatus, and in general way am satisfied with the results. Function was improved and painful exacerbations removed. I believe that a great deal can be accomplished if hot air can be preceded by surgical procedures, breaking up deformities and at once putting in hot air. Protect these joint in exacerbations; do not use passive motion. Give absolute rest. After exacerbation has passed and you feel cartilaginous and bony deposits beginning resolution, partial motion can be produced by application of special still apparatus. If range of motion 10 or 15 degrees the apparatus should be used to limit motion to this, as exacerbations are often produced by trauma beyond this degree.

Dr. Tyson of Philadelphia—I adhere to views which allow certain relation between the rheumatisms. Treatment has been unsatisfactory. I have never seen even a suggestion of cure. Results are purely palliative. General tonic treatment: Cod liver oil, arsenic and other rational measures.

The Chairman stated that the disease presents so many varied aspects that it is difficult to present any one. The essayist's work is the result of personal work. It is doubtful if anyone will leave with a different opinion from what he had when he entered, because of the lack of the unanimity of opinion; still the discussion is of great practical value. He holds to the view that while arthritis deformans has relations remote to rheumatisms it is a more or less distinct entity. If a person once begins on track of arthritis deformans, its ultimate results will be the same. Clinically, if the disease gets perfectly well without any change in conformation disease, it is not arthritis deformans and no matter what initial clinical symptoms and you have deformity they are cases of arthritis deformans. If you see former cases in a number of years, again with deformity, we are at sea as to whether the primary disease was an acute rheumatism as we first thought.

Dr. Sutton thought the disease was essentially a disease of debility and occurred in families.

Dr. Stewart, in closing the discussion, said that clinically there is often great difficulty in diagnosing cases. There is no clinical or pathologic distinction and many diseases are grouped under this head.

Dr. James Tyson read a paper entitled

THE PROPER USE OF TERMS TO DENOTE MYOCARDIAL CHANGES.

Credit was given Professor Adami of Montreal for his observations on the associated dilatation and hypertrophy of the heart in various pathologic conditions of the heart. The term dilatation should be reserved for enlargement of cavity of heart with associated degeneration of heart walls. In hypertrophous dilatation the walls are not degenerated.

Discussion was participated in by Dr. Whittaker of Cincinnati and Dr. N. S. Davis of Chicago, who said that cardiac fatigue and exhaustion should be used more frequently. Cardiac weakness is often found with beginning pathologic changes which leads to cardiac exhaustion with congestions.

Dr M. H. Fussell of Philadelphia reported

TWO CASES OF HEMOPHILIA.

Case 1.—The grandparents were healthy, but one died of phthisis. Father had had epistaxis in infancy; no tendency to bleeding in the family. When a baby he was cut with a bottle and bleeding followed for some time; at 3 years old had severe epistaxis; at 5 years cut finger bled for a week; soon after he cut scalp and the stitches cut through and still bled for several days until stopped by hair lip pins; tooth pulled, bled since last May. Weighs fifty-six pounds; pale, pigeon-breasted, systolic second sound murmur; venous hum in neck; spleen can be felt; left ankle joint larger than right; numerous subcutaneous hemorrhages of shin. Treated with calcium chlorid. In July had bleeding from nose following a blow.

Case 2.—Male, when eleven months old fell from bed and struck head; bleeding from pulling teeth and cuts on head; again from nose and cut on forehead; at present his nose is bleeding. Subcutaneous hemorrhages on left arm, large and hard. Glandular enlargement; blood contains 40 per cent. hemoglobin. On July 29 he fell on right side from bicycle; has had large subcutaneous hemorrhages on right side, which disappeared in about one month.

Both children given calcium chlorid, mother believes without improvement.

Dr. Allen A. Jones—It is not often that a leucocytosis is found without some inflammatory action somewhere.

A paper by Dr. J. B. McConnell of Montreal entitled "Pyopericardium following Pleuro-pneumonia; Pericardiotomy; Recovery, with Case," was read by title.

Thursday Morning, September 2.

Dr. Robert Saundby of Birmingham, read a paper on

TREATMENT OF DIABETES.

He said that a stereotyped diet should not be prescribed; clinical experience should be the criterion for treatment. Orthodox diet is a pretense. Potatoes are forbidden, while fancy articles containing much carbohydrates are allowed. Carry on weekly weighing, with measuring twenty-four hour urine; if weight is stationary or increasing patient is doing well; even the sugar is increased. Proceed experimentally, allowing more or less starchy foods as indicated.

Polyuria and extreme thirst is best met by diet and opium at night. In strict diet the sugar and starch are entirely excluded. Cakes made of gluten flour previously fermented may be allowed. Breakfast: fat bacon, tea or coffee, and mineral water. If sugar disappears can give experimentally a potato and milk. Light wine may be used cautiously.

From 10,000 grains before treatment, the sugar generally falls to 2,500 to 3,000 grains under treatment. The starch of cereals is more productive of glycosuria then that of potatoes.

Strict diet to begin with, adding carbohydrates as experimental observation will warrant, is the treatment advocated by all foreign observers and has many supporters, though they may be silent in America.

Dr. Sidney Coupland—A strict diet in which all carbohydrates are excluded is impossible. Every case of diabetes is an individual one and in some marked effect is produced by a trivial change in diet. We cannot expect permanent and marked effect from change in diet alone, for we must know more of pathology before any rational treatment can be advocated.

Dr. Shingleton Smith of Bristol—In the diabetes of young people we must go very carefully, but in that of older people we can have much more latitude in the diet. A certain amount of indulgence in carbohydrate craving must be allowed in some cases.

Dr. Ebenezer Duncan of Glasgow—The amount of sugar in the urine in some cases is not a guide as to progress of case. If diabetes is due to marked disease of pancreas no diet will do good. How far we can allow carbohydrates is a matter of experiment, guided by no increase in weakness or loss of muscular power. We must never give way to cravings of the patient for they invariably get rapidly worse.

Dr. Tyson of Philadelphia—Dr. Saundby's treatment is practically that of the speaker. It is often easy to find cases drop into one of two categories, mild and severe. In those from whose urine it is easy to eliminate sugar by diet, they are relieved with varying facility and ease. The cases of glycosuria will run over to diabetes if let alone. Cases containing under 2 per cent. of sugar in urine have been cured. Keep under observation, pure proteid diet being best, at least use it once a month for two days, and sugar will be found to disappear entirely. Cases of the second class are those in which pure meat diet will not entirely eliminate sugar; how far shall we limit the diet? A certain proportion of sugar is of itself harmful in the urine, and the diet should be restricted.

A pure proteid diet has been stated, by Dr. Munson, to be harmful, increasing the diacetic acid in the urine, this being responsible oftentimes for the coma. These foreign substances are due to the breaking up of the body albumin, but the speaker's views do not entirely coincide with those of Dr. Munson. It is practically impossible to keep one on a purely proteid diet, and the latitude which we are forced to permit will prevent the formation of these substances.

Prof. Abraham Jacobi of New York City—A good deal of what we know and do in the way of dietetic treatment is not the result of experimententation as much as of experience. Diet must be changed according to age. The very young will not stand strict carbohydrates; the very old much better. Many do not thrive on any diet. If they emaciate, the carbohydrates must be increased. The younger the child, the quicker they die, but they last longer by entirely restricting the carbohydrates. The question of milk: A diabetic never gets worse with milk, the speaker gives milk in every case and they are better for it. Duncan's recommendation is not best. Give milk in any form it can be taken. *Old persons do less well on strict diet than on* mixed diet.

Dr. Lindsay of Belfast—We must pick our cases. A good deal of liberty in diet is safe in older people, but experience has been uniformly unfavorable in the very young. The clinical course is best to be watched rather than the urine.

Dr. Tyson, speaking again, said that in the mild cases spoken of, the milk diet can be given, but without any special benefit or harm: safe with other diet. Not so though in the severe form. The urine as a rule is the best guide as to the condition of patient.

Dr. Wright of Ottawa—From experience I believe there is a distinction between glycosuria and diabetes, the former occurring chiefly in elderly people and in them there is no pathologic condition. Cases of healthy young men, under 25 years of age, sometimes show sugar in the urine without polyuria or other symptoms. These are found only when they present themselves for life insurance examination. In cas-man, unusually well developed, never ill, there is a glycosuria, absolutely without symptoms.

The speaker wished to know of any treatment, dietetic or otherwise, indicated.

The CHAIRMAN said that we are very prone to be routinist and the essay was of great importance in showing how much more beneficial it is to find out how much of carbohydrates a patient can stand and desires, and that the weight and clinical condition of the patient should be the index as to his condition, and not the urine and its sugar.

Dr. SAUNDBY, in closing the discussion, said that he did not advocate *latitude*, but the reverse, giving a diet which was tolerable to them, even in children. A little carbohydrate can be given, especially potato, for it agrees when no other form of carbohydrate can be tolerated. Four to six ounces can be given and well tolerated. All diabetic children die and we should try to make their lives as tolerable as may be. In each case it is an experiment. The doctor should only be required to analyze the urine. He has always used a milk diet, with others, for years, giving some daily with advantage. If during the first week we decide to watch the sugar, do not give it. The percentage of sugar is misleading; rather get the total amount in grains or grams. Polyuria, thirst and increase of sugar are guides. Loss of weight permits a certain increase of sugar, even if sugar in urine increases.

Dr. EBENEZER DUNCAN of Glasgow read a paper entitled

TREATMENT OF DIABETES BY URANIUM NITRATE.

Dr. West's paper first attracted the writer's attention to this remedy. Increase in weight and decreased thirst being the first result noticed. The late reports from various sources have not been so favorable. Experimental researches show that the remedy produces a nephritis. The author's observation shows it to be a safe remedy in 15 or 20 grain doses daily. Several cases of typical diabetes were reported, in which the nitrate of uranium was used after a trial of diabetic treatment, the result being in one case the urine reduced from 9 to 3 pints, the sugar from 40 grains to 10 grains, and proportionate increase in weight. The diminution in sugar and urine and increase in weight is due, the author believes, to the sugar consuming cells being strangulated by the uranium nitrate. He believes the remedy is of most use in neurogenous form of diabetes and practically none in the pancreatic form.

Dr. TYSON of Philadelphia used uranium twenty years ago and felt that it was of no use, but then used it in 2 grain doses t. i. d. Lately he has again been using it, but had to cease on account of producing diarrhea (in 5 grain doses). He had been afraid of such large doses but will try it again.

Dr. SAUNDBY of Birmingham had used the remedy in small doses and abandoned it. Since West's paper he had seen some [illegible]d in larger doses, but does not consider at all that it is a pecific.

Dr. DUNCAN, in reply, said he had not asserted it was a specific remedy, but he did say that improvement followed in every case. The diarrhea he believed was due to over-feeding, as undigested food was passed.

Dr. J. E. GRAHAM of Toronto read a paper entitled

CROSSED HEMIPLEGIA DUE TO INJURY TO THE PONS VAROLII

and exhibited the patient.

Accident occurred when the boy was eighteen months old. Nothing is known of family history. A stick entered the mouth and passed through the junction of the hard and soft palate. Considerable force was used to remove it. He cried from 5 to 11 P.M., then vomited blood, and convulsions occurred at intervals for three days; on the third night paralysis of right leg and arm, and face on opposite side. Swallowed with difficulty. In bed seven months. Convulsions nearly every day, and for five years they have occurred at night. Tonic is followed by general epileptiform convulsions; more frequent when constipated. Mind clear, but not as bright as others. Right side colder than other (these notes made five years ago). Scar half inch long on left side of palate at present.

Considerable atrophy of right side. Face drawn to left side; perhaps paralysis; wrist moved with difficulty; elbow well; foot half amount of flexion; awkward limp; patellar reflex exaggerated on right side; ankle clonus present.

Note made today: Face flushed; extremities cold; pupils equal; no paresis or nystagmus; contractures of elbow, wrist and fingers of right side; atrophy of right lower extremity; complete flexure of ankle impossible: intelligence below average; sensation normal, save right upper extremity, slower than other side; ankle clonus on right side; No athetoid movements. The paralyzed arm reacts to electricity more readily than left arm. Case of hemiplegia showing hemiplegia of whole right side and on left side of face also.

The splinter passed through into the inside of skull, and inflammatory lesion extended involving sensory sense as well as motor.

Dr. E. B. ANGELL had under observation a case in which there was a tumor of the pons in which there was an absence of reaction of degeneration. In the contraction of the leg, free incision of the tendons certainly gives increased function.

Dr. HENRY KOPLIK of New York read a paper entitled

BACTERIOLOGY OF PERTUSSIS.

Interesting cultures were exhibited in the department of bacteriology. Kohn and Neuman have made original investigations, but the whole matter was left somewhat chaotic. They were unable to say whether the diplococcus isolated was specific.

The author used serum from human blood, using hydrocele fluid. This will not prove favorable to other micrococci, streptococci not growing on this medium. In pertussis we have small white pellets which observers say contain bacillus; composed of epithelioid cells and mucus and contains small bacillus. If complicated by pneumonia, pellets not found, and it is difficult to isolate bacillus; uncomplicated cases can isolate it easily. In sixteen cases he has found it grown on hydrocele fluid in thirteen. Delicate, punctate coating, and grows from this on agar and gelatin; not on potato; in air; stains with methyl blue. It is motile, thinner than diphtheria bacillus, .8 micro-millimeters long. Only .3 in breadth, an exceedingly delicate micro-organism.

Impossible to produce symptoms of pertussis in lower animals and only on human subjects can it be produced.

Dr. JAMES GRANT—In the treatment of children with pertussis, vaccination frequently influenced the disease, modifying it greatly. I ask the author why this is so? What is the action of the vaccination on the bacteriologic forms?

Dr. KOPLIK, in reply, said he could not explain the phenomenon unless by referring to the action of erysipelas on malignant growths being similar.

A paper was read by Dr. JOHN H. MUSSER of Philadelphia entitled

THE DISAPPEARANCE OF ENDOCARDIAL MURMURS, PRESUMABLY ORGANIC.

Permanency of murmurs serve to aid diagnosis between anemic murmurs. Murmurs disappear and reappear when result of valvulitis, as mitral stenosis and aortic regurgitation. No report has been made of disappearance of aortic stenosis or of tricuspid murmurs. Peculiar accentuation of second sound is an important associated sign of mitral stenosis. Mitral obstruction murmurs are variable. It may disappear temporarily or permanently in the course of the disease or afterward. Nearly all authors confirm this as quoted by the author: Tyson, Walsh, Strümpell, Loomis, Hayden, Bramwell, Grieves, Williams, Boyd, Saunders and others, various causes being assigned. Presystolic murmur may be mistaken for this. Aortic regurgitation is the most persistent of all organic murmurs; some of the above authors stating it is rarely that it disappears. He reported a case of vanishing aortic regurgitation after being present one year. Patient died of pulmonary edema and autopsy showed a large calcareous spot on each leaflet; pressing these deposits down rendered the valve competent. We have pseudo-insufficiency which must be excluded in making diagnosis, also dilatation of ascending aorta and yielding of sinuses of Valsalva. In mitral regurgitation murmur which disappears, it is difficult to tell whether it was organic or inorganic. Other organic conditions causing regurgitation may be mentioned; a rupture of tendon of leaflet which sometimes floated in the cavity, sometimes between leaflets.

The following papers were read by title: "A Contribution to the Subject of Brain Tumors and Their Surgical Treatment," by Dr. M. Allen Starr of New York city; "The Enteric Fever of Armies, Contrasting the Disease in Tropical, Subtropical and Temperate Climates," by Surgeon-Major Hamilton of Plymouth; "Reynaud's Disease, Following Protracted General Erythema," by Dr. A. McPhedran of Toronto; "A Few Observations on Bermuda," by Surgeon-Captain Cummins of Bermuda; "Notes on Bermuda as a Winter Resort," by Dr. Eldor Harvey of Bermuda.

American Pharmaceutical Association.

IMPORTANT ACTION OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The following Preamble and Resolutions was presented to the AMERICAN MEDICAL ASSOCIATION by the delegation from the American Pharmaceutical Association at the last annual meeting of the former ASSOCIATION held in Philadelphia in June.

The document was referred back to the Pharmaceutical Association for ratification, and passed unanimously by that body in general session at its recent annual meeting held at Lake Minnetonka, Minn. It was then referred to the American Medical Association for final action at the next annual meeting in 1898, at Denver:

PREAMBLE AND RESOLUTIONS.

"To the American Medical Association:

"We, a delegation of pharmacists, representing every section of the United States, being appointed by the American Pharmaceutical Association to attend the meeting of the American Medical Association, in Philadelphia, the first Tuesday in June, 1897, do herewith present to your honorable body the following preamble and resolutions, hoping that your honorable body will endorse the same that it may express the sense of the National Medical and Pharmaceutical societies in relation to matters of mutual interest to the professions of medicine and pharmacy.

1. Whereas, Secrecy in regard to the origin, nature, composition, and methods of preparing medicine is a hindrance to science in that it conceals knowledge and presents an open door to fraud, and

2. Whereas, Monopolies in medical products enable medical monopolists to create a fictitious demand for the same by advertising the favorable side only, and suppressing anything that might injure sales, and

3. Whereas, Such a method of advertising gives undue importance to medical novelties, and

4. Whereas, Secrecy and monopoly and misleading methods of advertising are contrary to beneficence and professional liberality, and

5. Whereas, Pharmacy, or the science and art of preparing medicine is part of medical science and practice, and physicians are dependent upon pharmacists for the selection, preparation and standardization of medicine; for the publication of the knowledge of drugs and the methods of preparing them for therapeutic use; for the establishment of medicinal preparations in scientific forms that the knowledge thereof may be intelligible to future generations, and form part of medical literature, and take its place in text books for the instruction of students about to enter the professions of medicine and pharmacy and thus form part of what is known as the science of medicine, and

6. Whereas, The "United States Pharmacopeia," being devoted to the drugs and preparations used by physicians in treating the sick with directions for preparing the same, should contain a list of the newer drugs and preparations introduced to the materia medica, with processes for preparing them, and standards for their excellence and purity, and

7. Whereas, Many of the articles advertised in the medical and pharmaceutic journals claiming to be true pharmaceutic preparations are not admitted into the United States Pharmacopeia, though some of them are of sufficient value to be made official, for the reason that their only names are claimed as private property, and their constituents are not divulged, and

8. Whereas, The composition or origin of many of these articles are trade secrets, a danger threatens medical literature, for without a knowledge of their drug composition, pharmacopeial references to them as remedies for the treatment of disease is meaningless from a scientific standpoint, therefore, be it

1. *Resolved*, That we, as representing the profession of pharmacy, do hereby express our condemnation of secrecy and monopoly in medical products, and at the same time express our desire that the medical profession shall unite with the profession of pharmacy in raising the standard of professional and scientific requirements so that the practice of pharmacy shall be maintained at its true position as a part of medical science and practice, hoping that by so doing the time may soon come when physicians and pharmacists may work together in harmony in promoting progress in the knowledge of medicine, and in the application of medical agents to the relief of human suffering. We do hereby accept the definition of a secret remedy given by the official Medical Board of Saxony: "Secret remedies are all those agents sold for the prevention and cure of disease of man and animals, of which the ingredients, percentage composition and method of preparation are not made public when first announced for sale. Such information must be complete and exact in readily comprehensible language and made known to all desirous of such information." And be it

2. *Resolved*, That we request that all manufacturers of pharmaceutic preparations shall comply with scientific and professional requirements; shall throw open every medical product to legitimate competition; shall publish the working formulæ for all medicinal preparations or compounds; shall give to each preparation on the market, when first introduced, a name under which all may manufacture and deal in it, such name to be appropriate and descriptive of the article to which it is applied, and compatible with scientific nomenclature; and shall furnish the Committee of Revision of the "United States Pharmacopeia," if requested, with the composition of each secret or semisecret combination, so that the article described, if found worthy, may be made official in the "Pharmacopeia," and be it

3. *Resolved*, That we recognize the commercial element in pharmacy which requires that capital invested in the manufacture of medicine should receive legitimate protection, provided it is employed in accordance with beneficence and not used for the purpose of misleading the public by lying advertisements and injuring the public health; therefore, while not sanctioning the patenting of medicinal products themselves, we do sanction the patenting of machinery and processes for manufacturing medicines, provided that they are really new and useful inventions, and providing the applications for patents are not drawn up in such a manner as to create monopolies in the products themselves so that others can not manufacture them by other machinery and by the use of other processes. By this, we mean to say that all medical products should be open to free competition, and as the supreme court would not sustain the patent of Professor Morse because the application was so drawn up as not only to protect him in the use of his machinery and apparatus, but to give him a monopoly in the transmission of messages by electricity, and thus to hinder progress in the development of a most valuable discovery, so the courts should not sustain any patent which will create a monopoly in the manufacture and sale of a medicinal agent or composition of matter used in the relief of human suffering, and be it

4. *Resolved*, That it is our purpose to do away with the use of fanciful words employed as titles for medicinal preparations to the confusion of medical nomenclature, and replace the same by legitimate trade marks, or marks of trade used as commercial signatures to distinguish between two or more brands of the same article as manufactured by various firms, and be it

5. *Resolved*, That sufficient pharmacy should be taught in our medical colleges to enable students entering the practice of medicine to discriminate between persons engaged in the legitimate practice of that art, and those pretenders practicing pharmacal quackery; and that sufficient knowledge of physiology and therapy should be taught in pharmaceutic colleges to enlarge the scope of knowledge of pharmaceutic students so that they may afterward realize the responsibility of their own vocation, limit their practice to its proper sphere, and not trench on the prerogatives of physicians, that the medical and pharmaceutic professions may hereafter work in harmony for the purpose of promoting knowledge in medical science in all its departments, raising the standard of education in both professions, and furnishing the public with a higher class of medical and pharmacal service, and be it

6. *Resolved*, That the United States Pharmacopeia should be made a text-book in both medical as well as pharmaceutic colleges, that physicians and pharmacists should be urged to provide themselves with copies of that work, that both professions should be urged to take more interest in its decennial revision, sending accredited delegates from medical and pharmaceutic societies thoroughly instructed as representatives to the convention for revising the "Pharmacopeia," and that the increased revenue derived by the Committee on Revision from the larger demand for the "Pharmacopeia" thus engendered be devoted to improving that work by means of original investigation and other methods that may be suggested.

PRACTICAL NOTES.

Turpentine in Mumps.—A note from the *Massachusetts Medical Journal* states that in usual doses, according to patient's age, turpentine is a specific against mumps. Recoveries are quick and without metastasis.

Leeches for Influenza.—Great relief has been obtained in severe coryza by applying a couple of leeches to the nasal septum, after disinfection, protecting the nose with a cotton tampon inserted on each side. The wound made by the leeches is painted with collodion. D'Aiuto, who suggests the treatment, adds that it should be restricted to elderly people and extreme cases.—*Therap. Woch.*, August 1.

Dosage of Colchicum in Gout.—Professor Schultz announces that the failures in colchicum in gout are due to errors in the dosage, and he announces as the result of considerable research that the best formula is the tincture of colchicum seeds diluted with alcohol 1-10, of which 20 to 40 drops are taken during the day.—*Semaine Méd.*, August 18.

The Menthol Pencil for Insect Bites.—Immediate relief is experienced from the bite of an insect, mosquito, etc., if the spot is rubbed with an ordinary menthol pencil or, better still, painted with a solution of menthol in sulph. ether, 1 to 10 or 1 to 5.—From *Corr. Bl. f. Schw. Aerzte* No. 14, in *Therap. Woch.*, August 1.

How to Prevent Intolerance of Martial Medication.—Iron is well tolerated by the stomach when the secretion of hydrochloric acid is normal or below normal. The intolerance only occurs when there is excessive secretion. This can be remedied by appropriate alimentation or alkalines, and then the iron can be administered to advantage.— N. Buzdygan, *Semaine Méd.*, August 18.

The Success of Salol in Generalized Scleroderma is announced by A. Philippson in the *Deutsche Med. Woch.* of August 12, although he has only two cases to report. But the improvement in both was marked and permanent from the start. The puritis ceased at once and the skin regained its suppleness and the members their flexibility in eighteen months in the first, a very severe case, and a little later in the other, a woman of 69. The dose in the first case (a young man) was 3 to 4 grams a day, in the other 1.5 to 2 grams. No inconveniences were observed from its prolonged use. Massage and gymnastics were ordered as indicated.

Differentiation of Epithelioma and Syphilitic Chancre of the Lip.—Chancres of the lower lip and chin sometimes acquire such dimensions that they are mistaken for epithelioma, but the surface is more regular; the edges do not project and turn over; the blood exudes through numbers of infinitesimal openings without the free hemorrhage of an epithelioma; the progress of the lesion is much more rapid and the satellite adenopathy appears by the close of the first week, and the secondary eruptions toward the end of the first month.—*Gaz. M. de Liège* from *Jour. de M. et de C. Prov.*, June 10.

Whooping Cough Treated with Sulphate of Quinin, Resorcin and .—Dr. Leuriaux of Brussels recently communicated to the [illegible] Acad. de Méd., his success with insufflation of a powder composed of these substances which he considers an absolute specific. He reported twenty-six observations in detail, and stated that he had been observing its action in more than 200 cases. He ascribes the disease to an infective nasopharyngeal catarrh, which can be checked by the insufflations, while the tracheobronchic troubles are merely ulterior complications—*Bulletin*, August 3.

Dyspeptic Albuminuria.—Robin ascribes this trouble to the passage of undigested albumin into the urine, where it acts as a foreign substance. It is readily curable at first, when it is only intermittent, but after the chronic stage has arrived the proportion of cures is only 30 to 35 per cent. The treatment consists in merely regulating the diet, adapting it to each case as the albumin is found to increase or decrease with a vegetable, animal or mixed diet. A strictly milk diet is indicated for many patients, suspended if they begin to lose in weight.—*Bulletin de l'Acad. de Méd.*, August 17.

Success of Argonin in Gonorrhea.—Basing his assertions on the effects obtained in thirty-three cases of more or less chronic gonorrhea, none recent, Zydlovitsch recommends argonin as superior to all other medication for this purpose. It causes the rapid disappearance of the gonococci; does not aggravate the pathologic process, but attenuates it. It should be continued until no gonococci are discovered in the course of three to five examinations at three day intervals. The argonin is injected into the anterior portion of the urethra in a 3 to 200 solution five times a day, and retained five minutes. The posterior portion is treated with a 2.5 to 100 solution instilled. The consecutive catarrh with astringents.—*Gaz. Méd. de Liège*, August 5.

Jonnesco's Method of Nephropexy is described and illustrated in his new journal, the *Revista de Chirurgie*, published at Bucharest (No. 4). After an incision parallel to the twelfth rib or if too short the eleventh, the kidney is brought up to the wound. The adipose capsule is detached and turned back from the entire outer side of the kidney, which is then fastened to the rib by three double silk threads, or better still by two U-shaped pieces of silver wire, each end inserted separately with an Emmett needle passing through the skin, through the M. sacrolumbaris, the lower aponeurosis, and through the fibrous capsule on the rear side of the kidney, through the renal parenchyma 1.5 c.m. from the outer side of the organ, then through the fibrous capsule on the other surface through the periosteum of the twelfth rib and finally out again through all the layers, 3 cm. beyond the wound. The ends of the threads are tied over a long roll of sterile gauze on each side of the wound, and the organ is thus fastened to the rib at each end and in the middle, with the ureter in its normal position. He has performed this operation ten times on patients and many times experimentally. He is careful to keep his patient in bed twenty days, and removes all the threads or wires the tenth day, thus obviating all the inconveniences of permanent threads. The adhesions between the decorticated parenchymatous surface, the rib and the muscular tissues, form a remarkably firm support, and "all the disadvantages of other methods are absent."

Quinin Treatment of Meniere's Disease.—The sulphate of quinin is the specific for this annoying affection, but the technique of its administration is all important, Gilles de la Tourette states in a six page article on the subject in the *Semaine Méd.*, of August 18. He does not hesitate to send his patient to a sanitarium if he thinks his instructions will not be carried out to the letter at home. After consulting with a specialist, a plug of cerumen may prove the cause of the trouble—and if there is no acute affection of the tympanum, he proscribes all local treatment or intervention, and institutes a preparatory system of alimentation consisting chiefly of milk, for the week previous, after which the milk is dropped, as the sulphate of quinin coagulates it. The dose is important and should be carefully studied, varying from one-half to one gram (usually 0.75 gram) per day, divided into 3 or 4 doses, taken between meals, with a certain amount of water to prevent injury to the stomach. This course should be followed faithfully for fifteen days, warning the patient that his symptoms will grow worse at first, confining him probably to his bed. In some cases one course is sufficient to effect a complete cure, but a second course is required in most cases, and occasionally a third. An interval of two weeks should be allowed between the first and second, and of a month or two between the second and third. Perseverance is the *sin qua non* of success and the cases cured with one course require supervision for a long while afterward, so as to commence the following course promptly when indicated by a recurrence of the troubles. If there is intolerance of the quinin, it can be administered per rectum, 0.30 to 0.40, in an emulsion with the yolk of an egg, night and morning. This method is uncertain; if it fails the only recourse is to salicylate of soda, 2 to 4 grams a day for two weeks as above. The quinin acts upon the hyperexcitability of the labyrinth, which is the source of the trouble, but it has no effect upon sclerosis of the tympanum or anchylosis of the ossicles. Consequently if there is deafness from this cause, this treatment will not cure it. The general belief that quinin will cause deafness he considers, with Charcot, absolutely unfounded, and cites patients who claimed their hearing was improved by the quinin treatment.

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SATURDAY, SEPTEMBER 18, 1897.

EVIDENCE WHICH TENDS TO WEAKEN THE VALUE OF WIDAL'S TYPHOID AGGLUTINATION REACTION.

To one who listened to the recent elaborate and very valuable discussion upon sero-diagnosis in typhoid fever at the last meeting of the ASSOCIATION, the testimony upon the value of this test seemed far from convincing. The discussion was carried on by some of the most prominent bacteriologists in America and dwelt in considerable detail upon many features of the WIDAL reaction. Still there was a diversity of opinion upon many essential features, and even after the report of the special committee appointed by the Chairman to harmonize the views expressed, there was still elements of uncertainty about the matter.

A great deal was said about the importance of the technique to be employed in making the WIDAL serum test, and still there was scarcely a single point in the methods in which two observers agreed. Opinion differed as to the source of the serum, whether it should be from blood, from blisters, or whether dried blood should be employed; though the reaction was obtained by serum from any of these sources. The dilution of the serum was another point upon which opinions varied, and this held true for the source, age and virulence of the typhoid culture; for the dilution of the bacterial emulsion, and for the proportion of emulsion and serum. Then came the question of the agglutination reaction. What should be considered a reaction? How far should loss of motility and agglutination proper be given value? What should be considered the time limit of a reaction?

The single point upon which an almost unanimous opinion was obtained was with reference to the clinical value of the WIDAL reaction as a sign of typhoid fever.

The diversity of views expressed by these representative American scientists is only a repetition of the opinions of observers in all parts of the world who have discussed this question, and while these discussions, especially when conducted as systematically as the one at Philadelphia, will soon enable us to decide upon the merits of the case; they all seem to foreshadow a disappointment for those enthusiasts who failed to exercise a due conservatism in forming their judgment upon the value of the WIDAL test. Even from the clinical standpoint there can scarcely be a doubt that the reaction has occasionally failed to appear when the blood of a typhoid fever patient has been used; and, on the other hand, the reaction has occasionally been obtained in a variety of other diseases. How far these results have been due to faulty technique is impossible to say, especially when it is so hard to decide upon what is to be regarded as *the correct technique.*

It is well known among bacteriologists that there is a close biologic relationship between the colon bacillus and the bacillus of typhoid fever; so close indeed is this relationship that many bacteriologists have come to regard the common bacillus of the intestine and the bacillus of typhoid fever as varieties of the same species. This view has been advanced from time to time, and is again strongly suggested in the elaborate studies by ADELAIDE PECKHAM (*The Journal of Experimental Medicine,* Vol. II, No. V, 1897). Among other interesting and valuable studies upon these bacilli, this author has tested a large number of colon and typhoid bacilli from various sources as to their reaction with typhoid blood serum. A considerable number of cultures of what were regarded as typical typhoid bacilli failed to give a characteristic reaction, while at least two out of nineteen typical cultures of B. coli responded perfectly to the serum test. These results are quite in accord with all the other so called specific methods for the differentiation of the typhoid and colon group of bacteria, and they would seem to be a serious blow to the WIDAL tests, for upon the specificity of the reaction hinges much of its value in clinical diagnosis. If the colon bacillus will respond to the agglutination effect of serum from typhoid patients, why will not the typhoid bacillus be agglutinated by the blood serum from colon bacillus infections? We believe this will be found to be the case, and in support of this opinion we have succeeded in obtaining a typical agglutination reaction with typhoid cultures in five out of seven cases of suppurative appendicitis by using the dried blood after the directions of JOHNSTON. In three out of the five positive cases a bacillus corresponding perfectly to the colon type was alone isolated from the pus obtained at operation. The other cases had already been operated upon and no analysis of the pus was made. Such results seem suggestive to say the least, and they should be followed up.

Another curious feature about the agglutination of the typhoid bacillus has just been brought out by the experiments of Malvoz (*Annales de l'Institut Pasteur*, Tome XL, No. 7, 1897), who has succeeded in producing a reaction with typhoid bacilli, similar to that produced by typhoid serum, by various chemic substances. He mentions especially formaldehyde, corrosive sublimate, peroxid of hydrogen, and strong alcohol. Among the anilin colors, crysoidin, vesuvin, and safranin have the property of provoking a perfect agglutination even in very dilute solutions. Malvoz attempts to use this agglutinative action of chemicals for the differentiation of colon and typhoid bacilli, and appears to find a considerable difference in the behavior of these two types. On this point, however, judgment must be cautiously withheld, for in the failure of so many other differential tests it is improbable that this one of agglutination by chemic reagents will prove specific. As to the significance of these experiments in explaining the *modus operandi* of the agglutination reaction no opinion can at present be formed, and this is equally true as regards their bearing upon the clinical side of Widal's test.

OPIUM COMA OR MENINGEAL TUBERCULOSIS.

In a recent article on possible medico-legal relations of miliary tuberculosis, Dr. F. P. Weber of London, England, reports the following case:[1]

A 19 year old man was brought to the hospital under Dr. Weber's charge, suffering from febrile delirium. He could answer no questions and there was no history obtainable. The physical signs were not quite the same over both pulmonary apices, which caused meningeal tuberculosis to be suspected. There was, however, much albuminuria, a condition not usually associated with meningeal tuberculosis and further, neither the results of ophthalmoscopic examination nor special nervous symptoms were available. It was therefore possible that the patient had taken poison acting on the kidneys and nervous system. He died some days later. The postmortem examination cleared up the diagnosis. There were also tubercles in the lungs, and miliary tuberculosis of the mucous membrane of the glottis. The kidney affection present was parenchymatous and probably due to the bacillary toxins which had to be excreted. Dr. Weber remarks that cases of meningeal tuberculosis in adults are probably not rare, in which, if there were absence of past history, temporary suspicion of poison or foul play might be entertained. In the forgoing case the absence of past history and the presence of much albumin in the urine led to doubt in the diagnosis. In such cases the doubtful points are cleared up by postmortem examination.

Some ten years ago, in a paper read before the Chicago Medical Society[2] Dr. W. T. Belfield called attention to the like forensic aspects of meningeal tuberculosis. He pointed out that, given a case of coma preceded by vomiting and headache, occurring in a person of hitherto seemingly perfect health, having a suspicious abdominal enlargement, the possibility of an insidious meningeal tuberculosis should always be considered. In this paper Dr. Belfield pointed out that clinicians had frequently noticed the proteiform symptoms of meningeal tuberculosis. Bristowe, for example, had remarked that: "No disease is more protean in its features and probably none simulates so many other disorders. In some cases, indeed, even when the brain inflammation is uncomplicated, drowsiness and coma are the only symptoms ever recognized. In many cases the early stage of the disease is mistaken for inebriation." S. Wilks had reported several cases in which meningeal tuberculosis in adults had every obscure early symptom and mimicked the symptoms of opium poisoning. S. J. Gee reported several cases in which meningeal tuberculosis mimicked every variety of neurosis from simple hysteria down. Ross calls attention to the obscurity of the early symptoms of meningeal tuberculosis. Huguenin says that "often the differential diagnosis can not be made in the beginning between congestive cerebral hyperemia (essentially the condition produced by opium) and meningeal tuberculosis. If the individual be relatively healthy precedent to the breaking out of the meningitis, a prodomal period is often wanting in carefully observed cases and the disease begins with head symptoms in the midst of apparently good health.

Dr. Belfield's own case was that of a girl about 20 years old who had always had excellent health. Three sisters are still living, and neither they, the parents, nor any of the relatives, so far as known, have ever shown symptoms of tuberculosis. The present generation are examples of perfect health and this girl was in many respects seemingly the healthiest of the lot. Until five days before her death her health was as usual; then one evening she complained of feeling ill, her head ached; she vomited without apparent cause. She lay down, drank a cup of tea, and was all right. The same thing happened the next day and she complained of extreme headache. On the third day, with the exception of severe headache and seemingly causeless vomiting, she remained in her usual health. The evening before her death she was at the theater and came home about eleven o'clock, going to bed with one of her sisters. During the night the sister was several times awakened by the extraordinary breathing of the patient, which was very hard and loud. She shook her and the abnormal breathing ceased. In the morning it was found impossible to awaken her. She was breathing very deeply and slowly and could not be roused. Physicians were summoned, all of whom pronounced it a case of opium poisoning. The symptoms observed were stertorous breathing sometimes as slow as four or five per minute, contracted pupils, a suggestion of strabismus, and a rather warm surface. The pulse was remarkably good (about 80), similar to the pulse of a healthy person; the skin was not moist and clammy. The usual measures for opium poisoning were adopted. Mustard was given at once and as soon as a tube could be procured the stomach was pumped out. Minute doses of atropin were injected hypodermically, the patient receiving about a fortieth of a grain in three injections. The breathing improved very much after these injections, coming up to twelve and fifteen per minute, the pulse also quickened but suddenly the pulse flickered and went out and breathing stopped. On the following day Drs. **Krost** and **Belfield** made a postmortem examination of the head and abdomen. The brain was not hyperemic, there was no venous congestion; the pupils were widely dilated; the membranes of the brain were adherent to the brain substance and on stripping close they were found on close examination to be studded with numerous miliary tubercles. On opening the abdominal cavity the intestines bulged out and their surface was thickly studded with miliary tubercles. There was extreme tuberculosis of the peritoneum. The mesenteric glands were large and cheesy. The right ovary contained a rupture cyst about as large as a fist. That the rupture was antemortem was evident from the fact that the inner surface of the cyst was intensely congested and there was a good deal of coagulated blood in its cavity. Dr. **Belfield** points out that when it is remembered that the pulse was natural, that the surface was not cool and clammy and that their was a tendency to strabismus it becomes evident that death resulted from the tuberculosis, aided perhaps by rupture of the cyst. No opium could be discovered anywhere around. The patient's general disposition and circumstance were such as to forbid the presumption by her friends that she could have taken poison.

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[1] Lancet, Aug. 7, 1897.

[2] Western Medical Reporter, February, 1887.

The case seems to have been another instance of sudden coma incident to tubercular meningitis. It is of extreme interest as showing how insidious a course miliary tuberculosis of the serous membranes may take. The only abnormal features known to her family was an unusual fulness and hardness of the abdomen developed during the last year of her life. The symptoms hinting at possible tuberculosis were the peculiar breathing (which resembles that described by **Trousseau** as characteristic of tuberculosis), and the strabismus on which **Bristowe** lays stress. At the same time it must be remembered that these symptoms exceptionally complicate opium coma. Meningeal tuberculosis in adults is generally secondary to abdominal tuberculosis and of this there is decided evidence in the peculiar abdominal enlargement observed by the friends long precedent to death.

Bacteriologic tests are certainly of value in these cases, but absence of bacilli does not demonstrate beyond a doubt the absence of tuberculosis, especially since these cases are often ambulant and frequently do not come under observation under circumstances admitting of methods of bacteriologic diagnosis being employed. This was significantly illustrated by the case reported by Dr. **Belfield**. In view of possible medico-legal complications it is well therefore for the practitioner called to a case of seeming opium poisoning without a clear history, to bear in mind the possibility of meningeal tuberculosis. As Dr. **Weber** indicates, the ptomain of the bacillus tuberculosis plays no small part in determining the symptoms mimicking opium coma. In all probability it is assisted in playing this role by the sudden occurrence of renal inadequacy.

THE ANTITOXIC PROPERTIES OF BILE.

That bile, as secreted by the liver, is not essential to life, is shown by a number of facts, such as obstruction or obliteration of the biliary passages, excision of the liver, biliary fistulæ, etc. Whether under these circumstances the functions of the bile are replaced or compensated for by the activity of some other organ or organs, is not known. It has been thought that suppression of the biliary secretion results in two groups of symptoms: Those of cholemia, arising from the retention of bile in the liver and its resorption into the blood; and those of acholia, arising from the absence of bile from the intestinal tract. These symptoms will be the more pronounced in accordance with the abruptness of their onset and it is possible, under certain conditions, that they may lead to a fatal issue. Gradually induced, however, the system seems capable of adapting itself to the new order of things, and the disturbance of function may be slight and inconspicuous. Permanent retention of bile will of course be attended with chronic jaundice.

Of late years the opinion has gained ground that the bile plays only a subordinate part in the process of intestinal digestion. being rather accessory to the functions of the pancreatic juice. It aids especially in the emulsification and saponification of fats, and through its alkalinity favors the passage of the products of these processes into the vessels. It possesses, further, some degree of antiputrefactive power, as well as peristaltic activity. That it may have besides other and not less important functions, such as rendering innocuous toxic substances that gain entrance into the gastro-intestinal tract would seem indicated by some c[illegible] [illegible] ri[illegible] [illegible]dical

Journal, July 17, 1897, p: 125) in the course of investigations into the means by which the toxic activity of the venom of poisonous snakes may be neutralized. The liver has always been looked upon as the filter or gateway through which must pass poisons and other substances introduced into the stomach and bowels, and it may be developed that its usefulness in the direction of neutralizing the deleterious effects of such substances may be shared by the product of its activity, the bile.

It is well known that serpents' venom and toxins of various sorts introduced into the stomach of both lower animals and man do not give rise to the profound toxic effects that follow their injection beneath the skin. This peculiarity may be due either to the chemic activity of the gastric and intestinal secretions, or to failure of absorption. It is appreciated that the toxicity of the substances named is not materially diminished by gastric digestion; further, absorption from the stomach is very slow. That absorption from the intestine is unattended with symptoms of intoxication may be due to the chemic or physiologic action of some substance or substances present in the intestinal canal, most probably the bile or the pancreatic juice. As the result of an inquiry into this aspect of the subject **FRASER** found that the bile was capable of exercising a profound neutralizing influence upon several varieties of venom. The experiments consisted in mixing the bile of a venomous serpent with a lethal dose of venom and injecting the mixture beneath the skin of an animal. When the admixture of bile was sufficient, death did not take place. Similar results were secured with the bile of non-venomous serpents, although they were not equally pronounced. It would thus appear that the bile possesses distinct antitoxic powers.

Various facts tend to show that innocuous as well as venomous serpents possess poison-glands and secrete venom, but the former are innocuous because they are not normally supplied with weapons of offense in the form of poison-fangs. Most probably, therefore, the relative protection against the toxic action of venom introduced into the circulation, which is common to all serpents, is dependent upon an effect due to the venom secreted, in the case of the innocuous serpents only in relatively small quantity. In conformity with this fact, a larger quantity of bile from the latter was necessary to prevent death from injections of venom. The bile of oxen, rabbits and guinea pigs possesses a similar influence, though milder in degree. This difference in potency, it is thought, must be dependent, at least in part, upon some specific constituent or constituents present in different quantities in the bile of different animals. In the hope of isolating these, the bile of a venomous snake was treated with alcohol and the substances soluble in this separated from those insoluble. To the latter water was added and the resulting solution centrifugated and evaporated to dryness over sulphuric acid in the vacuum of an air pump. The alcoholic solution also was dried, at first over a water bath at a temperature of 100 degrees F., and afterward *in vacuo* over sulphuric acid. The product obtained by the second procedure proved incapable of preventing death from lethal doses of venom, while that obtained from the watery solution exhibited distinct antitoxic powers. It is thus shown that the antitoxic properties of bile reside in substances soluble in water.

Although bile in the alimentary canal is non-toxic, it is quite otherwise when introduced beneath the skin or directly into the circulation, and the deleterious effects would be all the more pronounced if such a quantity were injected as would be necessary to neutralize the influence of venom previously injected. The isolation of the antidotal principle or principles, however, makes it possible under such conditions to employ a sufficient dose without evil results.

FRASER notes the interesting fact that bile enters into the composition of the medicines most trusted in for the treatment of snake bite by the natives of Africa, both by topical application and by internal administration.

As has been stated, other toxins introduced into the stomach also are inert, and it may be, as with serpents' venom, that this effect is due to the influence of the bile. Further, the same influence may be responsible for the prevention of various forms of auto-intoxication through the gastro-intestinal tract.

THE STUDY OF ALCOHOL.

It will be new to our readers to learn that alcohol in all its many aspects is receiving unusual attention this year from scientists and medical men. The congress at Moscow has set apart a section on alcoholism, and the advance program announces six papers and discussions on various phases of this topic. A distinct congress called the International Congress Against the Abuse of Alcohol, meets at Brussels, Belgium, in September next, for the fifth annual meeting. This gathering includes a large number of eminent medical men, and also philanthropists, who discuss this subject in a very scientific business-like way, without much sentiment or theory. The French Academy of Medicine and the Chamber of Deputies have taken up the subject, and many papers and discussions have been offered which have occupied a great deal of time. All the secular papers and medical journals have, and are yet discussing the causes and remedies of the increasing alcoholism and pauperism of the country. Studies of alcohol on the body in health and disease have already begun, and papers are appearing in nearly all continental Europe condemning alcohol and showing its evil effects. The medical society of the Rhine Provinces recently took up the use of alcohol in medicine and passed strong resolutions against its use except under certain special conditions. In Russia, Sweden and Norway, medical societies have taken the same position and are agitating the subject in statistical papers and discussions.

In England a bill is before Parliament giving greater powers of control over inebriates, and the leading journals, both secular and medical, publish very strong radical articles on this subject. The two medical societies, one devoted to the action of alcohol in medicine and on the body, and the other to the study and care of inebriates, are becoming larger and more popular and their papers and publications are increasing yearly.

In this country two similar societies exist, one the association for the study and cure of inebriates (the first society of medical men ever formed to study this subject), the other the medical temperance association, are bringing the questions concerning alcohol and the inebriate to the attention of physicians everywhere. As an evidence of the great interest being created in this subject *Appleton's Science Monthly* has published five long papers so far this year on alcohol and the inebriate. For years the annual meeting of our ASSOCIATION has brought out many papers on these topics, which have been accepted as scientific and valuable. In this there is no reference to the armies of temperance and philanthropic persons who urge a continual crusade against all use of spirits. This is only an outline of the medical work and efforts to ascertain the real facts. The question is to reexamine the entire subject of alcohol and the inebriate in the new light of science, and above the levels of theory and opinion. This is the province of physicians in their various fields of practice. The laboratories may show how spirits act on animals and on the general functional and organic activities of the body, but the practitioner must put these questions to their final test.

It is a source of pleasure to note that medical men in this country lead all the world in the study of the inebriate. American laboratory studies of alcohol are still behind the French and German work. During the past year several very prominent experimental studies have appeared and the hope is expressed that more will follow. An effort is being made to endow a chair of experimental work in this field alone in an Eastern university. This will succeed after a time and we shall expect to find American physicians in the front on all lines of this new and most important field of study.

CORRESPONDENCE.

Blood-letting.

SAN FRANCISCO, CAL., Sept. 10, 1897.

To the Editor:—I am led by the excellent paper of Dr. J. W. Hoff on "Blood-letting as a Therapeutic Remedy," in the JOURNAL of August 28, to add some experiences that I have had with the lancet. I will premise by saying that my father was a student of Dr. Benjamin Rush of the University of Pennsylvania, class of 1809, and an advocate for the free use of blood-letting, then thought so essential in the sthenic diseases of the West. When preparing myself for the study of medicine I bled for him very often. But after the epidemic of cholera in 1833 he said the type of diseases was so changed that his patients did not bear the loss of blood as before, an opinion I have since found expressed in the valuable work on the practice of medicine, by Sir Thomas Watson. My father consequently rarely bled. Following his example, lancets rusted in my pockets, and for a long time a doctor who had lost a patient after venesection (and who of us has not read the harsh censure of Dr. Craik for its use in the case of General Washington?) would have been tabooed as an old fogy, if not dealt with more energetically.

I lived in one of the best mining districts of California the first two years after the discovery of gold. Only in the rainy season could the miners get water to wash the dirt they had thrown up in the dry season on the banks of the gulches. This water was as cold as ice and snow could make it and the men, a hardy set who lived on coarse food, were of full plethoric habits, suffered much from acute inflammatory rheumatism. Bear in mind this was nearly fifty years ago, and I hope your readers will not be shocked when I tell them that my custom was to set these tough fellows up in bed, when the violence of the attack did not preclude the possibility of doing so, open a vein and bleed almost to syncope; then, after free catharsis, give from two to four drams of nit. potassa in flax tea or gruel for a drink every twenty-four hours, a practice that gave me entire satisfaction, as not a single case, as far as my knowledge went, ever suffered subsequently from heart complications, although such were rife among them from other causes, as lifting boulders, sluice boxes, etc.

I will only mention two comparatively recent cases of recovery after blood-letting. I was called to see a 13-year-old son of Mrs. H., an intelligent German woman, who had been aroused at 3 o'clock A.M. by the harsh croupy cough of the boy. She put him in a hot bath and with the co. syr. squills, soon had him breathing easily, but in an hour the harsh croupy cough and dyspnea returned. She repeated the bath and medicine with a like result, followed in an hour or two as before. When I saw him at 7 A.M. he was unable to lie down, had a hard metallic cough and an anxious cyanosed expression of face. The treatment was supplemented by calomel, nauseants, bromids and counter-irritants with no apparent benefit. As a resort dernier I bled him, and before I had drawn a half a pint of blood he lay down, the symptoms all subsided, and he made a good recovery. Not long after that I was requested by Dr. S. to see with him Mrs. P., a primipara, the young wife of Dr. P., a former pupil of his. This was at 8 P.M. At midnight, twenty hours before, upon the termination of labor she went into convulsions and Dr. S. was called. He gave chloroform, chloral and morphia, but the convulsions went on every half hour. He sent for his partner and during the next day six others—all of our leading physicians—saw her, each advising "a little more grape, Captain Bragg." When I examined this moribund woman there were five of us present, one of whom gave a positive dissent when proposed venesection, but being overruled it was agreed that if I would perform the operation it might be done, as everything else had been tried upon the hypothesis of epileptic eclampsia. The lady's family were homeopathists, and it looked like taking desperate chances when I took the responsibility and opened a vein in the right arm, being careful to keep my fingers on the left radial arter[illegible] Before I had drawn a pint of blood the [illegible] brea[illegible] stopped, the hard pulse softened, the [illegible] and blanched and there was not another convulsion. A speedy recovery followed a large enema of oil and turpentine, and I had the pleasure of receiving a most grateful letter from her husband, Dr. P., in which he said the bleeding saved her life. It is to be regretted that a remedy so potent for good, when judiciously used, should have gone into, I will not say "*innocuous* desuetude." Men like Sir Thomas Watson and students of the great father of American medicine, did not mean to discard it, but honestly drew the attention of the profession to those changed conditions which called for care in its use; but extremists, liked Bennett, would have none of it in any case. A careful study of this writer, long ago convinced me that in the cases he reported in which he had bled with bad results, he showed almost a culpable ignorance of the conditions which would justify the use of the remedy, and the same want of discrimination has led many to fall into line with him.

It will be sixty years next March since I began the practice of medicine, and within that time I have heard and read almost every old standard remedy condemned by respectable graduates of our medical schools; one would not bleed under any circumstances; another would never blister; another would not give calomel; another would never give an emetic except in a case of poisoning, and recently one of our ablest physicians decried the use of opiates, and so on. Wishing not to be uncharitable, I believe that in each case the fault lay in the limited knowledge of the widest therapeutic range of the respective remedy condemned, together with a slavish following of text-books, when their diagnosis had been made without due consideration of age, temperament, habits of life or stage of disease; and has not the search after specifics for the last twenty years had something to do with the neglect of our old armamentarium? F. WALTON TODD, M.D.

Improved Method of Cocain Anesthesia.

DALLAS, TEXAS, Sept. 4, 1897.

To the Editor:—With the permission of Drs. Anderson and Oaks, I would like to add something in reference to the "Improved Method of Cocain Anesthesia" by Dr. P. L. Anderson. This is not in the nature of criticism, but simply to add my experience to theirs.

In 1890 it seemed to be the practice to use a 4 per cent. solution of cocain with a spray for this purpose, but I did not adhere to this, for I soon found that the toxic effects of the drug were alarming and began applying it by means of cotton wrapped on a cotton carrier. I did not at this time (1891) use the preliminary spray, but gradually increased the strength of the solution of cocain until finally a saturated solution was used. From this mode of application I did not notice any special toxic effect, except in very susceptible patients; in fact, it was so much less than previously that I thought I had an ideal method. Of course my previous experience taught me that its effects at times were very unhappy, and I used great caution in its application. The inexperienced should first be acquainted with the toxic effects of the drug. The word "caution" to a careful observer is the same as a green flag or a green lantern to a careful locomotive engineer—it means caution. I am inclined toward the belief that Dr. Oaks' grave apprehensions are not well founded, because there is no recent graduate of today, or even inexperienced physician, unless he is not abreast of the times, who is not acquainted and does not know that cocain is dangerous. To them it is only necessary to say a word of caution.

The saturated solution is prepared as follows: A small portion of cotton placed upon the end of a probe is saturated with water, the excess being wiped off; crystals of cocain placed in a watch-glass, or on the bottom of a medicine glass, are then rubbed up with the wet cotton, which is allowed to take up the cocain to its fine capacity. It is applied to the part to be operated upon by rubbing it against it until the patient decides that the part is perfectly insensible. If the nose pours out an abundance of mucus, this procedure must be repeated, rarely three times, which usually produced toxic effects by the secretion spreading over a greater surface. The flow of mucus prevents rapid absorption at the point desired, probably by diluting the drug. This mode of application is about the same as that advocated by Dr. Anderson, except he used 25 and 50 per cent. solution, while I used the saturated. In this way I got an absolutely fresh, as well as a saturated solution. This mode of preparing the solution was done for two reasons: 1, to get a fresh solution; 2, to do away with the necessity of throwing the cotton away if a repetition of the procedure was necessary, which in a very strong solution was considerable waste. At the end of a year or so this proceeding was partially abandoned, not because of toxic effect or insufficiency, but because it was too much trouble, and there was always more or less reaction following the slight injury to the membrane. In its place I began the preliminary use of a spray of 1.5 per cent. solution in 4 per cent. solution boric acid and applied pledgets of cotton saturated in a solution of 6 per cent. strength, which I still use with great satisfaction. I do not use the preliminary spray because it has any special advantage in producing anesthesia of the mucous membrane of the nose in a surgical sense, but because it reduces turgescence and swelling of the membrane; besides, depleting the erectile tissue slightly reduces its sensibility, and this enlarges the nasal passages and allows the cotton pledgets to be passed easily and almost painlessly. It also checks the flow of mucus, which flow greatly interferes with any method of application.

Saturate the cotton and squeeze out the excess by rolling it hard against the mouth of the bottle, and place it against the part to be operated upon, allowing it to remain there while otherwise preparing for the operation. If it is to be a chromic acid application the patient is ready by the time or before the acid is prepared on the applicator. This latter preparation attracts the patient's attention and he usually forgets about the cocain application.

This method of application has been eminently satisfactory in my hands, seldom getting the toxic effect of the drug; more often, however, I get the effect of mental dread upon the patient as he apprehends the operation; which, by the way, appears to be a peculiar idiosyncrasy of men, women succumbing much less often and recuperating more rapidly; a woman will faint much more quickly if witnessing the operation performed upon some one else. I attribute this difference to the fact that women acquire the habit and are taught to endure much more pain and mental strain than men. Her pride, prompted by her sense of humiliation, stimulates her to the position of self-control, which is truly remarkable. It would appear that if this effect is the result of cocain poisoning, men and women would be affected alike.

I still occasionally use the method I formerly used, and that advocated by Dr. Anderson, in anesthetizing the septum, and occasionally the turbinated bones. The time necessary for anesthesia is from three to eight minutes. I more often operate under than over five minutes. In the preliminary step any good spray apparatus is sufficient (I use a spray and instantaneous cut-off devised by myself). A continuous spray for two seconds duration in the anterior nares is sufficient, the patient being told to immediately incline the head forward and down without blowing his nose, which causes the excess to flow out and is caught on a napkin in the patient's hands, then by the time the pledget of cotton is deliberately prepared the preliminary spraying has been effective, and the patient having cleared out the nostrils, insert the cotton with cocain as desired. I can not agree with Dr. Ingals that from fifteen to twenty minutes are necessary to produce anesthesia sufficient for intranasal operations; indeed, the application must be very imperfectly made when this time is required. My patients complain of pain so very infrequently that I take it as a matter of fact that there will be no pain, and assure the patient so. In galvanocautery operations I seldom reach the fifteen minute mark for the completion of the operation, including the anesthesia. I very seldom have waited as long as fifteen minutes for anesthesia.

I always operate in the sitting posture, unless for special reasons I notice an idiosyncrasy or predisposition to fainting, because it is very much more convenient, the patient being able to expectorate and clear the nose in case of hemorrhage. While fainting and toxic effects are somewhat favored by the upright position, hemorrhage is less.

Dr. Anderson is correct in his statement that patients recover more quickly in the recumbent position, whether from the toxic effect of cocain or fainting. I have been compelled twice to place the patient in the recumbent position after having begun the operation sitting. It is not an easy matter to handle a limp patient under such condition; in fact, without an assistant it is at times quite impossible. This occasional unhappy condition in my opinion argues more than all else in favor of the recumbent posture, but the convenience both to patient and operator is certainly in favor of the sitting position.

Spraying the nose with a solution of cocain strong enough to produce anesthesia sufficiently complete for intranasal operations should be unconditionally and emphatically condemned as an unscientific and dangerous procedure.

The manner, then, of application as between placing pledgets of cotton saturated with a weak solution (6 to 10 per cent.) in the nasal cavity, and the method advocated by Dr. Anderson, and formerly practiced by myself, of a strong solution (25 per cent.) to the saturated solution, I prefer the former method because I have found it much more convenient, saves time and is tolerated better by the patient, without increasing the dangers of the toxic effects of the drug.

HENRY W. WANDLESS, M.D.

On the Excretion of Urea.

TIVERTON, R. I., Sept. 10, 1897.

To the Editor:—On page 438 of the JOURNAL, Aug. 28, 1897, Dr. Charles Stover of Amsterdam, N. Y., is quoted as follows: "He also spoke of a case which came under his own observation, in which but 500 grains of urea were excreted daily when there should have been 1,300, the patient developing eclampsia."

I do not remember having read that pregnancy was a particular cause of increased excretion of urea, but consulting my authorities, quotations from a few enclosed, I learn that the normal excretion of urea is about 1 ounce or 500 grains in health. If the above statement of Dr. Stover is a fact, that she should have excreted 1,300 grains, or 2.15 time the normal amount during health, what cause should this great increase of the excretion of urea in pregnancy be ascribed to? Allow me to quote. Bartley ("Med. Chemistry," 4th Ed., 1895, p. 615): This quantity, multiplied by the number of fluid ounces passed in twenty-four hours, gives the amount of urea excreted in twenty-four hours, which should not be far from 500 grains. A less quantity than 350 grains in an adult, who is eating the usual amount, should be regarded as pathologic and suspicious of nephritis or deficient kidney excretion. Robert ("Urinary and Renal Diseases," 2d Ed., 1872, p. 115): The daily separation of urea, by adult men between the ages of 20 and 40, averages about 500 grains; but the amount varies considerably from various causes, such as diet, exercise, meteorologic conditions and individual peculiarities; of twenty-four observations, of not less than six days each, tabulated by Dr. Parkes, the minimum result is 286.1 grains and the maximum 684.4 grains per day. Marshall ("Outlines of Physiology," Ed. 1868, Lea, p. 777): In man, with an exclusively animal diet, the daily quantity excreted was found by Lehmann to be about 820 grains; with a mixed diet, 500 grains; with a vegetable diet, 347 grains, and with a comparatively non-nitrogenous diet, 237 grains. In the female, from her smaller frame, her less active nutrient metamorphoses and the smaller quantity of food consumed, the daily quantity excreted is about three-fourths of an ounce (360 grains). Proportionately to the weight of the body it is less abundantly found in women. Hare ("Practical Diagnosis," 1896, p. 389): Although the quantity of urea varies very greatly in perfect health, the mean amount excreted in twenty-four hours by a healthy man of 20 to 40 years is about 512 grains; women excrete a little less than men. If, therefore, in a pregnant woman or a person suffering from Bright's disease, analysis shows a constant diminution in the amount of excreted urea, the physician is warned that a uremic convulsion or other manifestation of uremic disorder is imminent.

Nor can I find any reference in the standard works of my library to increased excretion of urea during pregnancy. On the other hand, I find many writers referring to eclampsia from other toxic causes than retained urea. (*Vide*, Professor Palmer, "Am. System of Obstetrics," p. 204, also Professor Lusk in his work.) E. P. STIMSON, M.D.

Leprosy in Chinese Laundries.

NEW YORK CITY, Sept. 6, 1897.

To the Editor:—The report of Charles F. Roberts, M.D., Sanitary Superintendent of the Board of Health of New York, to the Hon. Chas. G. Wilson, President, regarding the question of the presence or absence of leprosy in the Chinese laundries of this city, contains statements not consistent with the knowledge of the present day. I have nothing to say about the presence of the disease in the Chinese laundries; I may, however, say I do not believe in its existence. So far he is correct. But I object to his statement that "the authorities of the present day entertain the belief that the disease is due to infection not contagion."

I venture to affirm that all able authorities of the whole world, believe in contagiousness, and that it is as contagious in "the four hundred of New York" as in the slums of Cherry Hill. "The best authorities of this country" do not agree with the report of the Medical Society of the County of New York, a report which was gotten up to back its chairman, Health Commissioner George B. Fowler, in his intent to discharge the lepers from North Brother Island. *These lepers have since been let loose.*

As a matter of expediency for the New York Board of Health that report of the New York County Medical Society, and this report on Chinese laundrymen, are of one piece.

ALBERT S. ASHMEAD, M.D.

Reply to Dr. Paquin.

BUFFALO, N. Y., Aug. 26, 1897.

To the Editor:—I desire a little space to reply to an article of Dr. Paul Paquin written in criticism of my report, on treatment of tuberculosis, presented at the last meeting of the AMERICAN MEDICAL ASSOCIATION. Far from belittling the results of serum-therapy and declaring against the use of tubercle antitoxin, I am heartily in favor of such methods of treatment in suitable cases. The conclusions to which I came in regard to antitoxin are, it seems to me, thoroughly justified and are not materially different from Dr. Paquin's own conclusions: viz., that "in cases of phthisis that are at all advanced it is of no value, that in the *one* case (and I particularly state *one*) of almost pure tuberculosis of larynx and upper lobe in which I used it, it was worse than useless, not having stayed the disease and having produced great physical suffering; that in the case of gland tuberculosis it has apparently done no harm and may yet be of value;" but (here I differ from Dr. Paquin) "that in all cases with the exception of the last, *the pain produced by the injection and the unpleasant after-results in the way of dermatitis and glandular swellings would almost, if indeed not entirely, prohibit its use.*"

The possibility of improvement seems so slight when we consider the pain and suffering produced, especially as we can not definitely promise recovery or even improvement to our patients by the use of this particular serum, that I am not willing to ask patients to undergo the ordeal. So much for Dr. Paquin's criticism of the conclusions to which I have come; as to the more personal matters that he has cared to drag into the question, I have only to say that I was unable to procure any of Maragliano's serum and so could make no comparative test. He implies that I obtained the serum at a reduced rate by making false statements. I reply that I paid full price for the serum as I would not consent to the conditions under which the reduction in price was offered.

As to the slurring reference to my scientific ability, I am perfectly willing to stand on my record among those who know my work. Yours very truly,

DELANCEY ROCHESTER, M.D.

Dr. Paquin's Serum.

ST. LOUIS, Sept. 6, 1897.

To the Editor:—In the JOURNAL of Aug. 21, 1897, Dr. Paul Paquin mentions my name as one of a number of physicians who "used serum and are still using it." There appeared in the *New York Medical Journal*, Sept. 1, 1895, a report by me of a case of tuberculosis, for which I recommended the use of Paquin's anti-tubercle serum. The patient recovered. The report of this case has been used extensively to advertise Dr. Paquin's serum. I made an extensive trial of the serum for some months after the recovery of this patient, but the results were either negative, or they appeared to be similar to those following the use of Koch's old tuberculin. As the serum was injurious and dangerous to my patients, I discontinued its administration. I do not, under any circumstances, wish to be considered as indorsing the Paquin anti-tubercle serum.

Yours very truly, J. R. LEMEN, M.D.

The Use of Goat's Milk.

GROVELAND, MASS., Aug. 10, 1897.

To the Editor:—I should be greatly indebted to any of your readers who would write to me concerning any experience they may have had in the use of goat's milk in the treatment of wasting diseases.

I should also be very glad to receive at the same time professional opinion concerning goat blood serum, as to its antitoxic effect in the treatment of tuberculosis, diphtheria, etc.

Respectfully, WM. THORNTON PARKER, M.D.

ASSOCIATION NEWS.

Section on Surgery and Anatomy.—Minutes of the Section on Surgery and Anatomy at the forty-eighth annual meeting of the AMERICAN MEDICAL ASSOCIATION at Philadelphia, June 1-4, 1897. The Chair appointed as a nominating committee, Drs. DeForest Willard of Philadelphia, H. O. Marcy of Boston, and J. McFadden Gaston of Atlanta. This committee reported as follows: Chairman, Dr. John B. Murphy of Chicago, and Secretary, Dr. William L. Rodman of Louisville. Dr. Murphy having been selected to deliver the "Address on Surgery" next year, resigned the Chairmanship of this Section and it was moved that the nominations to fill the vacancy should be filled by ballot. Carried. The following were then nominated: Dr. Wm. L. Rodman, Louisville; Dr. H. O. Walker, Detroit, and Dr. W. J. Mayo, Rochester, Minn. After three ballots Dr. Rodman was declared elected. The following nominations were then made for Secretary to succeed Dr. Rodman: Drs. Clayton Parkhill of Denver and McLane of Detroit. Dr. McLane withdrawing, Dr. Parkhill was declared unanimously elected. It was moved and seconded that in the future the Nominating Committee shall be continued until the end of the session for which they are appointed to serve. Carried. It was moved and seconded that all papers read by title because their authors failed to read them shall be excluded from the "Transactions," except where such failure to read papers is due to the death of the author or to lack of time on the part of the Section. Not carried. It was moved and seconded that a committee of five should be appointed to consider Dr. Senn's proposition of the previous day and report the next morning. The Chairman appointed Drs. Nicholas Senn of Chicago, G. R. Fowler of Brooklyn, H. Augustus Wilson of Philadelphia, J. McFadden Gaston of Atlanta, and J. D. Griffiths of Kansas City, Mo. Dr. Senn declining to serve, Dr. H. O. Walker of Detroit was added to the Committee. (*Vide* JOURNAL, June 26, July 17, etc., for the Committee's report.) It was moved and seconded that the name of Dr. R. J. Reed of Wheeling, W. Va., should be inserted in the "Transactions" as Secretary *pro tem.* of this meeting instead of Dr. Bayard Holmes' name (owing to Dr. Holmes' absence). Carried. It was moved and seconded that a vote of thanks should be extended to the Chairman of this meeting.

Notice to Secretaries.—In order to enable the officers of the ASSOCIATION to know what societies are in affiliation with the ASSOCIATION, the secretaries of every State medical society are urgently requested to forward to the Permanent Secretary, W. B. Atkinson, M.D., 1400 Pine Street, Philadelphia, as early as possible, a complete list of the local or district societies which are "recognized by representation in the State society."

SOCIETY NEWS.

The Tri-State Medical Society of Alabama, Georgia and Tennessee will hold its ninth annual meeting in Nashville, Tenn., October 12, 13 and 14.

The American Association of Colored Physicians.—The annual session for 1897 will be held in Nashville, Tenn., October 15 and 16. The program offers thirty five papers by the leading negro physicians throughout the United States.

The Third International Congress of Sociology convened at Paris in July, with Senator Lilienfeld of Russia in the Chair. According to the *Progrès Méd.*, the most important address was delivered by Prof. Lester Ward of Washington, D. C., on the "Economics of Pain and the Economics of Pleasure."

The Medical Society of Virginia held its twentieth annual session at Hot Springs, Va., September 1, 2 and 3. The society was organized by ninety-two physicians, Nov. 2, 1870; of these twenty-seven are still living. The society now has a membership of 854. At the recent meeting prizes were awarded the competitors who had submitted essays on Virginia medical history. An original prize of $450 was awarded to Dr. Jordan of Richmond, while supplementary prizes of $100, $75, $50 and $25 went respectively to Drs. Hugh Cummings, non-resident fellow, of Philadelphia, Hugh M. McGuire of Alexandria, Jessie Ewell of Richmond and W. T. Walker of Lynchburg. George B. Johnston, M.D., president, in his address, contended for State Medical Societies and pointed out their good results to the profession and public. The question of the admission of women as fellows of the society was settled in their favor with little opposition. The following officers were elected: President, Dr. Lewis E. Haine, Danville; first vice-

president, Dr. L. G. Pedigo, Crockett Springs; second vice-president, Dr. A. S. Rixey, Culpeper; third vice-president, Dr. H. F. Cline, Front Royal; recording secretary, Dr. L. B. Edwards, Richmond; treasurer, Dr. R. T. Styll, Petersburg; corresponding secretary, Dr. John F. Winn, Richmond.

The Congress of Hygiene and Climatology for Belgium and the Congo, recently held at Brussels, was principally devoted to the recommendation of hygienic measures already adopted by other countries, and the question of acclimation in the Congo. We note that colonists from the north of Europe, Swedes, Norwegians, etc., are more apt to thrive than Italians, Spaniards, etc. The nervo-sanguine temperament is the most resistant to the climate, and the age between 25 and 35. The best season to arrive is in the dry, cool months of July, August and September. Negroes imported from South America, whose ancestors came from the Congo region, succumbed rapidly to malaria and dysentery, showing that the immunity had not been inherited. The annual mortality among the negroes working on the railroad is now only fifty per thousand, while there was a brief time when, from lack of suitable food and shelter, it rose to 900 per thousand. Bonkowsky Pasha represented Turkey at the Congress. He stated that the Sultan is much interested in hygienic matters, and that although the sanitary arrangements of the Red Sea and in Arabia are not complete, yet they had succeeded in arresting the spread of the plague in two months after it had appeared at Mecca; also that the cholera had not appeared in an epidemic form since 1895. Belgium is the first country to introduce a complete ozonometric service, and further study by similar scientific methods was urged on all countries.—*Gaz. Méd. de Liège*, August 19.

American Electro-Therapeutic Association.—The following papers will be read at the next annual meeting of the American Electro-Therapeutic Association at Harrisburg, Pa., Sept. 21, 22 and 23, 1897: Caleb Brown, Iowa, "Electricity as an Aid in the Treatment of Goiter;" Francis B. Bishop, Washington, D. C., "Chorea;" Lucy Hall Brown, Brooklyn, "A New Electrode for Use with Static Machine;" Eugene R. Corson, Savannah, "Some Thoughts and Suggestions on X-Ray Work;" Margaret A. Cleaves, New York, "Expenditure of Electrical Energy;" Prof. A. E. Dolbear, Boston, "Molecular Effects of Electricity;" William J. Herdman, Ann Arbor, "The Influence of Magnetic Fields on Nutrition;" J. H. Kellogg, Battle Creek, "Electricity as a Means of Involuntary Exercise;" Charles H. Lodor, Chicago, "The Treatment of Urethral Hyperesthesia in the Male;" Robert S. Newton, New York, "What Has Electricity Accomplished in the Treatment of Mental Diseases?" Robert Newman, New York, "Electric Treatment in Gout and Uric Acid Diathesis;" R. J. Nunn, Savannah, "Sources of Atmospheric Electricity;" Curran Pope, Louisville, "The Electro-Therapeutics of Neurasthenia;" F. H. Wallace, Boston, "Ozone in Nasal Catarrh and Pulmonary Diseases;" W. S. Watson, Fishkill-on-Hudson, "Medical Electricity;" L. A. Weigel, Rochester, "Electricity in Orthopedic Practice;" G. B. Massey, Philadelphia, "The New Electro-mercuric Treatment of Cancer;" J. Bergonié, Bordeaux, France, *a*, "A New Electrode, Preventing the Diffusion of the Current;" *b*, "Palliative Electric Treatment of Tic Douloureux of the Face;" *c*, "The Action of the Roentgen Rays on the Vitality and Virulence of Koch's Bacilli in Cultures." There is a good prospect of having a fine exhibit of electric apparatuses and also several social entertainments and receptions.

PUBLIC HEALTH.

Yellow Fever.—In our last issue we referred to the efforts that were being made by National and State authorities to arrest the spread of the epidemic at Ocean Springs and the coast of the Mississippi Sound. We stated (page 552) "the number of cases that is reported makes it probable that even the best directed efforts will not avail to prevent other cases here and there. Prompt isolation of these cases, which will occur this week, if at all, will prevent a further spread."

It now seems that the separate cases which have appeared, with the single exception of New Orleans, were not promptly isolated, and we may well fear that we are on the verge of an extended epidemic. According to the newspapers, on September 6 there have been 600 cases of various kinds of fever at Ocean Springs. There was one case of yellow fever reported at Edwards, Miss. On the 7th there were twenty-two new cases reported, namely, New Orleans five, Scranton sixteen, one refugee died at Louisville; on the 8th three new cases were reported at Biloxi with one death. The actual number of cases of yellow fever at Ocean Springs was then officially declared to be but 20. On the 9th it was stated that there had been a total of 748 cases of yellow fever at Ocean Springs from July 8 to September 9. Nobody, it seems, paid any particular attention to it during July and August and persons went in and out of the Springs as usual. On September 10 there were twelve "suspicious" cases reported at New Orleans and seven new cases at Biloxi. It subsequently appears that on September 13 thirteen cases were reported from Mobile, and it seems that the fears which were entertained the first of last week will unfortunately be realized. It is said that all cases have been attributed to Ocean Springs, with the exception of one case at the City Hospital in Mobile. Four cases were reported at Berkley, and Surgeon Carter gives it as his opinion that there have been ten cases, with four deaths, of yellow fever at Berkley. It thus appears that nearly all the cases have been developed from the original center at Ocean Springs.

In this connection it will be recalled that Congress some years ago directed the removal of the National Quarantine from Ship Island to Chandeleur Island, in order to prevent epidemics of this character, on the recommendation of Surgeon-General Hamilton. On the 13th seven new cases were reported at New Orleans, two cases at Galveston, Texas, and six new cases at Ocean Springs. Isolation, which would have been successful had it been applied early, is thus made extremely difficult of execution. The best hope for the people at this juncture is in immediate depopulation of the non-immune, and their escape to the high country. Atlanta, which has always opened its doors in cases of yellow fever epidemics, will, it is understood, pursue the same course this year. Its elevation, 1,600 feet, is such that it is believed, while yellow fever may exist among those arriving while sick, it is not likely to spread. Chicago opened its doors in 1878; thirty-six cases were treated here and no spread of the disease occurred. It is believed that the nights are too cool in the towns along Lake Michigan for yellow fever. Food for the fever now existing in the South should be removed at the earliest possible date as frost is not likely to occur along the Gulf Coast until November.

P. A. Surgeon Wasdin was reported sick on September 13, and the Texas quarantine at Sabine Pass damaged by a cyclone.

Protection of the Milk Supply by a Local Board of Health.—Minneapolis is one of the small number of cities in which the health authorities have undertaken to prevent the sale of milk from consumptive cows to the people under their jurisdiction, by requiring the dairy farmers who ship milk to the city to prove that their herds have been purified by means of the tuberculin test. One farmer rebelled against this requirement and appealed to the courts upon the ground that the city's board of health had no right to enforce such a regulation with respect to herds kept outside the city limits.

Health in Chicago.—*During* August the total number of deaths was 1,967 or 1.21 per 1,000, as compared to 1.40 per 1,000 in August, 1896. Of these deaths 755 were persons under 1 year, and 303 between 1 and 5 years old. The principal causes were: Infantile diarrhea, 362: other acute intestinal diseases, 360; diseases of the nervous system, 207; consumption, 153; diseases of the heart, 97; pneumonia, 66; cancer, 57; diphtheria and membranous croup, 47; typhoid fever, 42; and bronchitis 41 deaths.

The Arbitrary Power of Health Boards receives a handsome apology from Dr. H. M. Biggs of New York, in a paper read before the British Medical Association September 3. He says that "the belief is never aroused in any class of the population, however ignorant, that the institution or enforcement of any sanitary measures is designed for the restriction of the individual freedom. There is nowhere to be found any jealousy or distrust of law and government as such. It is therefore possible to adopt measures more arbitrary in many respects than could be adopted in most other countries, simply because our government is democratic. This is the keynote to the attitude of the sanitary authorities of New York.

NECROLOGY.

JESSE OREN, M.D., at his home in Laporte City, Iowa, August 25, 1897, of diabetes, aged 73 years. He studied medicine under Prof. James Bryan of Jefferson, was graduated from Pennsylvania Medical University in 1854, practiced a short time in Philadelphia, then entered the Russian service and served on the Russian staff as surgeon during the Crimean war. After the war ended he returned to Philadelphia and moved to Iowa in 1856. In 1858 he moved to Laporte City, where he made his home the remainder of his days. Dr. Oren was promoted while in the Russian service to the rank of Major, and was also made a present of twenty-five rubles by Czar Nicholas for excellent services.

J. M. SWIFT, M.D. The death of Dr. J. M. Swift of Northville, Mich., an honorary member of the Wayne County (Mich.) Medical Society was reported at a recent meeting of that Society, and on motion a committee was appointed by the President to draft suitable resolutions in respect for him. They are as follows:

The man who exerts himself to do good and helps to build up the commonwealth deserves the good will of his friends and neighbors while living, and when he has been called to join the great majority, he should be held in pleasant and appreciative memory by all who have known him. Dr. Swift, we know, was held in high esteem, and we, the members of this Society of which he was an honorary member, do here record the fact that we cherish the memory of our departed friend and brother, and

WHEREAS, Our professional brother, Dr. John M. Swift, who after a successful career, has been removed by an all-wise Providence, therefore,

Resolved, That as a co worker his death is sincerely felt by this society; and

Resolved, That we extend to his relatives and friends our sympathy and condolence; and

Resolved, That a copy of this memoir be spread upon the minutes of our Society and that the same be transmitted to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, the medical journals of this State, and the *Northville Record*, with the request that they publish the same, and also that a copy be sent to his widow.

Signed: E. B. Smith, David Inglis, J. H. Sanderson, H. C. Wyman.

WILLIAM BRODIE, M.D., born in Philadelphia forty-two years ago, and a graduate of the University of Pennsylvania, died suddenly at Forest Grove, Pa., from nephritis on September 3.

W. H. CRAYNE, M.D., died at Colfax, Washington, August 6, aged 48 years. He was born in Fountain County, Ind., and at the age of nine years moved to Champaign, Ill. He served for one year during the war in a company of Illinois volunteers. He graduated from the St. Louis College of Medicine and Surgery in 1880, and located in Oregon in 1884. He has resided in Colfax, Wash., since 1889.

JOHN ALLEN, M.D., Saco, Maine, September 1, aged 85 years.——Robert M. Pulliam, Richmond, Va., September 5, aged 66 years.——William H. Palmer, M D., Jackson, Mich., September 6, aged 60 years. During the war he was hospital steward and assistant surgeon of the Ninth Michigan Infantry and was also with the Army of the Cumberland during its operations in Kentucky, Tennessee and Alabama.——Professor Gros of Algiers.——P. v. Stern, physician to Russian Embassy at Berlin.——W. Kremnitz, Bucharest, aged 54 years.——J. Goldenhorn, Odessa, aged 38 years; death from surgical infection.——I. Tschetschichin, known by his works on the heat centers, aged 67 years.

MISCELLANY.

Why Not?—We are gravely informed that Dr. Kitasato of Tokio, Japan, is in charge of laboratories where anti-diphtheria, anti cholera, typhoid and erysipelas serums are made; also that his institute, connected with the sanitary society of Japan, contains at least the essential requisites for a bacteriologic course and for the practice of microphotography.

Actionable Words.—To render words spoken of and concerning a physician actionable, the supreme court of Indiana states, in the case of Divens v. Meredith, they must be spoken of him in his professional character. It is not enough that the language disparages him generally, or that his general reputation is thereby affected, or that the words used tend to injure him in his profession.

Indications from the Curve of the Agglutinating Power in Typhoid Fever.—If the curve rises abruptly and falls again, resembling the shape of a bell in its course, the typhoid is benign. In severe cases the curve rises slowly and irregularly, and the prognosis is unfavorable if the agglutinating power falls with the temperature.—P. Courmont, *Semaine Méd.*, July 28.

Personal.—Recently appointed by Governor Barnes: L. Haynes Buxton, M. D., of Guthrie, Okla., superintendent of public health and secretary of board; Wilber Hamilton, M.D., of Norman, vice-president of board. Wilson Lockhart, M.D., has been appointed superintendent of the Eastern Washington Hospital for the Insane at Medical Lake, vice Dr. John M. Semple resigned.

The Continuity of Living Matter.—Prof. Rudolph Virchow, at the twelfth International Medical Congress, lately held at Moscow, re-iterated with warmth in an opening address, his views of cellular life. "Life," he said, "has no other origin than from life itself. Life is in the cell. He who speaks of serum as a vital force apart from cells is wrong. The grand truth of cellular succession may be assailed in the future as it has been in the past, but it will never be thrown to earth."

The "Medical Record" and the English.—The *Medical Record* since the Montreal meeting has become pro English. It has frequently shown its great knowledge of the English people and their customs. In fact, it seems to know everything about the English except their language.

Medical Moscow.—The medical schools and hospitals of Moscow were mostly erected by the generosity of the enormously wealthy wholesale merchant class in that seat of extreme Russianism and devotion to the Church. This fact determines the character of the medical world there, which does not affiliate with the outside world like St. Petersburg. The stately row of clinics, two story palaces with side corridors, extends for a kilometer, and scarcely a year passes without the endowment and erection of some new clinic or hospital. All are heated with hot water, and have electric lights, etc. The number of large and small hospitals is almost endless, although most of them are built on the old-fashioned hospital plan. As many of the professors are connected with the wealthy merchant class, it is not a rare occurrence for one of them to endow some clinic or hospital, or to erect a sectarian school or even a church in the midst of the college buildings, at his own expense.—From A. Sack's letter in the *Deutsche Med. Woch.*, August 12.

The Bacillus Icteroides.—There is great rejoicing in South America over Sanarelli's announcement of his discovery of Sternberg's specific bacillus of yellow fever. The distinguished Italian bacteriologist presented his report at a special afternoon meeting in the theater of Montevideo, before a brilliant assemblage, including the President of the Republic and delegates from numerous medical and scientific societies all over the country. It was published in full in the daily press, in *O Brazil Médico* and other Spanish and Portuguese as well as Italian journals. The bacillus responds to every bacteriologic test to prove its identity and the experiments in the line of sero-therapy already promise important results.

Discretion with Township Trustee.—The discretion to determine whether or not a sick and indigent person, found within a county in Kansas where such person has no legal settlement, can be safely and properly sent to the county where such settlement exists, the court of appeals of Kansas holds, in Stevens v. Board of Commissioners of Miami County, July 31, 1897, rests with the trustee of the township, as overseer of the poor. Upon this ground, it further holds that the county becomes bound for medical services rendered upon an order of the trustee, or overseer of the poor, in a case in which he has, upon investigation and inquiry,, determined that aid ought to be extended to an indigent person so found within his township.

The Shrinkage of the Birth Rate in France has suggested the *Alliance Nationale*, of which Dr. Jacques Bertillon is president. The society was organized early during the year and has induced thirty-eight departmental assemblies to request the passage of a law reducing taxation pro rata to the number of children in the family, and that the same be applied to all financial questions in which the government is a party. In addition, where the number of servants exceeds the number of children, the taxpayer is to be subjected to an exceptional surtax, and all favors at the disposal of the state are to be reserved for the members of large families. Another proposition which is receiving considerable attention is that the government should educate and care for all children over six in any family.

Specific Agglutination Reaction Produced in Filtered Cholera, Typhus and Plague Bouillon Cultures by the Addition of Homologous Serum.—Further progress in our knowledge of the agglutination reaction is announced from the Vienna Diphtheria Antitoxin Institute under Professor Paltauf, by R. Kraus, assistant, in the *Wien. klin. Woch.* of August 12. He secured filtrates through "pukal" of cholera bouillon cultures, absolutely free from germs. To these he added sterile cholera serum (goat serum), and kept at 37 degrees C. In the course of twenty-four hours a precipitate formed, leaving the fluid above it perfectly clear. Analysis of the precipitate showed that it is formed of two albuminoids, one responding to the alkali albuminate and the other to the peptone test. He considers it therefore more than probable that it consists of direct substances from the bodies of the vibrios. Exactly similar results were obtained from filtrates of typhus and plague cultures with homologous serum. But the reaction is totally absent if any other serum is used, and also in experiments with toxin-producing bacteria (diphtheria, etc.).

Mortality Rate Tables.—From the *New York Times* of August 28, we learn that "the table of rates of mortality in the various States of the Union issued by the Hospital Marine Service is practically of little value. Really to learn what is the ratio of *deaths to population* we must know accurately both elements of the calculation. It is only in the larger cities, and not in all of these, that either of the elements is known with anything like accuracy. When we read of an average mortality per 1,000 of 4 in Arizona and 20.96 in the District of Columbia, we feel that the latter may be approximately correct, but that the former leaves us as ignorant as we were before. The general fact of a lower death rate may be accepted, but the ratio of its decrease can not be reached with any certainty from this table."

Intoxication from Medicines.—The *Therapeutische Woch.* began to publish in July a comprehensive alphabetic study of the various cases of intoxication from therapeutic measures reported in literature. We note six cases of intoxication from the use of bismuth and several from boric acid, used internally or externally, one from 0.25 gram chloralose administered as a narcotic, one case of extreme amblyopia caused by antifebrin (3 grams taken in half an hour), many cases of argyria after using argentum nitricum extensively, in which the pigmentation was permanent. The similar pigmentation that has been rarely observed after long use of arsenic disappears with the cessation of the medication. An enormous dose of atropin taken by a morphin eater by mistake and followed by a large injection of morphin, ended in recovery. One case of intoxication from the external use of belladonna is reported, already mentioned in the JOURNAL. The favorable effect of atropin in curing intoxication from over-doses of quinin is noticed. Where there is intolerance Aubert follows 0.5 gram quin. sulph. with 0.0005 gram atropin sulph. The article contains careful studies of the various symptoms of the intoxications, including the effects of drugs taken by mistake and for suicidal purposes.

Board of Health an Educational Institution.—The Board of United States General Appraisers at New York decided, June 1, 1897, in the matter of certain protests of Noyes Bros. & Cutler, against the decision of the collector of customs at St. Paul, Minn., as to the rate and amount of duties chargeable on certain imported philosophical apparatus, that the Minnesota State Board of Health, a body created by the legislature and having for one of its chief purposes the collection of valuable scientific information on sanitary matters for diffusion among the people of the State and for the information of the legislature itself, is an educational or scientific institution entitled to the free entry of scientific apparatus under paragraph 585, act of Aug. 28, 1894. The St. Paul City and County Hospital, which it was shown maintains clinics three times a week, which are attended by students of the Minnesota University free of charge, and which has a laboratory for pathologic, bacteriologic, and chemical work, the board of general appraisers holds is also an educational or scientific institution, entitled to free entry under the statute.

Forcible Reduction of Curvature of the Spine.—Calot's method of forcibly pressing the spine into place under anesthesia, with assistants stretching the body by the head and limbs, has proved wonderfully successful in certain cases, but Monod warns that it is strictly contra-indicated in long-standing humps, as consolidation is then impossible, and there is danger of rupturing the meninges and of general infection from mobilizing an isolated and encapsulated focus of tuberculosis or other infection. But in the first months, or even in older humps, when the number of vertebræ involved is not large, reduction is possible and effective and no trace of the deformity remains if a proper spinal corset is worn for a while. Péan has even secured the complete cure of an enormous hump on a girl of 16 who had been confined to her bed for a year or so with paraplegia and suffered intense pain. The *Bulletin de l'Acadèm. de Méd.* of June 8 contains a cut of the corset recommended by Calot. It is even asserted that by prompt treatment with this method there will be "no more hunchbacks."

The Cream of Tartar Tree.—At a recent meeting of the Leeds Medico Chirurgical Society, Dr. Sharp showed a specimen of the fruit of the cream of tartar tree from [illegible]al.

said it was stated in text-books that the cream of tartar tree was *Adansonia gregorii*, a native of Northern Australia, but it was not possible to say, in the absence of leaves, etc., whether his specimen belonged to this species or to Adansonia digitata, which is a native of Africa, and is called the baobab, monkey bread, or Ethiopian sour gourd. The fruits of both adansonia digitata and adansonia gregorii have a very similar composition. The extract of the leaves of the former evidently contains an agent which checks excessive perspiration; the pulp of both species is employed as a remedy in dysentery, and the juice expressed from the pulp is used as a drink in the fevers which prevail in the districts. Two German observers found tartaric acid and cream of tartar in the pulp, but there seems some doubt as to the species, while an English observer, whose specimen was also doubtful as to species, found chiefly acid malate of potassium.—London *Lancet.*

Proof of Period of Gestation not Necessary.—In the bastardy case of State v. Sexton, the supreme court of South Dakota holds, July 14, 1897, that, as the subject of inquiry is a matter of common knowledge, pertaining to the course of nature, of which courts will take judicial notice, no proof as to the ordinary period of gestation is necessary. The admission in evidence, in this case, of a table contained in a standard medical work giving information as to the average time from the day of conception to the day of the birth of a mature child, leads the court to remark that, when properly objected to, the hearsay character and uncertainty of a medical work, the author of which being neither sworn nor cross examined, is sufficient to exclude the book and all detached portions thereof, such as the table in question. But when it is disclosed that an expert has based an opinion, expressed on direct examination, upon the recitals of a particular medical work, the court says reference may in some instances be had thereto on cross-examination, as a means of testing his knowledge, and determining the value of such opinion. At the same time, the weight of current authority is clearly against the admission of scientific books as evidence of an issuable fact which may be established by the testimony of an expert.

Cultures of the Gonococcus.—The fact that gonorrheal lesions continue to develop when no cocci can be discovered is explained by Wassermann's recent experiences with gonococci cultivated on the pig serum with Salkowski's nutrose (sodium phosphate and casein). Fifteen c.c. pig serum; 30 to 35 c.c. water; 2 to 3 c.c. glycerin and 80 centigrams nutrose; sterilized by boiling over an alcohol lamp for twenty or thirty minutes and adding, at the moment of using, equal parts of peptonized gelose at 2 per cent., which supplies fluid enough for six or eight plates. He found that by adding peptone bouillon and leaving the cocci in these cultures three days an active specific toxin was evolved, which produces an inflammation at the injecting point, fever and pain in the muscles and joints. This toxin is in the bodies of the cocci, as the filtered liquid did not contain it. He was not successful in any attempts to secure immunization with this toxin. Werthheim and Bröse report a few cases of undoubted gonorrheic peritonitis; the former observing the circumscribed form alone, the latter the generalized. Welander has recently discovered the gonococcus in the blood and injections of a culture at the fifth generation produced acute gonorrhea in an individual who had never previously been affected.—*Meeting of Berlin Medical Association*, July 14.

Address of the General Secretary at the Opening of the Moscow Congress.—The total number of members inscribed to date, August 19, is 7,000. Half of these are our compatriots. In the other half, Austro-Hungary and Germany take the lead with about eight hundred members each. France has sent us more than four hundred members, Italy and Great Britain come next with over three hundred. The United States furnishes one hundred and twenty adherents. All the countries of the world, even the most remote, have furnished a contingent; Mexico, for instance, is represented by more than thirty members. To all we wish to express our unbounded gratitude. We thank especially the ladies, who have not been deterred, by the long and wearisome journey, from visiting our country. We greet in them loyal allies, and we are confident that they will help us to forget the fatigues of our long and assiduous labors. We are unable to offer you many distractions in this dead season, although we know that distractions are absolutely necessary to replace the variety in work to which you are accustomed. Variety to us is synonymous with rest. We bid you welcome to the heart of our country. Endeavor to learn to know us, to the end that, when you leave, you will be our friends, as you are already our allies in the only warfare in which we are interested, the warfare against the ills of humanity.

Botulismus Toxin and Antitoxin; "Sausage Poisoning."—The anaerobic bacillus discovered by van Ermengen in the epidemic of meat poisoning at Ellezelle (*Cbl. f. Bact.*, 1896, No. 19) was not supposed to belong to the ptomain group but to the toxalbumins, which include diphtheria and tetanus. This view is confirmed by the Koch Institute for Infective Diseases, which now announces that antitoxin prepared from this bacillus botulinus is not only effectual in arresting the toxic action of toxin injected nine hours before but is able to save animals twenty-four hours after intoxication, even when the nerve cells are already affected to a considerable extent; also that it gradually brings the cells back to their normal figuration or complete regeneration. The symptoms of botulismus intoxication are abnormal secretion of saliva and mucus in the mouth and throat, blepharoptosis, mydriasis, diplopia, strabismus, dysphagia to aphagia, aphonia, obstipation, retention of urine and sometimes disturbances of the respiration and circulation leading to a fatal termination with the manifestations of a bulbar paralysis. No fever nor mental disturbances. The alterations in the nerve cells of the anterior cornua studied with the Nissl alcohol-methyl-blue stain are: 1. The Nissl corpuscles seem to swell and the granules lose their characteristic concentric arrangement, the chromatophilous elements rarefy and disappear, principally around the edge and one pole of the cell. 2. The disintegration of the Nissl corpuscles, which crumble into powder. The cell then appears somewhat enlarged, the otherwise colorless intersubstance dull blue, apparently scattered with fine dust, and prominent in the center the bright tint and distinct outlines of the nucleolus. In the final stage the cell appears to be almost completely destroyed, the nucleolus alone is still prominent in the amorphous mass with ragged edges, more or less atrophic. The nerve cells do not show degeneration until twenty hours have elapsed after the intoxication and weeks must pass before complete restitution. The experiments that prove complete restitution after antitoxin treatment, fully confirm the announcements of Goldscheider and Flatau in regard to the anatomic restitution of injured nerve cells (*Fortschritte der Medicin*, 1897, No. 7), whose experiments included intoxication with "malon-nitril," counteracted with sodium hyposulphite. They also reported further experiments in this line with Behring's tetanus toxin and antitoxin at the recent Congress of Internal Medicine.—Kempner, Pollack and Brieger in the *Deutsche Med. Woch.*, August 12.

The Moscow Congress.—The executive committee have acquitted themselves of their arduous and complicated tasks with zeal and devotion, with judgment and unmistakable good luck and administrative ability. All our justifiable demands are fulfilled and our hopes surpassed. Even for the transportation of the vast multitudes trending eastward, the preparations were adequate and well planned, as was also the case with the arrangements for sheltering and taking care of the crowd after it arrived, which numbers 7,300 members, not including the ladies. Trivial complaints are heard on all sides, of course, usually dissatisfaction because the Russians do not speak the language of the speaker, or disgust at the street pavements, which really deserve all the bad that is said about them. The remedy for the wretched pavements is, however, the innumerable little one horse *Iswostschiks*, rapid and cheap, with their blue-bloused, red-belted, good-natured drivers, which enable one to see at his ease this incomparable, indescribable wonder city. . . . As the theater in which the opening session was held only seats 2,500, not all the members were able to gain admittance, but I was awarded a seat on the platform, where I could watch the long spectacle of the opening session *en amateur*. I saw in the side box the high and mighty protector of the Congress, the Grand Prince Sergei Alexandrowitsch, who disappeared after the preliminary address, by the way. I saw the Minister of Public Instruction, Deljanow, pronounce a Latin greeting, but could not hear him. I heard the president of the executive committee, Professor Sklifossowsky of Petersburg, General Secretary Roth and Prince Galizyn on the part of the city, read addresses of welcome in French. I listened then to the volubility of the various national delegates in turn, and the honorary presidents, followed by Virchow's address on "The Necessity of Accepting the Continuity of Life as the Base of all Biologic Conceptions," and Lannelongue's comprehensive study of "Surgical Tuberculosis." It was all good; rather too much of a good thing, and we all drew a breath of relief when we emerged from the heat of the crowded assembly upon the broad square in front of the theater, with the entrancing view before us of the walls, gates and clustering houses of the "inner city," above which tower the domes and steeples of the Kremlin, the entrance flanked by the imposing palace of the Duma and the historic museum, while the eye was attracted again and again to the golden cupolas of the great church to the right, glittering in the sunshine. The overpowering grandeur of the scene and the attendant circumstances brought a fresh enjoyment of life and a wonderful, and to us Germans rather a disconcerting, realization of the elementary vital strength and energies pulsating in this great, mighty, unique Moscow and the nation it represents. —Editorial chat in the *Deutsche Med. Woch.* of August 26.

The Absorption of Iron from the Intestine.—In the *Presse Médicale*, Chessevant states that Cloetta has made some experiments in regard to the elimination of iron in the economy. For this purpose he used ferratin, which exercises no caustic action on the tissues. His experiments demonstrated that in dogs which were subjected to a milk diet, the iron injected into the veins in the form of ferratin was eliminated by the large intestine. Quincke had also ascertained this by microchemic examination. The author also investigated the means of assimilation of this element when administered by the digestive tract, and he found that 20 per cent. of a dose of ferratin introduced into the stomach of a dog subjected to a milk diet, was absorbed. The organic combination of iron with albuminoid matter is necessary in order to insure its absorption. Two dogs were experimented upon as follows: Their food consisted of a soup made of starch, sugar, glucose and distilled water. To the nourishment of the first dog a solution of iron chlorid representing sixty milligrams of iron was added; to that of the second dog a solution of ferratin representing forty milligrams of iron. The villosities of the dog to which ferratin had been given presented the characteristic action of the iron absorbed. The iron contained in the intestine of the other dog was not absorbed and formed masses at the base of the villosities. The organic iron combined with albuminoids is evidently absorbed in the intestine, penetrates the chyle and enters the circulation by the mesenteric veins.—*New York Medical Journal.*

Prostatic Surgery.—The *Centralblatt f. Chir.*, of June 5, contains a detailed study of nineteen operations to relieve hypertrophied prostate by K. G. Lennander, with complete details of symptoms and results. He expresses his conviction that double vasectomy is destined to become very important in cases of dilatation of the bladder without infection, and with only partial retention of urine, but the rule is imperative that a catheter must never be introduced in these cases except under the most pressing circumstances. He states that this operation should be proposed in all cases in which the catheter treatment does not lead rapidly to comparative relief from the symptoms. If cystitis persists in spite of regular catherization epicystotomy should not be postponed. With this vasectomy can be combined, as recovery is apt to be prompter. He also questions whether it is not the best treatment in chronic urinary troubles, with complete retention but no cystitis, to relieve the bladder with punctures and aspiration and supplement this by vasectomy. It may be possible in this way to avoid catheterization and also cystitis. It is Lennander's practice to remove as much as possible of the connective tissue surrounding the vas. One case, a man of 57, still has natural painless erections at night. The testes remain normal to palpation for a long while. Kohler reports seventy vasectomies in the same number, of which three-fifths were cured, one-fifth improved and one-fifth unaffected by the operation.

Reading Medical Books to Jury.—The authorities, both English and American, are practically unanimous in holding that medical books, even if they are regarded as authoritative, can not be read to the jury as independent evidence of the opinions and theories therein expressed or advocated. One objection to such testimony is that it is not delivered under oath. A second objection is that the opposite party is thereby deprived of the benefit of a cross-examination. A third, and the United States court of appeals suggests (Union Pacific Railway Company v. Yates, March 22, 1897), perhaps a more important reason for rejecting such testimony, is that the science of medicine is not an exact science. It also holds that the Iowa statute which makes "books of science and art" presumptive evidence of facts of general notoriety or interest does not change the rule in that State. In this the court follows the construction placed upon a similar statute in California to the effect that the expression "facts of general notoriety or interest" means "historical facts, facts of the exact sciences and of literature or art," all of which, when relevant to a case in hand, may be proven by the production of books of standard authority, rather than by the mouths of living witnesses. At the same time, the court calls attention to the fact that, while the prevailing rule is as stated, a physician is sometimes allowed, while testifying, to fortify an opinion which he may have expressed, by referring to medical works of standard authority on which his opinion is in part predicated; and, when a medical expert has thus indicated the source of his authority, the books themselves may be offered subsequently for the purpose of showing that they do not support the opinion expressed, or that they contradict it.

Reciprocity of Attack and Defense in the Animal Creation.—M. Albert Gaudry, in a review of the course of development of animate nature through the geologic ages, remarks on a curious analogy between the changes experienced by fishes in the secondary age and those which modern warships are passing through. As soon as the thought of armoring vessels took effect, stronger projectiles were devised in order to penetrate the armor. Then the armor had to be strengthened, and just as rapidly as the plates were made thicker, more enormous projectiles were cast: so that the race has culminated in the construction of vessels so heavy that they are almost unmanageable, and thought is turning again toward light, swift boats. With the secondary fishes, too, offensive arms and defensive armor were developed pace by pace. The teeth were modified till they could crush through the hard cuirasses of the ganoids, and the secondary-age beds are characterized by marine animals thus furnished. Powerful grinding teeth are found in the bony and the cartilaginous fishes, and even in many of the massive reptiles of the trias. The fishes, exposed to enemies whose instruments of offense matched their defensive armor, were obliged to seek safety in flight. Their vertebral column became more solid, so as to furnish a strong support to their spinal muscles, and their tails were shortened and broadened so as to become instruments of energetic locomotion. When this transformation was completed, the carnivorous fishes had no more use for crushing teeth, and they have almost disappeared; no more marine reptiles with teeth like paving stones are found in the tertiary beds or in modern times; and fishes with large teeth working like mill-stones are rare in comparison to those which have thin cutting teeth; and power resides in agility to reach the goal or escape the danger. Existing fishes are marked by an activity that was unknown in the ancient oceans, and justify the observation of Moquen Tandon, that "the agitation and inconstancy of the sea seem to have impressed themselves on the beings which live in its waves, in the suppleness, rapidity and vivacity of their movements."—*Popular Science Monthly.*

Washington.

HEALTH OF THE DISTRICT.—The number of deaths reported to the Health Department the week ending September 11, was 91. Of the decedents 52 were white and 39 were colored. The annual death rate of the total population was 17.1 per thousand inhabitants, being for the whites 14.3 and for the colored 23. There were 4 fatal cases of malarial fever; 6 of typhoid fever; 5 of diphtheria, and 5 of whooping cough, 2 from pneumonia and 7 from consumption.

WASHINGTON ASYLUM HOSPITAL.—Dr. McDonald, resident physician at the Washingron Asylum Hospital, has resigned, and Dr. Stewart Johnson has been appointed by the Commissioners to fill the vacancy.

PHYSICIANS RETURNED TO DUTY.—The following have returned from vacation: Dr. Samuel C. Busey; Dr. Frank Hyett; Dr. James C. McGuire; Dr. S. O. Richey; Dr. Chas. R. Collins; Dr. J. Tabor Johnson; Dr. W. W. Johnston. Dr. Linn E. La Fetra is on a brief visit to the National Capitol, and will shortly return to his post at the N. Y. City Hospital. Dr. James D. Morgan has returned from a brief visit to Montreal, where he attended meeting of the British Medical Association.

COLUMBIA HOSPITAL.—Dr. J. F. McGrath has resigned the office of Resident Physician at the Columbia Hospital and Dr. Wm. E. West of New York, formerly resident physician of the Central Dispensary and Emergency Hospital, has been appointed to fill the vacancy.

Hospitals.

ST. ELIZABETH'S HOSPITAL at Baker City, Ore., has recently been opened for the reception of patients. It is under the control of the Sisters of St. Francis, and will supply a long felt want for hospital facilities in eastern Oregon.

NEW YORK is to have a new home for girl cripples, to be established by the Sisters of the Annunciation, on Washington Heights. The summer home is St. Elizabeth House at Riverbank, seven miles from Stamford, Conn. Here the beneficiaries are taken on the first of May and remain until October. The new house is an old-fashioned residence with large rooms and verandahs on three sides.

THE CHARITY HOSPITAL, New Orleans, is the recipient of $75,000, given by Mrs. Richard Milliken, widow of a wealthy sugar planter, to found a children's building, including a kindergarten.——The Telfair Hospital, Savannah, Ga., reopened September 1, after having been closed two months for improvements.——The Cottage hospital, Des Moines, Iowa, reopened September 1.——The new St. Francis' Hospital, Hartford, Conn., opened August 27.——Conneaut, Ohio, now has a long needed public hospital in the Lyon Hospital just completed.——The Pennsylvania Hospital, Philadelphia, cared for 1,661 emergency cases, treated 1,536 in the out-patient department and 304 in the hospital wards during August, 1897.——The Massachusetts General Hospital is to receive $750,000 from the late Henry Pierce of Boston.——St. Joseph's Hospital was dedicated at St. Joseph, Mo., September 8, an addition having been built at a cost of $4,500.

Societies.

The following recent meetings are noted:

Connecticut—The New Haven Medical Society, ninety-four years old, held its regular session in that city, September 1.

Indiana—The Miami County Medical Association held a meeting at Peru, August 27.

Iowa—The Plymouth County Medical Society was organized at Le Mars, August 24. The Polk Medical Society met at Des Moines, September 7. The Southwestern Iowa Medical Society held a regular session at Osceola, August 19.

Maryland—The Baltimore County Medical Society met at Towson, August 19.

Michigan—The September meeting of the Academy of Medicine of Kalamazoo was held September 7.

New York—The Cortland County Medical Society's quarterly meeting was September 9, at Syracuse. The Medical Society of the County of Queens held its quarterly meeting at Long Beach, Long Island, N. Y., on the afternoon of August 31. "The Diagnosis and Treatment of Fractures" was the chief subject discussed.

Ohio—The Belmont County Medical Society held a meeting at Bellaire, August 31. The Morrow County Medical Society's regular session was held at Gilead, September 6.

Pennsylvania—The twentieth annual reunion of the Pennsylvania and Maryland Union Medical Association was held at York, August 26. The Reading Medical Association's annual meeting was held August 30.

Rhode Island—The Rhode Island Medical Society held its quarterly session at Providence, September 2.

Tennessee—The Sweetwater Medical Association held a regular meeting September 9, at Madisonville.

CHANGE OF ADDRESS.

Bowers, C. E., from Wichita to Anthony, Kan.

Haskin, H. P., from Gaines to Mansfield, Pa.

Martin, Thomas C., from The Lennox to cor. Prospect and Kennard Sts., Cleveland, Ohio.

Porter, G. H., from Benton, Wis., to Steamboat Rock, Wis.

Stewart, F. E., from Detroit, Mich., to care Merck & Co., University Place, New York, N. Y.

Winterbotham, W. H., from Salina, Kan., to 2101 W. Adams St., Chicago.

LETTERS RECEIVED.

Ames, Delano (3), Baltimore, Md.; Anderson, P. L., Chicago; Ayer N. W. & Son, Philadelphia, Pa.

Burrage, W. L., Boston, Mass.; Biedler, H. H., Baltimore, Md.

Caldwell & Co. (Inc'd), New York, N. Y.; Cokenower, J. W., Des Moines, Iowa; Cordell, E. F., Baltimore, Md.; Crafts, Leo M., Minneapolis, Minn.: Collins, A R., Allentown, Tenn.; Colorado Sanitarium, Boulder, Colo.

Dudley, W. H., Easton, Pa.; Drevet Manufacturing Co., New York.

Furay, Chas. E., Chadron, Neb.; Fassett, C. W., St. Louis, Mo.; Fair, H. D., Red Key, Ind.

Griffith, J. P. Crozer, Philadelphia, Pa.; Gardner, Ben. S., Marsden, I. T.: Grube, W. W., Toledo, Ohio.

Hollister, O. C., The Dalles, Oregon; Helfman, Joseph, Detroit, Mich; Hogler, Elmer E., Springfield, Ill.; Holmes, Bayard (2), Chicago; Hazlett, E. E., Abilene, Kan.; Hull & Co., W. H. H., New York, N. Y.; Hobday, W. A., Halstad, Minn.

Jones, Thomas S., Louisville, Ky.

Kress & Owen Co., New York, N. Y.

Loar, L. T., Darbyville, Ohio; Luckey, J. E., V[illegible]n, Iowa; Laycock, L. C., Alexandria, Ohio; Lord & Thomas, Chicago; Love, I. N., St. Louis, Mo.

Mackie, L. V. G., Attleboro, Mass.; [illegible] I, Chicago; Munson, Edward L., Fort Assin[illegible]bo[illegible] A., Clearfield, Pa.; Morse, S E., Dixon, Cal.; [illegible] Canada.

Newman, H. P., Chicago; Newmen, [illegible] owa; Noble, Thomas B., Indianapolis, Ind.

Ohlmacher, A. P., Gallipolis Ohio.

Pennington, H. V., London, Ky.; Potter, N. B., Boston, Mass.

Reed, R Harvey, Columbus, Ohio; Rand, D. H., Portland, Oregon.

Schofield, J. F., Shirleysburg, Pa.

Woody, Samuel E., Louisville, Ky.; Wilford, H. B., Marshallville, Ohio; Wade, J. T., Arlington, Neb.; Waller, J. J., Oliver Springs, Tenn.

THE PUBLIC SERVICE.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending September 11, 1897.

Surgeon F. Rogers, detached from the Boston Navy Yard October 4 and ordered to the Norfolk Navy Yard.

Medical Inspector J. L. Neilson, detached from the Norfolk Navy Yard September 30 and ordered to the Boston Navy Yard October 4.

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ADDRESS.

THE WORK OF PASTEUR AND THE MODERN CONCEPTION OF MEDICINE.

Delivered at the Sixty-fifth Annual Meeting of the British Medical Association, Montreal, Aug. 31 to Sept. 4, 1897.

BY PROF. CHARLES RICHET.

DELEGATE OF THE FRENCH GOVERNMENT AND OF THE FACULTY OF MEDICINE OF PARIS.

[From advance sheets of the British Medical Journal.]

It is not without emotion that I rise to address this learned assembly. I know indeed that I am addressing men who are not my fellow citizens, but among them are some, the children of our old French nation, who have the same mother tongue as we; they speak from childhood our beloved French language; they are therefore a little more than my fellow citizens, for they are my compatriots, and I feel myself animated by a truly fraternal affection for them, and as to my English colleagues they have given us evidence of so much good will and of a courtesy so delicate that I need make no great effort to assure them of my gratitude. In one word, although a stranger I seem to be among friends.

I am somewhat troubled also because I am addressing medical men and I am speaking before a medical congress. Now, although I belong in some small degree to the great medical family, since my father has conferred honor upon the profession of medicine by his labors and by his works, and although I have the great honor to be the delegate of the Faculty of Medicine of Paris, yet I am not a medical man, and a physiologist displays some temerity in venturing to speak before you on medical matters.

Still I have an excuse. It is this, that I desire to attempt to bring about a complete reconciliation between medicine and science. It may seem that this is commonplace and that any such attempt would be quite unnecessary. But it is not so, gentlemen. We might find perhaps somewhere, not I am sure, in this assembly, medical men ready to assert unhesitatingly and that there is discord between medicine and science, that all those sciences which are called ancillary, as physics, chemistry, physiology, are impediments with which the clinician has nothing to do. Yes, there are to be found in the world medical men, among them men of even high accomplishment, who are ready still to say: "What have I got to do with your experimental science? Observation of the sick and clinical study are worth more than all your clever experiments, and it is not from laboratories that the means of curing disease can come." Such an opinion appears to me to be erroneous, and I would with all the energy which I possess help to upset it. I hold that it is by experimental science alone that medicine has made and can make progress. It will suffice to describe the work of Pasteur, my illustrious master, in order to give you a convincing demonstration of this.

I shall not be contradicted when I say that the value of this work is greater than all that the history of medicine has given us since the commencement of our era. Through his labors everything has been renewed, regenerated, and, thanks to him, medicine has made more progress in the twenty years than has been made in the twenty centuries.

Louis Pasteur was born at Dôle in the Jura in 1821, and at the beginning of his career consecrated himself to the study of chemistry. He became deeply interested in a difficult and important problem—molecular dissymetery. Here was a question in pure chemistry which would seem to take us very far from medical questions, but it was to lead Pasteur directly to the study of fermentations. If a solution of tartaric acid (in the form of tartrate) be left untouched a change occurs after some time in the chemical constitution of the liquid, which before Pasteur's time had been overlooked. The original solution has no action on polarized light, but after fermentation this same solution has become capable of deflecting polarized light. Pasteur explained this phenomenon by showing that the original tartaric acid is a mixture of an acid deviating light to the right with an acid deviating it to the left, and that a process of partial decomposition takes place; one of the acids is destroyed and the other is not altered, so that the action upon polarized light previously absent by the mixture of the two acids becomes evident. Here we have a fundamental experiment. It is told how, when the young Pasteur desired to show it to Biot, that great physicist who had discovered the phenomena of polarization, the old savant grasped the trembling hand of the young man and before beginning the optical examination of the crystals submitted to him by Pasteur, said to him with tears in his eyes. "*Mon cher enfant*, I have loved science so much that in face of the beautiful experiments which you relate to me I can not prevent myself from being deeply moved."

The explanation given of this phenomenon at that time was that the tartaric acid was decomposed by fermentation. Men were then content to use this magic word, which appeared to explain everything, but which in reality told nothing at all. Neither Lavoisier, nor Liebig nor Frémy had been able to discover its meaning, and were reduced to holding a theory of half organized matter, a childish conception worthy of Paracelsus.

One of Pasteur's experiments, perhaps the most beautiful which he ever made, demonstrated the nature of this mysterious phenomenon. If a sugary solution of carbonate of lime is left to itself, after a certain time it begins to effervesce, carbonic acid is evolved and lactic acid is formed, which decomposes the carbonate of lime to form lactate of lime. This lactic acid is formed at the expense of the sugar, which disappears little by little. But what is the cause of this transformation of sugar into lactic acid? Well, Pasteur showed that the efficient cause of this chemical action was a thin layer of organic matter; that this layer of organic matter consisted of extremely small moving organisms which increased in number as the fermentation went on. Their growth it is, then, which produces the phenomenon of the transformation of sugar of milk into lactic acid. If, for example, we take a sugary solution in which all preexisting germs have been destroyed by heat, no lactic fermentation will take place. But if we introduce into this sterile liquid a small quantity of this layer of organic matter, such as could be obtained from any liquid in which normal lactic fermentation is taking place, we shall see the lactic acid again form rapidly in the new solution.

Let us dwell a little on this admirable experiment. Now-a-days it seems to us so extremely simple that we can scarcely perceive its importance. It seems to us now, in 1897, that from all time we must have known that an organic solution when heated was sterile, and that a germ would suffice to render it capable of fermentation. But this is a mere delusion; no, a thousands times no! This great fact of the generation of germs, was absolutely unknown before Pasteur, and the method of sterilization of liquids and of their inoculation with spores was revealed to us by Pasteur. It is the nature of great discoveries that they become popularized in a short time and thus very soon become elementary. A first year's medical student knows perfectly that which neither Lavoisier nor Liebig, nor Frémy, nor any one before Pasteur, had been able to perceive. One is always tempted to be ungrateful to great discoverers, for their revelations fall rapidly within the domain of common knowledge. They become so simple that they cease to surprise us. We do not think of being grateful, and we forget the efforts which genius has had to make to wrest the truth from jealous Nature. Gentlemen, let us not be ungrateful; let us remember that the recognition of the real cause of all fermentation (the development and germination of organized elements) dates from 1857 and from the celebrated memoir of Pasteur upon lactic fermentation. A new world was then opened to science.

Nevertheless this memoir of Pasteur, containing one of the fundamental discoveries of the century, was not welcomed as it ought to have been. At first its importance was not understood and afterward absurd contradictions were opposed to it. A whole series of beautiful and decisive experiments were necessary to prove that there was no such thing as spontaneous generation, and that sterile liquids remained sterile indefinitely so long as no germs were introduced into them. Pasteur devoted six years (1857-1863) to the proof of the fundamental fact that "organic liquids do not alter until a living germ is introduced into them, and living germs exist everywhere."

A great step yet remained to be taken. This was to determine the evolution of these germs, not merely *in vitro* but in the living organism. We to whom the idea of parasitism and microbic infection is now so familiar can scarcely conceive that it has not always been thus. The microbic theory has become so ordinary, so popular, that we are tempted to believe that the part played by microbes was understood even in the times of Hippocrates, but I assure you that in truth this was not the case, and for long enough after Hippocrates, the power of microbes was not known. Pasteur, to whom, to Sedillot and Littré, we owe the word microbe, was the first also to explain to us in his essay on the silkworm disease, published in 1867, the part they played in the production of disease. He proved that the bright corpuscles found in the bodies of diseased silkworms are living germs, a distinct living species, a parasite which can multiply and reproduce itself and disseminate the contagion.

It was therefore with painful astonishment that I heard Prof. Marshall Hall recently say that the discovery of the part played by micro-organisms in disease was due to Koch and dated from 1876. Now, ten years before this, Pasteur had published his experiments in *pébrine* and *flacherie.*

Davaine had shown the part played by bacteria in anthrax infection, and the idea of infection and of contagion by microbes in the higher animals as well as in the lower had become a common place, not indeed in the medical world, but in all laboratories.

Thus, by successful steps, did the work of Pasteur develop in all its greatness and logic. In the first place, in order to elucidate a chemical problem he studied tartaric fermentation, then he was led to study lactic fermentation, and he showed that they were biologic phenomena. He then pursued the analysis of this phenomena with all its consequences and was led to the conception of disease, due to the development of a parasite.

The normal living being follows out its course of growth without the development of any organic parisite in its tissues or in its humors. But if these humors or tissues happen to be inoculated with an organism capable of developing, then this small living thing multiplies the higher organism infected, and the whole body becomes as it were a culture fluid, in which the pathogenic microbe propagates itself, a center of infection which scatters the disease by sowing the noxious germs wherever it goes. Thus arose the new conception, profoundly new not only for medicine but for hygiene—*Disease is Parasitism.* From thenceforth we understood the meaning of the words "infection" and "contagion," previously mysterious.

It is true that Pasteur did not discover all the microbes of all contagious diseases, but this is of small moment since he was the first to discover that infection was a phenomenon of microbial parasitism. All those who after him have proved points of detail, however important or fundamental they may be, have but followed the path traced by the master. Whether they will or not, they are all the pupils of Pasteur, as those who follow the study of chemistry are pupils of Lavoisier.

The greatest of Pasteur's disciples, Robert Koch, although with some ingratitude he refuses to recognize his master, has only perfected certain points in *technique* and applied his ingenuity and his perspicacity to the solution of questions which in spite of their practical importance are still secondary. He has not, in fact, been able to do anything new except upon points of detail; all that is essential comes from Pasteur himself.

Need I say that this idea of the microbe, of the parasite, has become the basis of medicine. If we take up treatises on pathology written before this prodigious revolution, we shall be astonished by the insignificance and the nothingness of these very ancient books. Yet they are not really very old, they are dated 1875 or 1880, but as one reads them it seems as though several centuries must have intervened between these venerable writings and modern books. I know an excellent article on tuberculosis written in 1878, before the microbe of tuberculosis had been discovered. Well, this article belongs to another age, it belongs no longer to medicine, but to the history of medicine, for it swarms with mistakes and incredible errors with regard to pathologic anatomy, etiology, prophylaxis, treatment; in fact, from every point of view.

In ten years medicine has been entirely overturned and re-made. It is being re-made every day. Every day brings some new discovery in matters of detail, but the great principle is always there and it must always be attributed to the one initiator.

This is not all. Another new and great discovery was to be made by Pasteur himself, and to constitute the supreme development, the culminating point as it were of his life's work. This is the principle of vaccination. By a series of researches, admirable for their precision, Pasteur proved that the pathogenic microbe could be attenuated, that is to say rendered incapable of causing death. But though this microbe does not cause death, yet it can produce the disease; a disease sometimes so attenuated as to be almost imperceptible. Now the living being which has suffered from this attenuated disease is protected against its more serious forms and borrowing the word consecrated by the immortal discovery of Jenner, Pasteur said that we have here *vaccination.*

Fermentation, infection, contagion, vaccination; here in four words we have the work of Pasteur. What more need I say? Do not these four words possess in their simplicity unequaled eloquence?

Can any one longer maintain that the progress of medicine is not due to experimental science? Does not all this knowledge of microbes and of the part which they play in disease imply immediately and necessarily immense progress in therapeutics?

ANTISEPTIC SURGERY.

To take but one example, I will cite the application of microbial theories to surgery.

There was a time when erysipelas, purulent infection and hospital gangrene decimated those upon whom operations had been performed, when puerperal infection claimed a terrible number of victims. It seems to us now-a-days that the medical profession before 1868 were blindfolded and that their blindness was almost criminal. These are now no more than historic memories. A sad history, doubtless, but one which we must look at coolly in order to understand what science can do for medicine. Left to their own resources, practitioners of medicine during long centuries could do nothing against erysipelas, against purulent infection, against puerperal infection, but basing itself upon science surgery has been able to triumph over those odious diseases and to relegate them to the past.

Let me here introduce a reminiscence. When on the occasion of his jubilee, a great celebration was prepared for Pasteur in the Sorbonne, in the presence of the leading men of science of the world, there was a moment when all hearts were softened—the moment when the great surgeon who was the first to perceive how to apply to the practice of his art the theory of pathogenic parasites, when Lord Lister drew near to Pasteur and gave him a fraternal embrace. These two great benefactors of humanity, united in their common work, afforded a spectacle never to be forgotten, a striking reconciliation of medicine with science.

But the apogee of the glory of Pasteur was the discovery of the new treatment of hydrophobia. No one of his scientific conquests was more popular, and from France and from the whole world there arose a long cry of admiration. Perhaps in the eyes of biologists this discovery possesses less importance than his labors with reference to the fermentations and to vaccination, but for the public this was the chief part of Pasteur's work. And men of science also were forced to admire the scientific courage of Pasteur, who putting aside the precise methods which he had bought and discovered knew how to devise new methods to meet the exigencies of the circumstances and how to put them victoriously into practice.

Thus was finished the work of Pasteur. He was spared to take part in the triumph of his ideas and to be a witness of his own glory. If, like so many discoverers, he had sometimes in his earlier days known conflicts and hatreds and petty quarrels and foolish objections, nevertheless he had not to deplore the ingratitude of mankind. He died full of honors, surrounded by admiration, respect and love. For him, renown had already commenced when he died.

And now let us turn back to consider the indisputable union of medicine and of science. This in fact is what ought to strike us in the work of Pasteur. It is not only in general biology and in the progress of our knowledge that his work is great, it is still more in its immediate practical applications. The great biologists of our century, Lavoisier, Claude Bernard, Darwin, have without doubt left behind them work which by reason of its conquests of new births is not inferior to the work of Pasteur, but these new truths do not lead to any such immediate application as antisepsis, the treatment of hydrophobia, anthrax, vaccination, or the prophylaxis of infectious diseases. Pasteur was not only a man of science, he was also a benefactor, and there is scarcely one who can be compared with him as a benefactor of suffering humanity except Jenner, who found out how to preserve thousands and thousands of human beings from the most hideous of all diseases.

Further, Pasteur brought back medicine into the true way of science, even after Magendie, Müller, Schwann and Claude Bernard, it might still have been asked whether all these experiments establishing so many important truths had really been of any advantage for the relief of the sick. To discover, as did Schwann, that living beings are an aggregate of cells; to prove as did Claude Bernard that the liver forms sugar; to establish as did Darwin that living species can be transformed by the influence of long accumulated variations in the environments, these are admirable pieces of work, but work in pure science which had not any immediate therapeutic results. Strictly speaking then it was possible to maintain that clinical medicine did not derive any benefit from such investigations. I do not for a moment believe that this opinion had a shadow of a foundation, but before the time of Pasteur it was not so absurd as it has become since Pasteur. Since Pasteur no man can, without incurring the charge of monstrous inaptitude, refuse the rights of *citizenship in medicine* to experiment and to biology.

And to speak the truth, men of science and biologists, as though their ardor had been redoubled by the renovation of medical ideas, have during these last ten years made discoveries which have introduced into medical science new elements which clinical observation alone had been absolutely incapable of discovering. I will cite a few examples—the action of the thyroid gland, the Roentgen rays, pancreatic diabetes and serum therapeutics.

Physiologists had shown long ago that the ablation of the thyroid gland led to serious results. Schiff had proved this as long ago as 1857, but the explanation of the phenomenon did not become clear until Claude Bernard, but especially Brown-Sequard, had demonstrated the existence of internal secretions of glands which pour into the blood their products that probably neutralize certain toxic substances. This led Vascole and Gley to inject into animals from whom the thyroid gland had been removed, the juice of the thyroid, thus prolonging their existence. The therapeutic conclusion to be drawn was obvious, namely, to treat the unfortunate subjects of cretinism or of diseases of the thyroid gland by the injection of extracts of the thyroid body. You know the result has been most happy.

This new treatment was a true experiment and as is the case with so many experiments the result has been a little different to that which was expected. The ingestion of thyroidin is not only a means of curing goiter and cretinism, but is also a treatment sometimes remarkably efficacious for obesity.

THE ROENTGEN RAYS.

The discovery of the Roentgen rays excited general enthusiasm. The research was made and success obtained, and as a matter of fact it is one of the greatest discoveries in contemporary physics. Now, you are not unaware that this Roentgen ray has been called to play a part, if not in the treatment, at least in the diagnosis of diseases, the importance of which goes on increasing from day to day. Physicists have discovered the principle, it is for medical men to follow up its application.

PANCREATIC DIABETES.

The existence of pancreatic diabetes was suspected vaguely by a clinical physician, Lancereaux, but the means which clinical medicine and pathologic anatomy placed at his disposal did not give him the power to solve the problem. In spite of his perspicacity he could do no more than note a certain correspondence between diabetes and the lesions of the pancreas. How could more have been learnt if we had not the resource of experiment? Two physiologists, Mering and Minkowski, have had the good fortune to show that ablation of the pancreas determines glycosuria, to show that there is a pancreatic diabetes, and they have studied its various conditions with great ability.

SERUM THERAPEUTICS.

I come now to serum therapeutics, a direct consequence of the labors of Pasteur. This is a mode of treatment born of experimental method alone. Here again science has done for the art of medicine that which clinical observation, left to its own resources, could never have accomplished.

Permit me now to show how serum therapeutics is derived directly from physiology and experiment, and pardon me if I am forced to speak of my own work; I shall do so I hope without any vanity. I know very well that we always owe to our predecessors and to our rivals much more than our pride admits, and that the experiments and the ideas which succeed are not always those which have been conceived methodically.

About 1887 M. Chauveau had shown that French sheep could contract anthrax, and that they are very easily infected by the bacillus anthracis, the microbe of anthrax, if small quantities of the bacillus be injected under the skin. But Algerian sheep seem to be safe from the disease. In vain is the bacillus anthracis injected into them; they do not contract anthrax. They are refractory to this disease and possess a remarkable immunity to it. Having reflected on this strange fact I framed the hypothesis that the cause of the immunity of the Algerian sheep, which are absolutely similar from the anatomic and zoologic point of view to French sheep, depended upon chemical substances contained in the blood, and that in consequence we might hope to confer immunity on French sheep by transfusing them with the blood of the Algerian sheep. It is, however, difficult to make experiments on sheep. Therefore, with my friend Hericourt, who has been throughout the researches my tireless fellow-worker, I took animals of two different species, the common victims of physiologists—rabbits and dogs.

Just at that time we had been studying a microbe nearly related to the staphylococcus albus, the staphylococcus pyosepticus, which in rabbits produces enormous subcutaneous swellings when injected under the skin and causes death in 24 or 36 hours. The dog on the other hand seems to be almost refractory to inoculation with this microbe. We therefore attempted to transfuse the blood of the normal dog into rabbits by intravenous injection, but this operation did not succeed, for the transfusion of dog's blood into the veins of the rabbit even in a dose of only ten grams rapidly causes death.

It then occurred to us to resort to peritoneal transfusion in place of intravenous transfusion. In this way we were able to introduce into the organism of the rabbit 50 or 60 grams of dog's blood, and had the good fortune to see the experiment succeed completely. Rabbits transfused with the blood of the normal dog survived the inoculation of the microbe for four or five days, and the rabbits transfused with the blood of a dog vaccinated against the microbe did not die, and were in fact hardly ill at all.

This experiment, which was made on Nov. 5, 1888, is as it seems to me the very basis of serum therapeutics. It in fact proves that the blood of animals refractory to a disease contains chemical bodies which counteract the effects of the specific pathogenic microbe of the disease, and we understood its importance from the first, for having established the general pathologic principle we resolved to apply it to a disease of man.

For several days, then, Hericourt and I debated the question whether we should experiment with one or other of the three diseases—anthrax, diphtheria or tuberculosis. Unfortunately we decided for tuberculosis. Its microbe is easily cultivated and, as you know, it produces greater ravages among men and animals than any other disease. We set to work at once, but, as you will understand, time was required before we could obtain definite results. Still, in a year's time we were able to show that the injection of dog's blood into rabbits retarded enormously the development of tuberculosis. It was, nevertheless, necessary to pass from experimental physiology to human therapeutics. Taking advantage of an observation of Bouchard, to the effect that the serum of refractory animals is as active as the whole blood, we were able to inject the serum in tuberculous diseases. The first sero-therapeutic injection was made by us on December 6, 1889.

At first we had for a time great hope. Yes, in truth, for several weeks we believed that we had discovered the heroic treatment of tuberculosis. For several weeks the various patients that we had under treatment found that their strength was renewed, that their appetite returned, that their weight increased and that cough and expectoration disappeared almost completely. But, alas! it was no more than a transient improvement. A month, or a month and a half, later the pitiless disease resumed its course and the sero-therapeutic treatment turned out to be inefficacious. Happily, while by the most diverse plans we were in vain searching for a method of treating tuberculosis by serum, a German experimenter, Behring, after studying the effects of the serum of refractory animals upon diphtheria showed (in 1892) that this serum is wonderfully efficacious in the treatment of the disease. He applied the serum method of treatment not only to diphtheria, but also to tetanus, and at first in animals and afterward in man he obtained results which were really marvelous. Gentlemen, you know the rest and I need not tell you that this sero-therapeutic method improved and popularized by Roux in 1894 is now a treatment without compare. The statistics on this head are absolutely conclusive. The mortality of diphtheria, which was 45 per cent., has fallen to 15 per cent. That means for the city of Paris alone an annual saving of about one thousand human lives; for the whole of France nearly ten thousand lives. We may take the same proportion for Italy, Germany, England, the United States, Canada and Russia and may estimate the number of infants which serum therapeutics snatch from death at about fifty thousand.

In other diseases the results of serum therapeutics have been much more open to criticism and it would be necessary in order to arrive at a satisfactory conclusion to discuss them in detail. I can not attempt to do this here for it would be an abuse of your patience. I will content myself by venturing the opinion that the last word has not yet been said about serum therapeutics. The organism is endowed with marvelous power of resisting the poisons secreted by microbes. It sets to work in its turn to secrete counter-poisons which neutralize the poisons secreted by the microbe. The antitoxins of the organism combat the toxins of the parasite, and in the future the art of serum therapeutics will be to seek in these resisting organisms the antitoxins fabricated by their cells.

Thus on whatever side we turn we find that medicine has always been guided by experimental science. By experiment and by science it is compelled to march forward. This was true in the time of Harvey, for that immortal physiologist had to meet the opposition of physicians. This was true also in the time of Lavoisier, when by a few decisive experiments he proved the chemical nature of the phenomena of life. But how much more true is it at the present time, since Claude Bernard and above all Pasteur have by experiment laid open a whole world and had warranted us in conceiving the widest hopes for the future of medicine!

The part of the man of science and of the physician are very different. The physician ought to be conservative, applying methodically the teachings and the precepts which he has received. He has no right to experiment upon his patients or to permit human life or human suffering to be risked on fantastic theories. But the man of science ought to be a revolutionist. He ought not to be content with the doctrines which he has been taught. The opinion of the master ought to be but a light weight upon his mind. He ought to seek on every hand for facts which are new and even improbable. Darwin says somewhere that he made the experiments of a fool, and often it is right to attempt that which appears contradictory to all the most received and classic opinions. Without this spirit of adventure, without this scientific daring which opens up new horizons there is no progress.

The task of the explorer or of the pioneer is not that of the physician. He ought to be careful to keep himself abreast of all scientific progress in order that his patients may have the benefit of it, but he can not advance the progress of science, save within restricted limits. Having no right to experiment he is almost powerless to solve the difficult problems which arise.

It is the duty of the chemists, the physicists, and above all the physiologists to grind medicine into the new ways. They have not to take the heavier responsibility of a human life upon their shoulders and nothing ought to check their audacity. You, gentlemen, have not the right thus to be audacious, you need prudence and moderation, and convinced as I am of the power of the experimental science I still think that the applications which the chemists or the physiologists suggest to you should only be accepted with considerable caution. It costs us nothing after a few experiments which have succeeded fairly well to say to the physician, "Try that on your patients." Upon knowing very well that our responsibility is *nil* and that the ancient axiom *primo non nocere*, an axiom which ought to be your strict rule of conduct, does not in any way apply to us. You see, therefore, that it would be unjust to make it a matter of reproach to physicians and surgeons that they have not made great scientific discoveries. This is not their mission. It is theirs to relieve human suffering and to seek among new scientific truths that one which is most proper to relieve or to cure the sick.

Nor can I understand how any one should have wished to create an antagonism between medicine and science. To suppose that they are in contradiction is to show that we understand nothing about either the one or the other. It is not reasonable to assert that the one is superior or inferior to the other; they are different in their means and in their ends. They are mutually complementary and both are equally necessary.

If I were ill, most assuredly I would not seek the assistance of a chemist or a physiologist, and medicine is not to be learned from the books of Claude Bernard or of Pasteur. Clinical instruction is necessary, such as long observation of patients alone can furnish. Prophylaxis, diagnosis, prognosis, therapeutics are not to be learned in scientific books. Something else is necessary—observation, long, patient observation, the old Hippocratic observation, without which there could be no good physician. Young students must be guided in the examination of patients by experienced practitioners and no one I presume would be guilty of the folly of proposing to replace the clinical ward by the laboratory.

But without laboratories the clinical department must remain incapable of scientific advance and this condition of stasis is most assuredly undesirable.

For in spite of all the progress which has been made, much yet remains to be done. Are not tuberculosis and cancer, for example, the opprobrium of medicine? I appeal to all medical men here present. Is there any one of you, gentlemen, who in the presence of such painful modes of death, does not feel himself humiliated to the bottom of his soul by his powerlessness?

Well, this feeling of our present powerlessness against disease ought to stimulate us to work. The work to be done is enormous, and we must none of us grow weary in our work. We physiologists must seek new facts; we must seek and seek again, seek always without being afraid of the boldest hypotheses and without putting any limit to our audacity, without troubling our heads as to the practical consequences which may flow from our discoveries, having only truth, divine truth, for our object. You, gentlemen, it is your duty to follow with the warmest interest both the general effect and the detailed results of biologic discoveries, in order to attempt to find some practical application. From this unceasing collaboration progress will be born. But it is necessary that men of science and physicians should both be animated with these two governing sentiments—faith in science and love of man.

ORIGINAL ARTICLES.

PERSONAL OBSERVATIONS AND EXPERIENCE WITH DIPHTHERIA ANTITOXIC SERUM.

Presented in the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

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In view of the American Pediatric Society's collective investigation on the value of the antitoxin treatment of laryngeal diphtheria, and the favorable comments it is calling forth from the medical press everywhere, the subject seems trite before such a body of representative medical men of our country. The committee of the Pediatric Society spared no pains in making their report, which includes only undoubted cases of laryngeal diphtheria treated with antitoxin, and deserves the highest commendation from the entire profession, as it will undoubtedly be the means of saving many lives by conducing to a more general and better employment of diphtheria antitoxin. The report shows that in operative cases of laryngeal diphtheria before the introduction of antitoxin 27 per cent. recovered, while when antitoxin is used 73 per cent. recover. The committee made the significant statement that even so high a percentage of recoveries is too low, from the fact that many practitioners still lack confidence in the remedy, and either from procrastination on their part or objections on the part of friends use antitoxin too late; others employ the remedy timidly and in too small doses, often one-tenth to one-fourth of the required dose being administered. Dillon Brown in his reply to the report said he fully agreed that the report shows a mortality from laryngeal diphtheria entirely too high, and that in his personal experience from Sept. 1, 1896, to April 1, 1897, the percentage of recoveries in laryngeal diphtheria under antitoxin treatment was 94.7 per cent., only one case out of twenty having died.

Regarding the opposition to the remedy, a report so favorable, resulting from the most crucial of tests made with the greatest care and impartiality, would seem an adequate reply. It is not more than was to be expected, that a remedy promising so much should meet with the keenest opposition. In this, diphtheria antitoxin has simply shared the fate of every distinct advance in medical science. Vaccination, anesthesia, hypodermic medication, antisepsis and the germ cause of disease are only a few notable examples. That antitoxin should still meet considerable opposition is not to be wondered at, considering the short time since its introduction.

The physiologist, the biologist, the bacteriologist and the chemist have all been working hand in hand toward a scientific treatment of diseases based upon the germ theory. The antitoxin treatment of diphtheria is an outgrowth of their researches, is founded on facts which were never universally accepted by the profession, and is employed only by the hypodermic method of medication, which still meets the most vigorous opposition in many communities. "The foundation of the treatment with antitoxin rests on the fact—and it is well to keep in view that it is a fact—that the blood serum of animals immunized against certain diseases contain substances called antitoxin, which when injected into healthy animals will give immunity to the same disease. Further, not only will the serum confer immunity to later infection, but will if not given too late prevent the otherwise fatal outcome of the disease in animals already ill." ("Am. System of Practical Medicine," Loomis and Thompson, vol. 1, p. 692.) "The power of the diphtheria antitoxin to neutralize the poisonous effects of the diphtheria toxin in animals is, as stated before, an absolute fact which has been shown to be uniformly true in thousands of experiments. We have every reason to expect that since the toxin in human diphtheria is, so far as we can determine, exactly the same toxin as that in diphtheria in animals, this power of antitoxin to make the toxin harmless will manifest itself in man under similar conditions." (*Ibid.* p. 693.)

It is evident that the physician who can not accept what he still calls the "germ theory of disease" is not open to conviction even by what Virchow designated the "brute force of figures." It has been well said that there are today probably not over four or five active opponents to the antitoxin treatment of diphtheria, whose names were known to the medical profession before the introduction of antitoxin.

That antitoxin is fully specific in experimental diphtheria is a matter beyond all peradventure. The bacteriologist will today inoculate a number of animals with the same culture of diphtheria bacilli; in half he allows the disease to run its course. The animals go through all the characteristic symptoms of the disease and die. In the other half he stops the process by an antidotal dose of antitoxin and the animals show none of the symptoms of diphtheria and live. If he does this fifty times with the same result, and if fifty bacteriologists all over the world do the same thing with the same results, who will attempt to say that antitoxin is not specific in these instances? If a dose of antitoxin affects inoculated lower animals so favorably is it not reasonable to suppose that it will do the same thing for infected man?

The report comes to us from all parts of the civilized world of hundreds of thousands of cases of diphtheria treated with antitoxin with wonderful success, and these cases represent every phase of the disease, in all seasons of the year, in all possible variations of climate, and under the supervision of thousands of different physicians. Will any one attempt to dispute the honesty, sobriety and judgment of all these medical men? Has there ever been a parallel of antitoxin in all the annals of medicine? Has any drug ever been so uniformly accepted and so unanimously endorsed in so short a time by the profession as diphtheria antitoxin? In spite of all of these facts and the convincing figures of the American Pediatric Society we still see some adverse criticisms in our journals. Usually these critics have not tried the remedy and condemn it only on general principles. If they have tried the remedy and found it wanting in any particular it is because their cases were not a fair test or they used the remedy too late in the disease or in too small doses, or used a poor quality of the serum.

My own experience with antitoxin began Sept. 22, 1894, when I injected a child 8 years of age with 2 c.c. of Aronson's antitoxin on the tenth day of the disease. This was the first case treated with antitoxin in Philadelphia. The antitoxin was supplied by Dr. Lewis Jurist, who had recently received it from New York. It was of the strength of fifty units to each cubic centimeter, or one-tenth that I now use. Dr. Jurist had seen the case with me the day before, confirmed the diagnosis and suggested using the specimen of serum. The test was by no means a fair one. The dose, 100 units, was entirely too small and administered too late in the disease. The child died on September 24, and two days later I myself contracted diphtheria and was disabled for five weeks, but did not have antitoxin used in my own case, as there was none to be had in the city. The first case treated successfully was that of Dr. Muehleck, Oct. 2, 1894, and virtually constitutes the first legitimate trial of the serum treatment in the city.

Since July, 1895, I have used antitoxin in thirty-five consecutive cases of diphtheria freely and persistently. In every case a bacteriologic examination was made by another and disinterested physician and the clinical diagnosis thus confirmed. All of this bacteriologic work was done by the Board of Health physicians, and all the cases showed the Klebs-Loeffler bacilli with the clinical history of true diphtheria. In addition to the thirty-five cases of true diphtheria one dose of antitoxin was administered in eight cases which showed every aspect of true diphtheria, but in which the bacteriologic examination revealed no Klebs-Loeffler bacilli. For this reason these are excluded from this report; but I wish to say that all recovered. The pseudo-membrane in the majority of cases promptly disappeared and the antitoxin seemed to have only good effects. Besides administering antitoxin in five cases for other physicians which are not included in the above thirty-five, I immunized twenty-eight persons, none of whom contracted diphtheria.

It is not my purpose to speak at length of the clinical history of each case, but simply to classify them and report only the special points of interest in a few of the cases.

There were six cases of membraneous croup or laryngeal diphtheria with one death. The fatal case occurred in a child of four and one-half months, who was attended by a homeopathic physician for five days prior to the time when I saw it. It seemed as if the child would live only a few minutes, so severe was the stenosis. I immediately intubated and injected 1,000 units of antitoxin. The patient was much relieved by the tube, rested comfortably and even took some nourishment. In six hours I injected 1,000 units more in the hope that I could counteract the effects of the toxins, but thirteen hours after intubation the child died from broncho-pneumonia and exhaustion.

All my cases except the fatal one were injected on or before the fourth day of the disease. Two were injected on the fourth day, twenty-one during the first twenty-four hours, ten during the first forty-eight hours, one on the third day, two on the fourth day and one on the sixth day. The ages of the patients varied from four and one-half months to twenty-eight years. Two of them were 2 years or under, fifteen were between the ages of 2 and 4 years, twelve between 4 and 10, and six more than 10 years of age.

The amount of antitoxin used at each injection was regulated largely by the conditions. If the case seemed to be a bad one or had continued a length of time, a large initial dose was given. Frequently 2,000 units were given to a child 3 years of age and repeated in twelve hours if the patient had not improved sufficiently. I preferred to give too much rather than too little; that is to err on the side of safety to the patient.

Concerning complications in these cases I have only to say that since employing the serum treatment I see comparatively few complications in diphtheria. One of the above cases which developed a rather serious complication was that of a little boy 3 years old, who was injected on the fourth day of the disease. The child was suffering from laryngeal diphtheria and the parents were told by an experienced physician who, however, had not used antitoxin in the case, that the child could not recover. When seen at midnight the case seemed hopeless. The patient was bringing into play all of the extraordinary muscles of respiration. I intubated at once and then injected 2,000 units of Extra Potent antitoxin. I remained with the child myself for several hours to study the effects of the remedy and if necessary remove or reinsert the tube. It was truly a pleasure to note the change in the child's entire condition. Respirations became easy and regular, his countenance was more natural, and he fell into a restful sleep. When seen the next day he was comparatively comfortable and had taken quite freely of milk and whisky. I, however, injected 2,000 units more ten hours after the first injection and allowed the tube to remain forty-eight hours. I found it necessary to administer a third dose on the fourth day, making in all a total of 5,000 units. This patient developed suppurating cervical glands from streptococcus infection, also paralysis involving the faucial muscles and the muscles of the lower extremities, but is perfectly well today.

In all my cases the urine was examined at the time the antitoxin was injected, and forty-eight hours after if it was possible to secure a specimen. Not a single case examined showed kidney complications after the injection if they were not present prior to the administration of antitoxin. I do not believe the kidneys are ever effected by the treatment, but that when the urine shows the presence of nephritis this is the result of the diphtheria, or that the condition existed prior to the disease.

With the exception already noted, my experience has been with the Philadelphia product (Mulford's) and recently entirely with the concentrated form. I can fully endorse what has been said by the American

Pediatric Society and others regarding the superiority of concentration in antitoxic serum.

In studying the literature of the opponents to the antitoxin treatment of diphtheria the two facts to be noted are, first, that the great mass of it belongs to the first two years of the antitoxin period; and second, that in recent criticisms the tactics are entirely different from those in the earlier charges. I may state here that in taking up this subject I had before me a complete file of all the claims of the opposition, and that no pains have been spared in studying each feature and attaching thereto its full importance. While time does not permit, nor indeed the occasion demand, that every detail be taken up, I purpose to select those claims which, to the physician unfamiliar with the production and value of the remedy, seem to have most weight.

The earliest charge was that antitoxin is only another product of the German laboratory and that it possesses no more value than did "Koch's lymph." As the figures from the hospitals where it was being tried disproved this assertion and the remedy began to be employed in private practice, every conceivable ill effect was ascribed to the remedy. A summary of these so-called ill effects, it is to be noted, contains every effect which classic descriptions of diphtheria ascribe to the disease. Matter of this kind makes up the mass of the early literature and is the great reference library to the physician who can not accept the germ cause of disease, or who is otherwise by principle antagonistic to progression in therapy and who wishes to place himself on record as opposing a "fad."

The occasion of much of the displacement of cause and effect was an early misconception of the non-toxic character of antitoxin. In the process of production it was reasoned, contrary to facts, that the horse was inoculated with the disease (diphtheria), and that the serum employed is consequently not the serum of health. The bacillus diphtheriæ, after developing powerful toxin, is killed by the addition of 1 per cent. trikresol or 2 per cent. carbolic acid, and the dead bodies of the bacilli filtered out of the bouillon containing the toxin, so the pure toxins only are injected; the horses can not, therefore, be given diphtheria any more than a patient taking strychnia could have a tree of nux vomica grow from him.

Since the volume of testimony in favor of antitoxin has become so large, the opposition is narrowed down to one or two of several claims here briefly stated: 1. Antitoxic serum is a foreign body in the system. 2. We do not know the nature or mode of action of the remedy. 3. It is uncertain in action and occasionally disastrous in effects. 4. The virtues of antitoxic serum are due wholly to the preservative contained.

Blood serum is not a foreign product in the animal economy, a fact which can not be stated of quinin, morphin and a thousand other recognized remedial agents.

Antitoxin has been found in small quantities in normal blood and in mother's milk.

It is true that we know little of its nature, except by its effects; yet this is equally true of other remedies, notably electricity. We do not know specifically how it acts, nor do we know how many other remedies act. But we do know that it either acts by neutralizing the toxins secreted by the diphtheria bacilli or by rendering the system tolerant to these toxins.

The claim that antitoxin is uncertain in its action arises from a failure to appreciate the therapeutic application and limitations of the remedy. In point of fact, diphtheria antitoxic serum is one of the most certain remedies in modern therapeutics, and this is the testimony of thousands of physicians who are relying solely upon it. As one of many who could be quoted, I present this by Dr. Wm. H. Park, professor of Bellevue Medical College: "I have seen, in watching more than 1,500 cases, no serious effects upon the heart, kidneys or nervous system which could be attributed to antitoxin, with the possible exception of two cases of scarlatina complicated with diphtheria. In these cases there was complete suppression of urine, which was probably due to the scarlet fever and diphtheria and not to the antitoxin." ("Practice of Medicine," Loomis and Thompson, Vol. I, fol. 701).

The so-called fatal cases, of which there are five or six that can not be satisfactarily explained because the proper data can not be secured, have called forth much of the recent opposition. One writer has seen in the use of antitoxin a possible medico-legal question, in face of the fact that every mortality rate where antitoxin was used shows a great saving of life. Dr. J. J. Kinyoun of the U. S. Marine-Hospital Service has stated that if antitoxin could have been secured and employed in every case of diphtheria in the United States during the past five years, at the lowest estimate 150,000 lives would have been saved. In this he but voices the sentiment of all the advocates of the serum treatment of diphtheria. Dr. Abraham Jacobi has said: "Nor is there a practitioner but has the right, or rather the duty, of giving antitoxin a place among his most reliable remedies. If present experience is confirmed by many more similar facts, it will be entitled to be claimed as a specific, though it have not the power to cure every case of diphtheria any more than quinin cures every case of malaria or mercury of syphilis" (Paper by Louis Fischer, *Medical Record*, Dec. 24, 1896). This statement was made before the supplementary report of the American Pediatric Society of which the *Medical News* says editorially, May 15, 1897: "The final word is spoken—a fact is before us." We have no other remedy that has half the evidence in its favor that diphtheria antitoxin now has, and the time is before us when the physician who ruthlessly permits his patients to die for want of a timely dose of antitoxin will be held chargeable at law.

Regarding these so-called fatal cases, Louis Starr writes: "That the antitoxin in itself is practically harmless may be considered as well established, in view of the countless number of injections that have been made (now numbering over a million, A. Jacobi) with but a few fatalities attributed to its use; and in these cases the evidence is either so complete as to clear the injection of all blame, or so incomplete as to allow of no positive deduction. The unpleasant effects occasionally noted, such as amorphous eruptions, fever and painful joints, are clearly due to the serum and not to the antitoxin; and as more concentrated serums are being put on the market these may be confidently expected to grow less in number, since the quantity of serum to be injected will thus be lessened in amount." ("Gould's Year Book of Medicine and Surgery," fol. 758.)

Various explanations of these cases have been advanced, but since the required data are wanting, none are satisfactory. The claim has been made that by error in the production of the antitoxin a trace of toxin in the serum remained and was the cause of the death. This is impossible for three reasons: 1. The horses are not bled till several days after receiving the last toxin, and then only if the trial bleeding shows the presence of sufficient antitoxin. 2. The presence of toxins could not escape detection in the delicate process by which all antitoxin is standardized before being bottled. Again, diphtheria toxins in their most virulent form do not cause sudden death. In the instances cited untoward symptoms appeared immediately and death followed within five or ten minutes after injecting the antitoxin. To say that the serum was contaminated by pathogenic bacteria will not adequately explain, because no germs found in nature are capable of causing death within a few days, while those produced in the more favorable artificial cultures can not cause death, even in small animals, within several hours. The cases simply remain unexplained, and must be considered incidental to the treatment and not accidental. They have their parallel in the instances of other remedies of which cases are not reported.

It will be recalled by many that fatality was frequently attributed to the hypodermic method of medication when first introduced, and that many physicians even now refrain from employing the hypodermic syringe in patients apparently moribund.

There is no means possible by which we can determine the amount of toxin which has been absorbed or secreted by the diphtheria bacilli in the patient suffering with diphtheria, and therefore the only safe thing to do is to give a quantity of the antitoxin which will be sufficient to neutralize any quantity of toxin that may be secreted. The remedy is a harmless one, and if any mistake is to be made it should be on the safe side of giving too large, rather than too small a dose.

Finally, the charge that the virtues of antitoxic serum are due to the preservative and not to the antitoxin, is one which answers itself. The fact that one brand of antitoxin contains no preservative and that another contains only a pellet of insoluble gum camphor is sufficient. However, serum is too unstable a product to depend on when not well preserved. That carbolic and phenic acid will not, when administered hypodermically, yield all the results claimed for antitoxic serum is sufficiently evidenced by the fact that it is nowhere so employed.

I can not close this paper without again referring to my unbounded confidence in antitoxin, which has been bred by personal experience and the favorable comments from numerous competent observers. I believe it will do more toward prolonging the average human life than any remedial agent discovered during the present century. In my first twenty cases I used other treatment in connection with the serum, but as my experience with antitoxin increased and as I witnessed the results obtained by it, I began to rely entirely on this remedy. I now approach a case of diphtheria with none of my former dread, and feel that if I can see a case reasonably early my results will be uniformly successful.

2501 Oxford Street.

The New York State Commission in Lunacy reports a slight decrease in cases. On August 1 there were 21,730 inmates of public and private asylums, while on September 1 there were 21,699.

STATISTICS OF SIXTY CASES OF TYPHOID FEVER COMPLICATED WITH HEMORRHAGE FROM THE BOWELS.

Presented to the Section on Practice of Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY ROLAND G. CURTIN, M.D.

PHILADELPHIA.

During the last twenty years I have kept large card boards on which were the headings of the more important points to be observed in connection with hemorrhage of the bowels in typhoid fever, and whenever a case occurred of which I could secure the data, it was placed under the appropriate headings. In thus tabulating sixty cases we have a chance to observe the relative frequency of symptoms and fatality, as well as the effect of location, season, climate, epidemics, and other conditions which have an influence on the disease.

In giving you a report of the sixty cases that I have collected, the first point to which I will refer will be that of *age*.

Between the	ages of	10 and 15	years	there were	3 cases.
"	"	15 and 20	"	"	9 "
"	"	20 and 25	"	"	15 "
"	"	25 and 30	"	"	15 "
"	"	30 and 35	"	"	9 "
"	"	35 and 40	"	"	3 "
"	"	40 and 45	"	"	4 "
"	"	45 and 50	"	there was	1 case.
"	"	55 and 60	"	"	1 "

You will observe that there are no cases reported under the age of ten years, but this may be accounted for largely by the fact that forty-eight of the sixty were drawn from hospitals where adults are generally treated.

The next point that I will consider is the sex of the patient. I find that the tables indicate that there were twenty-two females and thirty-eight males. In the Philadelphia Hospital, from which a large number of these cases were secured, the average number of male patients greatly exceeds the female, their statistics showing that, in the past ten years, 554 males, with 134 females, were treated. Taking the general statistics of the disease, the proportion of males would not be so great as this report would seem to indicate.

I published a clinical lecture in the Philadelphia Hospital Reports, in 1893, giving statistics of the first seventeen cases that I had gathered up to that time. Of this series five died and twelve recovered. Seven were treated at their homes and ten in the hospital, and of the five deaths but two were private cases.

In the last series of forty-three cases the mortality increased, twenty-three having died while twenty recovered. In five private cases two died, and in the hospital twenty-one died and seventeen recovered, making the mortality over one-half. What is the cause of this increased mortality?

These later cases have been collected since the introduction of the cold water treatment, which is used quite generally in the hospitals from which the cases were taken. In the private cases cold sponging was resorted to in every case reported in the last series.

Upon investigation I found that since the cold water treatment was instituted the number of hemorrhagic cases has considerably increased, according to the hospital records that furnish the data, and in addition the mortality of the hemorrhagic cases largely increased, viz., from five in seventeen, less than one-half, to twenty-five in forty-three cases or over one-half. Another factor that must not be lost sight of is that for the past eight years we have had in our midst the more or less constant influence of the epidemic of influenza, which has caused a catarrhal fever, accompanied in some instances by hemorrhage of the bowels. In two such cases I have had the opportunity of making autopsies, and I have the report of a third where hemorrhage of the bowels occurred quite early in the course of the fever, causing death. In one instance the hemorrhage occurred first on the sixth day and death on the eighth. In these three cases no evidence of any disease of Peyer's patches or solitary glands was discovered.

If this influenza is capable of causing hemorrhage, why could not the influence which it has been exerting on a large percentage of the population for the past eight years, be a factor in producing hemorrhage in typhoid fever with which it is often complicated? It is well for us to study these statistics, which seem to indicate that something is increasing the number of hemorrhagic and fatal cases of typhoid fever.

Let us see what the effect is following the free use of cold to the surface as is so universally done in the hospitals. When you take into consideration that the application of cold drives the blood from the surface of the body, it must necessarily be followed by an increased amount in the interior, causing a congested condition of the internal organs, and if there happens to be a blood vessel weakened or opened by the operative process, it may give way or a clot be dislodged and a hemorrhage follow. The necessary disturbance in giving a cold bath, or the reaction following it, may have a tendency to produce the same result.

On inquiry I find that in two of the tabulated cases the hemorrhage seemingly took place while the patient was in a bath, and in one case immediately after a bath. One hemorrhage occurred while the patient was in a cold pack, and two just after a cold sponge.

These statistics would seem to indicate that it would be well to avoid cold applications to the skin where there is a tendency to hemorrhage, or where it has already occurred. I would also suggest that during the third week, when the sloughing process is most active, the cold bath or pack, if used at all, be used with great care, avoiding sudden and marked impressions on the external circulation. We may in this way avoid making the case a hemorrhagic one.

Temperature and hemorrhage.—A study of the temperature shows that in twenty-six cases it was lowered by the hemorrhage, in nine there was no seeming effect; and in seven there was an elevation immediately after, while seventeen were not noted one way or the other. By these figures we find that the fall in temperature is the best index of the time that blood is being lost, if the amount be large.

The bloody stool usually takes place some time after the hemorrhage has occurred, especially if it has not been severe. We can easily imagine that a patient might have a small hemorrhage today and if he was at all constipated the blood might remain in the bowel for one, two, or three days before being discharged: therefore we must not necessarily think, when we see blood coming from the bowel, that the patient is having a hemorrhage at that moment, for he may then be safely over it.

Color of the blood.—In six cases it was reported bright red; in fifteen it was altered; clotted in one; first bright red and then altered in twelve cases; dark and clotted in eight; venous in one; bright and dark red mixed in three; tarry in seven; not clotted and then bright red in two; not noted in six.

When the blood is quickly expelled it is less apt to be changed than when it is retained for a time in the bowel, as it then becomes altered by the intestinal secretions.

The length of time hemorrhage continued was 2 hours in 1 case; 6 in 2 cases; 12 in 3 cases; 1½ days in 2 cases; 1 day in 15 cases; 2 days in 8 cases; 3 days in 6 cases; 4 days in 2 cases; 5 days in 1 case; 6 days in 4 cases; 7 days in 1 case; 8 days in 1 case; 10 days in 1 case; till death in 1 case, and was not noted in 12 cases.

The number of hours was 1 in 24 cases; 2 in 15; 3 in 4; 4 in 3; 5 in 3; 6 in 4; 7 in 1; 8 or more in 4; and not noted in 1 case. No doubt, in some of the cases, each passage was counted as a separate hemorrhage.

The day of first hemorrhage was 1 on the 6th; 1 the 7th; 1 1 the 9th; 3 the 10th; 1 the 11th; 5 the 12th; 4 the 13th; 2 the 14th; 4 the 15th; 7 the 16th; 2 the 17th; 2 the 18th; 3 the 20th; 2 the 21st; 1 the 22d; 1 the 23d; 4 the 24th; 1 the 26th; 1 the 29th; 2 the 30th; 1 the 33d; 1 the 35th, and 1 on the 10th day of relapse.

The day of second hemorrhage was the 7th in 1 case; 11th in 2; 12th in 1; 13th in 1; 14th in 4; 15th in 2; 16th in 3; 17th in 3; 18th in 2; 20th in 1; 21st in 1; 22d in 2; 24th in 1; 25th in 1; 29th in 2; 31st in 2; 34th in 1; 35th in 1; 38th in 1; not at all in 13; not noted in 9; 11th day of relapse in 2; and after the first 30 days in 1.

The probable total amount of hemorrhage was 2 oz. in 3 cases; 3 in 1; 5 in 1; 8 in 1; 12 in 2: 1 pint in 8; 1¼ pints in 6; 3 pints in 7; 1 quart in 4; 2 quarts in 8; 3 in 4; noted as profuse in 2; very severe in 1; small in 1, and not noted in 9.

Complications as follows occurred: Neuritis in 1 case; uterine hemorrhage in 1; malarial hematozoon found in 1; periostitis and phlebitis in 1; la grippe in 1; phlebitis in 1; furnucles, meningitis in 1; organic heart disease in 5; furuncles in 1; excessive nervousness in 6; purpura hemorrhagica in 1: pneumonia in 2; late epistaxis in 3; nephritis in 1; convulsions in 1; otitis media in 1; cardiac murmur in 4; perforation in 1; pulmonary congestion in 1; none in 14; not noted in 16.

Unusual epistaxis.—Marked in five cases; unusually present in eleven; not present in twenty-four; and not noted in twenty.

Hemorrhagic diathesis.—Marked in one case; suspected in 5; not noted in 16; and no suspicion in 38.

Sequelæ.—Acute phthisis in two cases; anemia and periostitis in one; prolonged convalescence in two; prolonged convalescence and anemia in one; furuncles in one; phlegmasia in one; periostitis in one; not noted in seventeen; and no sequelæ in seventeen.

The conditions that seem to indicate a fatal termination in hemorrhagic typhoid fever cases are:

1. A tympanitic condition of the abdomen with a continual discharge of black clotted blood. The blood vessels may sometimes be kept patulous by the distended condition of the intestines.
2. Associated renal trouble, which alters the blood in some cases, rendering it less coagulable.
3. Marked organic heart disease. The blood being impoverished and lessened in quantity is propelled slowly and the tissues are consequently imperfectly supplied with blood. Under these conditions a hemorrhage from the bowel becomes the "last straw that breaks the camel's back."
4. Cases of hemophilia. The blood is so altered that there is little likelihood of its being staunched.

THE RATIONAL TREATMENT OF SUNSTROKE.

BY W. H. WEAVER, M.D.

CHICAGO, ILL.

That our treatment of insolation is almost entirely symptomatic is evidence that there is some point in the philosophy of its appearance or in the pathology which has been overlooked. Symptomatic treatment always means either incurability or ignorance of the diseased condition. Often in our haste to find relief for the sufferer we neglect well-known facts and principles. That there should have been 2,038 deaths from sunstroke during the month or August, 1896, and undoubtedly an enormously greater number of unreported cases of milder degree making partial recoveries, indicates, at least, that there is room for improvement in its treatment. Secondary fever and headache, with a low form of meningitis, incapacitates many men who have not been killed outright by the stroke.

Resulting from the rapid transpiration through the lungs, and surface of the body containing 2,800 sweat glands to the square inch, there is a great reduction in the volume of the blood, as if in an evaporator. With the perspiration is lost a large amount of sodium chlorid, but very little, comparatively, of the waste matters and impurities of the blood. The loss of sodium chlorid diminishes the acidity of the gastric juice and it soon becomes inefficient. The drinking of large amounts of water during the process of digestion further reduces the digestive power and weakens the muscular coat of the stomach, resulting in its dilatation and gastro-intestinal catarrh. The continued absorption of the products of incomplete digestion thus loading up the blood with waste matters assists in the production of toxemia. The kidneys are sluggish because of the diminished quantity of blood. The scanty urine passed is as heavily loaded as possible with waste matters and is strongly acid.

Considering all these important factors, and possibly more, the resulting condition would be that of heat stroke or thermal fever, with great injury to the nervous system in severe cases. This high percentage of toxins and waste matters in the blood must be rendered innocuous. Nature attempts to do it by burning it up with a high fever. But as nature's fevers often get beyond control if allowed full freedom, we prevent a disastrous result by reducing the temperature of the patient. At one time venesection, free and copious, was practiced in India with such fatal results that it was abandoned. By this means toxic elements were removed from the body, but the percentage in the blood remained the same or increased from the lower arterial pressure and the increased inactivity of the kidneys. However, there is one case of which I have read the report but have since been unable to find it, where the blood removed was immediately replaced by the normal salt solution, with rapid and complete recovery of the patient. This procedure effectually reduced the percentage of toxins in the blood.

I would propose the use of artificial blood serum (Cheron's), which is always ready and requires no preparation except the aseptic needle and operator. Its use should be continued until the normal action of the kidneys is established, and the temperature reduced to nearly normal. By this means we restore the two elements lost in large amounts from the blood as a result of excessive heat. The treatment of remaining conditions or complications should be based on accurate knowledge of their causes. Dr. A. Lambert read a paper before the New York Academy of Medicine, May 20, 1897, in which he says that "the theory best suited to our present knowledge is that it is due to auto-intoxication, with heat as a contributing cause." This, then, ought to be the basis for the scientific treatment of the condition in all its manifestations. The initial treatment should probably always include the immediate use of the ice-cap and bath for high temperature and unconsciousness. Still, some cases die with low temperature while many recover from temperature ranging as high as 110 to 115 degrees F.; so that high temperature is not necessarily fatal, and it may be that if the theory of toxemia is made the basis for treatment, a much larger percentage of cases may be saved and make more rapid and complete recoveries.

126 State Street.

ANCHORING THE KIDNEY.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY R. HARVEY REED, M.D.

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF SURGERY AND CLINICAL SURGERY, OHIO MEDICAL UNIVERSITY; SURGEON TO THE PROTESTANT AND UNIVERSITY HOSPITALS, COLUMBUS, OHIO.

The frequent occurrence of hydro- and pyonephrosis warrants our study as to their cause and prophylaxis.

Hydronephrosis is the result of an occlusion of the ureters. This may be due to a calculus, adhesive bands, tumors, or by a kink obstructing the lumen to such an extent as to prevent the flow of urine from the kidney to the bladder. Experimentation by the author and others, where the ureter has been ligated in the lower animals, has demonstrated that the healthy kidney will endure an enormous amount of torture without undergoing degeneration. Under these circumstances it has been demonstrated that hydronephrosis may exist from ten to fifteen days with the kidney greatly distended without a breaking down of its substance. Notwithstanding this fact a continuation of the pressure will sooner or later be followed by pressure necrosis and pyonephrosis.

It is not my purpose in this paper to take up the question of hydronephrosis or pyonephrosis caused by calculi, adhesive bands, pressure by tumor, or by tubercular or pus infection. I shall confine what I have to say on these conditions to the causes arising from the mechanical obstruction due to the displacement of the kidney and their relief. While the congenital displacement of the kidney may be followed by mechanical obstruction of the ureter. we are apt to have this form of obstruction arising from a traumatism resulting in a kink of the ureter at the point of obstruction, and if not promptly relieved it may be followed by permanent obstruction resulting in inflammatory adhesions followed by hydronephrosis, and if not relieved, by pyonephrosis.

This brings us to the point of how we shall best relieve this pathologic condition. We all know, as in an ordinary hernia, it may be temporarily relieved by taxis or change of position so as to replace the kidney and by doing so relieve the obstruction for the time being. But also like hernia, it is liable to return, and while the patient may live for years in this condition we never know the moment a permanent occlusion may occur which will place the patient's life in jeopardy. If this be true, then we are justified in performing a radical operation whereby the kidney shall be anchored as near its normal position as possible.

Experience has taught the writer that like pessaries and trusses, abdominal palliative treatment which usually consists in abdominal bandages and compresses is of little or no value. While these are advocated in out text-books, and have been resorted to by many practitioners, I am of the firm belief that their use is of little or no value in giving permanent relief. It is only necessary to go to the cadaver and examine for ourselves to see that a bandage can not be placed over the abdominal cavity with sufficient firmness to hold the kidney in place, for the reason if the bandage be drawn sufficiently tight to press upon the anterior portion of the spinal column itself, it would still leave the kidney free to move underneath the bandage beyond any question.

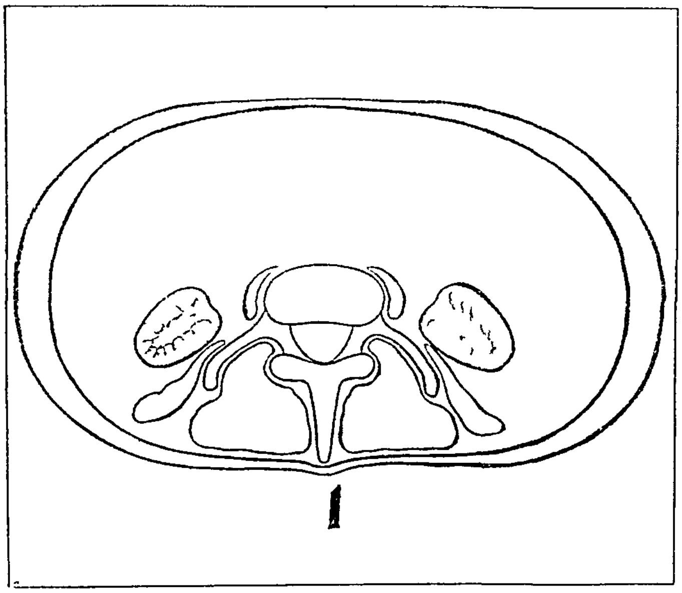

Diagram showing the relative relations of the kidney to the abdominal wall and the spinal column

A glance at the accompanying chart will aid in recognizing the fact that the kidney is so located, anatomically, as to be out of reach of general pressure made upon the abdominal cavity although that pressure may be of such a character as to press firmly upon the anterior and posterior portion of the spinal column. If this were done we all know that it would be followed by serious injury to the contents of the abdominal cavity, and to attempt to overcome this anatomic condition by the use of a compress would likewise be dangerous and useless.

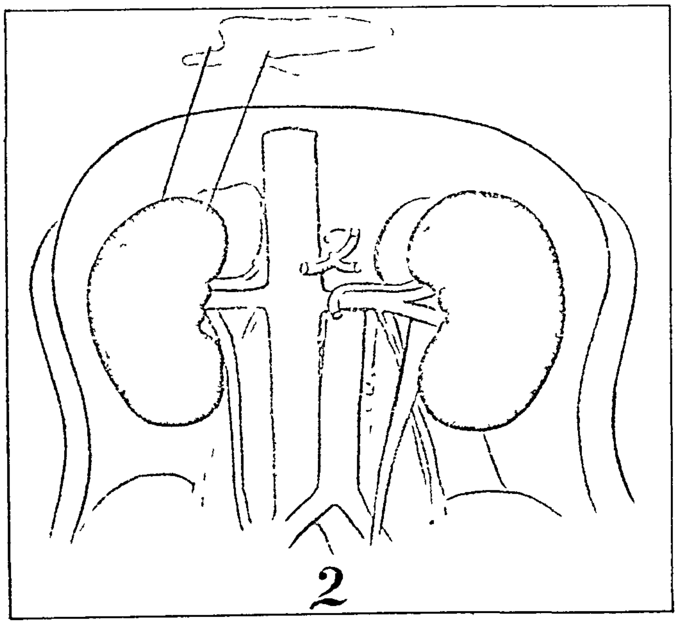

Diagram showing the insertion of the needles through the upper part of the kidney, one needle being inserted at a time.

I realize that there are objections to the radical cure of a floating or loose kidney, but I believe on the average, there is less danger to the patient who submits to a radical cure than to allow this condition to exist taking the chances of hydro- or pyo-nephrosis which is so apt to follow a chronic condition of this kind. The methods for anchoring the kidney, which have been handed down to us for ages in our text-books, entail difficulties which I have endeavored to overcome and, while this method contemplates the opening of the abdominal cavity, I feel justified in advocating this procedure under the present advanced stage of aseptic surgery especially when the method proposed is so much more simple and so much easier performed.

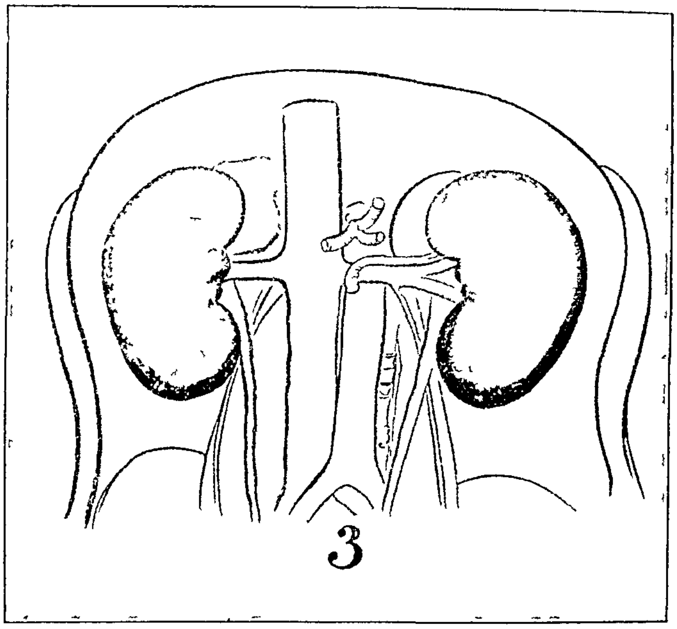

Diagram showing the anchor after it has been placed, as seen from the opening in the anterior abdominal parietes

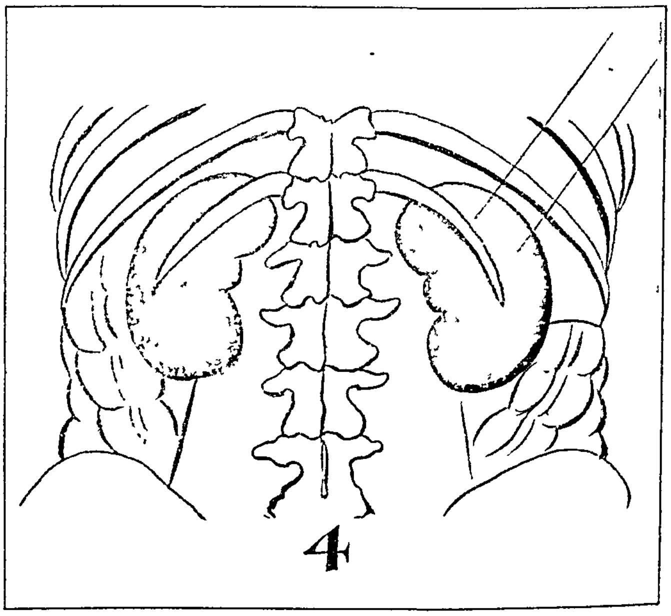

Diagram showing the exit of the needles posteriorly between the 11th and 12th ribs.

Notwithstanding the attempts at describing this method in previous papers, I feel that the description has not been clearly understood, basing the same upon the numerous letters I have received from members of the medical profession in different parts of the country. For this reason I endeavor to make this method more clearly understood by the accompanying illustrations.

In making this operation very few instruments are required. All that is necessary is a scalpel, two or three hemostats, a pair of small retractors and two straight needles which I have had made especially for this purpose, each one of which should not be less than six inches in length. These needles should be placed one at each end of a single suture which may be sterilized silk-worm gut, silk, kangaroo tail or catgut.

In making the operation a small incision is made in the abdominal wall over the normal position of the kidney. Usually this opening need not exceed two and one-half inches. The intestines are turned to one side and the kidney brought up or down, as the case may be, to its normal position, when the needles are passed through the cortical substance and brought out between the eleventh and twelfth ribs on the back. By referring to diagram No. 2, the position of these needles will be observed as they appear from the front.

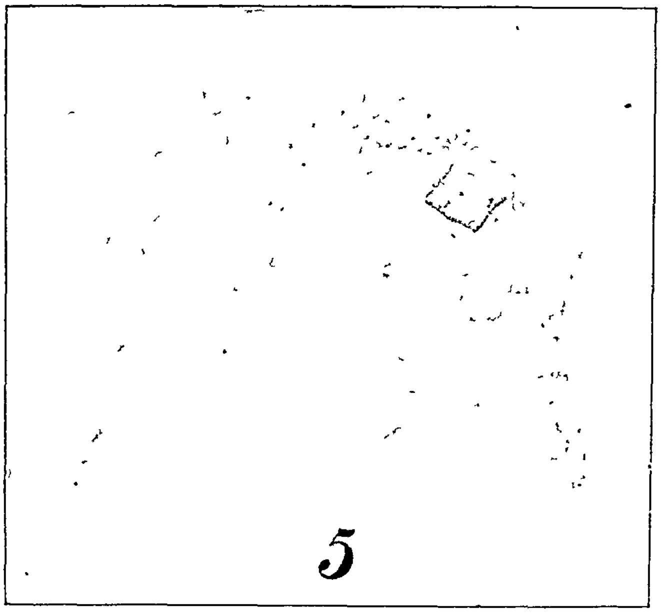

Diagram showing the ends of the anchor tied across a piece of gauze on the back, and the approximate position of the kidney.

Referring to diagram No. 3, the position of the suture is shown, as seen from in front, while plate No. 4 shows the approximate position of the needles as they make their exit posteriorly.

After having passed the needles through the kidney, the lumbar muscles and the integument, the assistant makes traction on them until they have passed entirely through all these structures. In the meantime the operator should place his finger under the ligature and by the touch satisfy himself beyond a question that it does not include a loop of the intestine. It should only include the peritoneal covering of the kidney and the kidney itself. He should also guard against drawing the suture too tight, but just sufficiently taut to hold the kidney in place.

The ligature should be tied over a piece of gauze (see diagram No. 5) to prevent unnecessary irritation of the skin. There is nothing left to do now but close the abdominal wound, allow the suture to remain from ten days to two weeks, when it can readily be removed, which leaves the kidney free from all foreign substance. If deemed necessary two or three sutures may be inserted, but I have not found it necessary to insert more than two in any case I have operated on, and in the majority of cases I have only used one, with the most satisfactory results.

In conclusion I would recommend:

1. The radical operation for anchoring the kidney rather than trust to the palliative treatment.
2. The use of the double spear or staple suture, as demonstrated by the accompanying illustrations, in preference to any form of lumbar operation.

DISCUSSION.

Dr. I. N. Quimby—I would like to report a case in which the kidney got loose some time after it had been anchored, and this was doubtless due to the inflammatory action which was set up. I must not speak against the bandage as I think it does much good by compression.

Dr. J. D. Thomas of Pittsburg—Putting a ligature on the far side of the kidney to bring it up against the back is a good method, provided you feel sure it will stay there. The bandage does not cure the patient but gives some comfort. A certain number of cases will necessarily relapse.

Dr. Reed—In comparing my method with that of Dr. Thomas I must say that I think it a very advisable one, although there are some objections. The principal one seems to me to be due to the fact that the surgeon does not always find the kidney just where it should be, and another objection is the time it takes. It matters not how you anchor the kidney, you will have the same difficulty in getting it where you want it and holding it there. In my method there is no slipping up or down of the kidney, and you have it fixed so that it can not move after the first suture is put in. The simplicity of my method is a great point in its favor. In any method we must have adhesions formed in order to have the kidney remain in place. I have never had any trouble with the operation and I hope that the gentlemen will be kind enough to try it.

ROENTGEN RAY SKIAGRAPHY.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY DE FOREST WILLARD, M.D.
PHILADELPHIA, PA.

Professor Goodspeed has very properly emphasized the importance of the study of normal living anatomic delineations. Even surgeons are not familiar with the appearance of the living skeleton *in situ*, and for accurate comparison we assuredly require a series of skiagraphic normals.

I was in my first efforts greatly puzzled in the interpretation of conditions either plainly or indistinctly seen in the skiagraph, and even after considerable experience am obliged to study with great care each representation in order to differentiate the abnormal from the normal conditions.

Although skiagraphy is a most valuable assistant to the surgeon, yet a word of caution is necessary. It has been most conclusively shown that the position of the tube, the direction of the rays, the method and time of the exposure, the magnification of portions of an object not in contact with the plate, the elongation of shadows from distant portions of an object, together with other varied conditions, may so completely distort the resultant image that error is certainly possible. A fracture may appear to exist when a bone has not been broken; and on the other hand it has been shown that a known fracture produced by osteotomy is not discoverable. These facts make it imperative that the medico-legal value of these radiographs should be considered carefully, and pictorial evidence should receive only its due amount of consideration in connection with clinical evidence. Clinical evidence should have, and does have, large weight in the question as to results after fracture or other injury. Knowledge obtained by long experience and positive indications is far more valuable than any representation visible alone to the eye. A familiar example of this is seen in photography, an art which has obtained through many years a stage of great perfection, and yet representations taken by the same artist upon the same day of the same individual will yield results almost absolutely dissimilar; therefore, in suits for malpractice, while these skiagraphs may be useful, a single view is not indisputable evidence. The alleged deformity should be shown from a number of different points of observation, and comparison should be made with normal anatomic conditions. Recent callus is translucent to the rays and may appear falsely as a nonunion. Not only should the skiagraph be absolutely identified but all of the well-established rules of evidence should be rigidly followed.

Again, a simple deformity which does not interfere with function may not be of serious importance, and we have no right in the present state of our knowledge to compel a surgeon to secure results which were very probably unattainable under the conditions resulting from the particular form of injury or from environment. Valuable as skiagraphy is as an assistant to a surgeon, it is still a young science and its indications must be carefully and thoroughly considered in connection with clinical symptoms. A skiagraph is but one of a number of elements which will greatly assist a surgeon in arriving at a proper diagnosis and in the determination of the treatment to be employed.

FRACTURES AND DISLOCATIONS.—The importance of skiagraphy, particularly in fractures near the joints, is well illustrated by representations (shown on screen) which exhibit the difficulties in reduction and in retention of fragments.

For demonstrating fractures in the upper extremities the process is especially useful, and in hospitals where the patient can be taken to the scotoscopic room, the lower limb can also be readily skiagraphed. Doubtless an apparatus capable of transportation will soon be devised.

The progress of union in fractures can be steadily watched as the rays readily penetrate bandages, silicate of soda and even plaster-of-paris, although the latter contains lime. In non-union and in mal-union most valuable information can be elicited. In suspected dislocations where the local injury is great and the swelling considerable the advantages of this process are self-evident, and the necessity or non-necessity of operative interference is demonstrable.

In the present state of our knowledge, and with our well established clinical facilities for diagnosis, the securing of such deliniation, while very desirable, should not be considered an essential procedure, although frequently of great advantage.

In the difficulties surrounding injuries about the elbow-joint the assistance of anesthetics and the use of the rays will greatly simplify the problem.

The delineations of the thicker portions of the body are still only moderately clear; yet even fractures and dislocations of the vertebral bones, pelvis, etc., are recognizable.

In the skull the opportunities for misrepresentation are greater, but the difficulties will in time be overcome and the deadly and often undiscoverable fractures at the base may yet be made plain to our vision.

FOREIGN BODIES.—The detection of foreign bodies in the tissues is frequently a work of ease. Their location and depth is obtainable by pictures taken at different angles or by the device of comparative definition, such as has been shown by Prof. Goodspeed.

The locating of needles is still a problem (even though they are plainly visible in a skiagraph) since they are perfectly capable of being transferred from one position to another after the taking of the picture, and their habit of concealing themselves within the sheath of the tendons or of sliding in the tissues is well known. Many surgeons have missed a needle when it has been present in the direct area of operation. By taking views from different angles the relation to hard and soft parts can be determined with decided accuracy. Scott has proposed to take two pictures on different parts of the same plate; one end of the plate being covered with sheet lead while the other end is subjected to the rays; after which a second picture is taken on the other end of the sensitive plate without moving plate or tube. The varying angles of the object can thus be clinically determined or can be geometrically figured with accuracy (*American X-Ray Journal*, Vol. 1, No. 2, June, 1897, p. 41).

Two or three pictures taken at different angles, by tubes connected in series, will also give mathematical triangles for exact information.

Foreign bodies in the brain, esophagus and thoracic or abdominal cavities can often be thoroughly outlined, and by a series of rays even their depth may be located. With the fluoroscope also, a surgeon may during operation, especially in the esophagus, stomach or bronchi, bring to his help the immediate use of the rays and view and guide his instruments during manipulation.

A discouraging fact in the delineation of foreign bodies in the abdomen has been shown by Prof. Goodspeed in the case of the so-called "man ostrich" who had swallowed a large number of metal articles, belts, knives, etc., just previous to the application of the X-rays, yet only a darkened area was visible without any definite outline of the articles.

Drainage-tubes lost in the thoracic cavity are sometimes non-demonstrable, but after skilled adaptation of time of exposure are visible.

The placing of lead or other reference marks upon the surface to fix the location during skiagraphy is often of advantage in ascertaining distance from the surface. The process is also useful in locating the position of a collapsed lung in empyema and after thoracotomy, and the rapidity of expansion is not only interesting but an important addition to our knowledge.

BONE DISEASE.—The importance of the process in locating bone abscess, periosteal thickening, osseous growths, exostoses, etc., is undoubted and much information can be obtained, not only in regard to the shape, attachment, position, etc., but the question of treatment may be materially influenced.

JOINT DISEASE.—In joint disease, not only of minor articulations but in the larger joints, as the hip and knee, most important results are obtainable. Joint erosion of cartilage, destruction of the bone, etc., are as nearly visible to the eye as if the joint itself had been opened by the knife, and the question of excision, erasion, amputation or non-interference may be facilitated. Whether a joint should be allowed to remain anchylosed, or whether it will be safe to attempt restoration of motion can be very accurately decided by this process as I have previously exhibited ("Trans. Amer. Surg. Assoc.," 1896).

In hip diseases the non-existence of the head and neck of the bone, and the position and condition of the upper extremity of the femur can be readily determined. Old dislocations and fractures of the neck of the femur can be also shown with advantage.

In caries of the vertebra not only can the diseased area be located, but the outlines of the resulting abscess can be determined by withdrawing the pus and filling the cavity with iodoform emulsion, which will outline the thickened and darkened sides of the abscess cavity. In hip abscesses the same maneuver can be practiced.

In anchylosis of the shoulder great assistance can be gained by the simple representation. Osseous projections, nodules, callosities, etc., interfering with the restoration of the joint motion are readily shown. The process is also helpful in periostitis, in bone thickening and in demonstrating the cause of metatarsalgia. Epiphyseal separation can also be differentiated from dislocation.

In knock-knee, bow-legs, deficiencies of bone, irregularity of condyle growths, etc., the use of the process is invaluable.

In talipes the shape of the tarsal bones may be outlined and the form of operation decided upon (Willard: "Trans. Amer. Ortho. Assoc.," 1896).

In the foot, deviations of all kinds from the normal standard are demonstrable with the greatest ease and accuracy; and the same may be said of the hand.

Gall and Bladder Stones.—Gall-stones, renal calculi, enteroliths, etc., while decidedly opaque to the X-rays are frequently not discoverable when *in situ*. Their detection will largely depend on the skill of the operator and his technique. We have many things yet to learn in regard to outlining these abnormal bodies, but a few months will probably bring extended knowledge. The difficulties in the case of gall-stones are due to the fact that when surrounded by the medium of bile they are obscured. In renal calculi also close relation of the vertebral bodies and ribs may conceal the concretion. The different varieties of concretions require special care as to the time of exposure, etc. In the bladder, the bones of the pelvis also obstruct the view; but by passing the rays in the direction of the axis of the pelvis this difficulty may be overcome, as has already been shown in several instances.

It is scarcely necessary for me to speak of the advantages of this process in regard to the more strictly medical conditions such as aneurysm, dislocation of the stomach, the condition of the viscera, subdiaphragmatic abscess, etc.; or of its use in ophthalmology. Its employment is steadily advancing in importance.

Dangers.—The dangers following the use of the X-rays may be due to two causes. To an idiosyncrasy or to susceptibility to the ray's action; or as seems more probable to me from experience, the necessity for skilled knowledge on the part of the operator. In a large number of these skiagraphs, made for me by Prof. Goodspeed, I have never had the slightest difficulty, and the explanation of this seems to me to lie largely in the fact that Prof. G. keeps the tube twelve to fifteen inches from the body; while in the cases that have been burned I have known the tube to be placed only three or four inches from the subject.

Undoubtedly an inflammation extending to a suppuration or slow gangrene may be caused by too close application of the rays. This action is doubtless a disturbance of or an interference with, the nutrition of the part caused not by bacilli, but by an action akin to that produced by the chemical rays of the sun. Unfortunately the patient does not, as a rule, detect any special electric sensations, and only occasionally is the sensation of heat realized. The separation of the eschar is not unlike that of a burn, yet the action produced by these rays is probably one *sui generis*. The safe plan, therefore, is to allow for at least twelve inches between the skin and the tube during exposure.

PRACTICAL DIFFICULTIES OF PSYCHO-THERAPEUTICS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY G. V. I. BROWN, D.D.S., M.D., C.M.
DULUTH, MINN.

Last year, in a paper before this Section, I gave somewhat in detail a description of the various states of disordination accountable for psychic phenomena, designated by a variety of terms, significant for the present purpose by the possibility of their utilization in the department of therapeutics, and with this end in view I also cited a number of cases, illustrating beneficial results obtained in widely different affections by fixation of attention and suggestive therapeutics. At this time, therefore, I desire to eliminate discussion of elements of doubt and skepticism, together with confusion of terms and difficulties of definition that lead away from the practical side of the subject, and deal as directly as possible with the difficulties some nine years' experience have shown me must often be overcome to successfully administer this treatment.

In view of the fact that more or less wonderful cures have been effected through mental influence, why is not psycho-therapeutics more generally used? The answer must be not because of inefficiency, for efficiency in many diseases has been repeatedly demonstrated, but by reason of certain difficulties encountered in its use in daily practice, in the ability to overcome which lies the possibility of successful results. These may in a general way be enumerated as follows: 1. The almost endless variety of individual peculiarities among patients subject to functional neuroses. 2. Instability of impressions. 3. Counter influence of autosuggestion. 4. Increase instead of decrease of the most characteristic symptom, self-consciousness. 5. Danger of masking the symptoms of some organic disease until it may have progressed beyond curative interference, especially of a surgical nature.

At least a large proportion of patients requiring psycho-therapeutic assistance for nervous troubles are naturally of neurotic tendency, and though perhaps beyond all reproach with regard to mental unsoundness, are nevertheless so erratic and prone to peculiar notions, so flighty in the transmission and nature of their thoughts, that the individual equation becomes indeed a very uncertain problem, and to such natures this treatment often seems at [illegible] to be [illegible]ularly suitable. They will accept [illegible] [illegible]ual eagerness and for a time [illegible] remarkable degree, deceiving both themselves and the operator, as their imaginations play upon the fancied improvement. Yet, by reason of the very lack in brain development, imperfection of the nervous elements, or whatever the original reason of deficiency may have been, there will be in like degree a want of stability evidenced in the inability to retain permanently and beneficially suggestions given, and just as love sits lightly upon those whose affections have been transferred from one person to another in the course of numerous flirtations until its steady flame may have been utterly destroyed, leaving only the emotional reflection, so these patients who usually have passed from doctor to doctor, from remedy to remedy, as the history of their cases indicate, have simply been supplied with a new emotion, and in a little while the whole structure of hopefulness will collapse with apparently good results lost in despondency or given over for some new thing that they are about to try.

Among these are commonly the so-called subjects that hypnotists and mesmeric healers write about. Just as they tend to extremes in other matters, so in hypnotism they pass more readily into the deeper states, exhibiting catalepsy, strange actions and other phenomena significant of profound condition; yet, frequently, without nearly so deeply rooted a hold on their minds as will result from a healthful suggestion given to patients of another class who are not at all in a hypnotic state and who would not easily be put into that condition. Such cases are well adapted for description in books and essays, but for the practitioner with whom they continue to abide are most discouraging. In the treatment of this class one must place but little reliance on outward and visible signs of improvement. The operator must impress the fact that the process of recovery will necessarily be a slow one, and have himself understand that long, patient and continuous effort will be necessary to stimulate the development and strengthening of the weakened nerve elements and to overcome the habit of disease.

Another class, frequently the outcome of characteristics before described at an early stage, have abnormal hopelessness about their condition; look with skepticism on what they call theories and with every appearance of desire to further beneficial influence, have an inherent degree of obstinacy, the common associate of nervous disorder which sets up an almost insurmountable state of mental opposition. Often they seem anxious to get well. They frequently make an earnest effort to co-operate and facilitate the mental influence, yet will betray in some unintentional way the fact that there is a clearly defined idea in their minds, an auto-suggestion, that you will not succeed, with a certain inward satisfaction to themselves, unreasonable as it may seem, when they believe you do not accomplish the intended result. When told to sleep they resist the influence, though the eyes be obediently closed, and at the moment when they ought to slumber will open their eyes, usually with a peculiar smile that at once tells the story and explains the cause of the difficulty, yet in all other ways such a patient may be and commonly is quite open to the effect of suggestion. Therefore, to manage successfully one must either continue some method of concentration until physical or mental weariness shall overcome the resistance, induce some influence sufficiently poweful to effect the same result, two sometimes difficult things to accomplish; or must, as I prefer to do, seem to put great etress on sleep or some other suggestion which is understood by the patient to be significant of hypnosis or of susceptibility to your influence, but which is really of minor importance; and while the attention is thus fixed upon resisting this particular effect the best possible state of susceptibility is opened for other suggestions, which being incidentally given will usually show a surprisingly happy result. For example, a neurathenic patient may require rest and yet resist the direct effort to induce sleep, but if told that sometimes patients can not be put to sleep by merely being told to sleep and that in such cases generally a drowsy feeling comes on at a later hour, almost invariably such a patient will leave you filled with the idea that you could exert no great influence over him, yet will tell you later that he felt drowsy and fell asleep at about the hour you had indicated.

In almost every instance by the use of some simple expedient such as giving instructions to take a series of twenty full regular inhalations and exhalations, resting for a short period each time the given number is reached, or, better still, by massage one can assist the direction of attention as desired and avoid mental opposition in a great measure. Self-consciousness is the active irritant in neurasthenia, to the hypochondriac and to sufferers from disorders of nerve and muscular action.

It seems to be a simple matter, as described by a host of writers, to divert the mind into other channels; yet, as a matter of fact, it frequently taxes one's ability to the utmost to do this so-called simple thing. Since the very effort at concentration of attention will usually take its most accutomed form, thus increasing consciousness of trouble and, as has frequently happened in my own experience, methods of assisting mental control, successful in other cases, have quite unexpectedly caused in a few moments violent outbursts of weeping on the part of the patient or a hysteric condition quite beyond control for the time being.

One such patient described her case recently by saying, "it makes me pity myself." Usualty a gentle stroking of the head without trying to make noticeable suggestion for a time will do more to restore the natural equilibrium temporarily upset than anything else, while extreme patience and infinite tact must do the rest later on.

The very nature of this treatment, tending as it does to give hopefulness and encouragement, successful as it should be in relieving pain, reducing temperature and giving relief by allaying symptoms by which nature expresses to us the warning of disease, if, in reality, the condition be one of organic nature, despite the claims of Bernheim and others that organic changes can be accomplished in a state of deep hypnosis, its reliability could hardly be compared to the surgeon's knife, and if an early operation would otherwise have been called for, then how serious might be a treatment which by masking symptoms has delayed instead of facilitating diagnosis.

In conclusion: All of the difficulties described might be summed up into one general head by saying that the chief disadvantage of psycho-therapeutics in general practice, aside from the consideration of the possibility of danger of weakening mental influence, causing too great a susceptibility and becoming a factor in crime, which does not lie within the province of this paper, is the practicability of individualizing each particular case, and just in proportion as cases may be studied and treated with due recognition of individual requirements, so will also be the record of successful results.

A NEW METHOD OF INVITING SLEEP.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY J. B. LEARNED, M.D.
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A violent collision with the frozen earth, the result of my first drive with a newly purchased horse in 1880, took me out of the busy life of the every day and night practitioners. For many years, instead of experimenting upon a willing and paying class of the laity, I was experimenting upon an unwilling and non-paying member of the profession. I did not sample all the remedies of the "Dispensatory," but I sampled many remedies outside the "Dispensatory." Hot water, cold water, inside and out; lack of food and surplus of food; gymnastics in my room and gymnastics with the woodsaw in the basement in the night time, brisk walking in the halls and around the square before retiring, friction direct and indirect, long deep inspirations with and without the numberless mental occupations, as varied as the physical; all these I tried faithfully. I also read about insomnia, its causes and remedies It was during this blank interval, while I waited for power to return to me, that I raised the inquiry: Can we devise any means to turn off the belts from this little fragment of brain that insists on its automatic excursions day and night—this perpetual motion of a few cells of gray matter, that obstructs rest and prevents repair of the great whole? Can we by counteraction set up a motion elsewhere after retiring, that will bring an equilibrium of arterial and vital current so that sleep will come to our relief?

During this frame of mind, I experimented and practiced with muscle and will in many and divers ways after retiring: I had the whole bed, length and breadth. I directed various contractions and relaxations, and finally reached the conclusion that a systematized and well ordered method of muscular and mental activity would soon bring the conditions required—a sense of fatigue that precedes and invites sleep. A recumbent position furnished the best opportunity. Once asleep the point is gained. Who has not been dull and almost asleep before retiring, but wide awake immediately after disrobing and experiencing the gentle shock of the fresh sheets and changed posture?

Is it necessary to recite here the advantages of proper conditions of atmosphere and temperature of the sleeping room? I will assume not, but will say that open windows at all seasons, heat never turned on in my sleeping room and moderate bed-covering has come to be a necessity with me. This is my method:

Lying upon my back, with or without pillow, I reach for the foot-board and head-board at the same time. This brings into use many muscles that have not been on active duty during the day. I now raise the head half an inch, enough to realize that it has more weight than I first supposed. At the same time, by will power, I direct the respiratory process to a slower and deeper movement. I order about eight inspirations deep and full, in place of sixteen per minute. Every inspiration is recorded, counted. Thus the process begins of inviting the forces into new channels and relieving the old. At the expiration of ten to twenty inspirations the head has become so heavy you want to drop it. This you do. Immediately the right foot is raised a half inch from its resting place. The reach for the foot-board and head-board continues; the count of slow deep inspirations continues; the sense of fatigue of muscles engaged in lifting the foot and holding up the coverings continues. Here, as before, the foot, like the head, has become a dead weight and must go down. Now, immediately the left foot is elevated with all the previous conditions remaining. The reach downward and upward of foot and head is kept up, so far as power will permit without exhaustion. This foot remains up for the same length of time, the respirations being the clockwork. It goes down. You may now relieve the reach for foot- and head-board and use the muscle to elevate the trunk, holding it by resting upon heels and head and shoulders. This elevation of the central part of the body and rest upon the two extremes will call for change as all the former positions have done. By the same clock you have the time marked off and the body is again flat upon the back waiting new orders. Turn now to the right side reaching for head- and foot-board as before, and elevate the head half an inch by use of the lateral muscles of the neck and chest. At the expiration of the time the head goes down and the foot goes up by use of the lateral muscles. Change now to the left side and repeat what has just been accomplished by the muscles of the opposite side. You have now assumed eight positions and used a large majority of the whole number of muscles in carrying out your dictations. If you have not fallen asleep before this cycle is completed you may begin again and go over the same round. If you have already gone to sleep you will not be required to.

Other methods of procedures would answer the same purpose, undoubtedly, with the respirations guarded and uniformity observed, mind and muscle constantly occupied. There should be no periods of rest, no vacations. Thus fatigue comes inevitably and sleep follows. I know of no means so ready, so much at command, any time and anywhere, so inexpensive and so absolutely certain to induce sleep as this routine of mental and muscular exercise. It involves a principle. Following it, sleep appears to be inevitable. There is but one drawback; it requires some exertion, continuous mental and muscular exertion. The indolent will find it unattractive.

Some conditions of heart or nerve center may altogether contraindicate this method. The length of time employed in the several positions will vary according to the make-up of the individual. No one rule can apply to the robust and the exhausted as to the time spent in a given exercise, only that which measures the power of endurance. It is the sense of general weariness following persistent effort that brings the desired result.

DISCUSSION.

Dr. **Eccles**—I have been something of a victim to insomnia myself, have tried all sorts of plans and have studied, as far as I could, the causes of the trouble. Confining myself to my own experiences, I have observed that fear is the cause of insomnia with me. No matter how fatigued I may be on retiring, if the fear that I will have a sleepless night takes possession of my mi [illegible] able to sle [illegible] long as I have the fear no [illegible] good, [illegible] I get rid of this fear I can get to sleep. Anything that will divert the mind will accomplish this.

Dr. Woodbury—Any method which will take the place of reliance upon narcotic drugs in the treatment of insomnia should be heartily welcomed. In some cases a small amount of food, such as a glass of hot milk or a cup of broth, or even heavier food does all that could be wished. Dr. John L. Atlee, once President of the Association, told me that he used to suffer greatly from insomnia and had tried all the remedies that had been suggested to him; finally he found that by keeping a supply of water crackers in his bureau drawer, and when he could not sleep, getting out of bed and eating a couple of crackers while walking about the room would always enable him to get a good sleep when he went back to bed.

Dr. J. V. Shoemaker—There are times when not only the method which has been suggested by the reader of this paper will fail, but also when every other agent will fail, including the use of food and mental influences. It depends on the mental constitution of the patient what drugs or what influences may produce sleep. It has been my preference for several years to teach the use of other means in the place of hypnotics as a method of inducing sleep, on account of the great abuse of these drugs at the present day. At the present time the literature of medicine is filled full of new hypnotic agents which are recommended for the doctor to use. As I said before, these gymnastics will fail in some cases and succeed in others. I remember a case of a gentleman who had tried everything without success, including the use of food or hot milk, electricity and massage, mechanical movements and the modern hypnotic agents, but all failed to relieve his insomnia. I traveled with this gentleman, very much against my will, as he prowled around during the day complaining of his inability to sleep at night. We happened one evening to go into the great garden of Strauss in Vienna, and as the strains of music reached our ears I noticed for the first time an expression of tranquility on the face of my patient. That night he had a good refreshing slumber for the first time for years. What I want to illustrate by this case is the fact that different cases require different remedies. This was a patient who failed to receive benefit from massage, electricity, modern narcotic remedies, but in whom music accomplished the desired result. I believe that out of the multitude of narcotic remedies offered at the present day, there is not one which can be relied upon to positively succeed. One will succeed in one case, another in another. In ordinary cases taking a little food, in others applying mustard plaster, or as the old ladies used to say, "to tie onions to the wrists and feet would bring it about." So in regard to the suggestion made in the paper, I would say that in many cases it would succeed, but there are others where other agents or methods must be used.

Dr. Anderson of New York—The method calls to my mind Dr. Benwill's method of inducing anesthesia by rapid breathing, and it occurs to me that the result may be attributed to the accumulation of carbonic acid in the blood.

Dr. Learned—The method I advocate is not simply a means of producing muscular fatigue, because I have often been very tired and still suffered with insomnia. As regards the carbonic acid explanation, I would say that I only reduce the respirations to the normal rate during sleep, and there is no such accumulation of carbonic acid in the blood as has been suggested.

A NATIONAL MEDICAL SCHOOL.

Presented in the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY ALBERT S. ASHMEAD, M.D.

NEW YORK.

A wolf in sheep's clothing could not be more dangerous to the shepherd's fold than the enemy which confronts the general body of practitioners today. Accumulation of wealth in a few men's hands and the drifting of these men to the cities, is one of the causes which render the endowment of medical schools, the founding of hospitals, easier than ever. The medcal schools will obtain from rich men money to build Smith clinics, Jones maternities, or Robinson hospitals or operating wards. In the expenditure of such funds, the medical man who obtains the superintendence ceases to be independent; he becomes, as a rule, the retainer, if not the sycophant of the rich man.

In times of yore a student starting the study of medicine appeared at college, after having read with his preceptor, a general practitioner in the country, for from one to three years. Today preceptorships have ceased to exist, otherwise than nominally. The student only starts his studies after coming to the college, and usually drifts at once into a specialty. With a compulsory four years' course in our medical schools has come the demand for academic degrees before matriculation. Such men after graduation are not likely to settle in the villages and be satisfied with general practice; the majority of them will wish to settle in the cities and try specialties. The country practitioner will go entirely out of existence, or if he does survive, he will fall into contempt as a failure as an educated man. Hospitalism and specialism are enemies of general practitioner work.

Should an immoral or otherwise unworthy man apply to any of our schools for matriculation, is there one of these schools (in the absence of direct charges) that will refuse to matriculate and graduate him? Not one. I know a school, one of the most eminent of the schools, which had among its third course students (it was a college requiring three years attendance) a man who had committed an abortion, a fact which was reported to the president of its alumni association. When this student came up for graduation he was conditioned on two branches; when he came up again he was again conditioned. Then he went to a rival school, took out a course of tickets, was put on the *ad eundem* list, and soon afterward graduated. This man is today practicing in New York City, and holds a position on the staff of a prominent hospital.

Rivalry will increase with the needless multiplication of our medical schools; only rivalry here will do quite the contrary of what competition does in other branches. It will simply be detrimental, as the above instance shows.

Is there a legislature in any State of the Union which will refuse to charter a new medical school if the application is backed up by reputable medical men and money? Not one! They do not ask whether the supply keeps step with the demand.

We have too many medical schools. The student who fails to graduate from the high standard school has only to fall to the next level to obtain its degree.

The salvation of the general practitioners of America is in the formation of a National standard, or a National school, and the taking away from the State the chartering of the medical schools. Let us have one medical school which will graduate general practitioners for the country. It is the country practitioner who needs protection against city specialists.

Let us revive the method to require for each student the old-fashioned preceptor, who stands sponsor for the fitness and moral character of the applicant for immatriculation, who when the candidate applies for graduation will certify that his fitness and character are still the same.

There were, though not for medicine, such preceptors in Old Rome; every patrician was a lawyer, and received in his study the young man who wanted advice. This study was a kind of law school, and a school of morality and of general practice of life. It was his duty to

Clienti promere jura
Majores audire, minori dicere per quae,
Crescere res possit, minui damnosa cupido.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

(Continued from page 591.)

XIII.—GERMAN MEDICINE.

Leibnitz; University of Halle; Thomasius, Wolff, Franke; System of Medicine by Hoffmann and Stahl; Boerhaave; Haller; Gaub; Vienna School: van Swieten, de Haën, Störck, Stoll; Neurologic pathology, Unzer; Humor pathologists Ch. L. Hofmann and Kämpf; Classification of diseases; Study of the ancients; System of J. Brown; Realization of Chemistry and physicians; Special pathology; Remedies; Medical practitioners.

When the German churches announced the eighteenth century, a warm, quickening spring sun shone in Hanover and Halle, newly vivifying the German sciences. *Leibnitz* there created German philosophy. He taught the Germans to think independently and to develop their sciences philosophically. Here were professors of the young University, who, as leaders in the movement, restored the mother tongue to scholars, made the ideas of the great philosophy popular, aroused the flat crude Protestantism and revolutionized German medicine. Leibnitz unified the inexhaustable depths of mathematic, philosophic, physical and historic knowledge. with a strong creative power and a depth of spirit through which he received the greastest influence upon his time. And the more because he was no learned Philistine, but a man of the world who understood how to lift science out of the student's dingy room and introduce it to higher stations, even into the salons of the emperor and empress, and to foreign nations. By numerous monographs and an immense correspondence he brought his weight to bear especially upon the leaders of the nation, breaking precedents on all sides. The point of his philosophy lay in the atomic doctrine which maintains the existence of simple indivisible substances from which all combinations are made up, a doctrine which is important also for medicine. The University of Halle, through the acquisition of several eminent, and some persecuted professors, had become a brilliant center for the development of German culture. The intolerant Leipzig theologians had accused the jurist, *Christian Thomasius* of heresy, on account of his candid teachings, and had driven him from Leipzig, whereupon he, with several hundred students, withdrew to Halle which in consequence of his great reputation was raised to a University (1694). At that time German scholars wrote in Latin, because the mother tongue, enriched with foreign words, appeared to them too rude and unyielding to intelligently express scientific matters. While they forced German thoughts into the dead languages, they hindered every national development. Indeed Leibnitz declared the German tongue completely ripe as a learned language, but he himself wrote almost entirely in Latin and French. On the other hand the intellectual and facile Thomasius, one of the brightest men of his time, who gave the death-blow to prosecutions for witchcraft, earned the great merit of being the first to give lectures in the German tongue in a German university (Leipzig, 1687). This threw the wigs of his colleagues into violent commotion, but greatly increased the number of his students. He contended in the press as the first journalist. At his side lectured the philosopher *Christian Wolff*, who had been driven from Halle by the orthodox party, and later had been reinstated by Frederick the Great. He collected Leibnitz's ideas into a system and as a clear conservative teacher, systematic and methodic, he smoothed the way in all the sciences and immensely expedited their promulgation in Germany. He frequently wrote in German. It is owing to the stimulus of these three men that, from that time on, the German language was more widely cultivated and triumphantly installed beside the Latin tongue, and was more frequently used in scientific works, although it could not entirely supersede Latin and, with scholars of the second rank, to the end of the century remained stiff and even crude. Nevertheless, this glorious achievement was the first step toward placing the whole nation in an entirely new relation toward the scholars. The three faculties in Halle had, in the persecuted theologian *August Hermann Franke*, who had been driven out of Leipzig, a worthy contemporary of Spener; these two restored intellectual freedom and the religious spirit to the dead letter of the torpid Lutherism. It was not their fault that this afterward worked so much harm as degenerated pietism, and indeed reacted upon medicine. The clerical life of which this university was the scientific heart, could not remain without some inflence upon the development of one young student in Halle who, together with Sebastian Bach, gave a magnificent impetus to German music through his grand oratorios, viz., Händel, the composer of the Messiah. Halle had also within its walls the two most celebrated physicians of Germany, *Friedrich Hoffmann* and *Georg Ernst Stahl.*

In the restless ferment which manifested itself in all sciences at the beginning of the century, German medicine did not remain behind, but went astray, however, when instead of seeking to enlarge its separate branches by exact investigations, it sought its advancement in the building up of systems. Theories stood everywhere in the foreground, and book-knowledge was supreme. They contended with beautitully worded repetitions, compiled the opinions of the authorities, and thereby overlooked the simple facts. The eighteenth century swarmed with systems into which the whole of medicine was fitted by force; one encroached upon the other and sought to crowd out its rival. The life of each varied according to the intellectual capacity and the social station of the author; now one disappeared when scarcely born and again another exercised its dominion for a decade and continually won new adherents. Nothing could be more welcome to the lazy practitioner than that he should be relieved of the inconvenient business of thinking. He had now nothing more to do at the sick-bed than to determine the chief character of the disease from the most prominent symptoms, whereupon his system placed in his hands the appropriate remedies, in black and white.

The two leading systems, one of which found the greatest acceptance in Germany for over a half century, were originated by Hoffmann and Stahl. These men were of the same age (born 1660); the former a physician in Halberstadt, the latter court physician in Weimar, when at the foundation of the University in Halle they were appointed professors in medicine. *Hoffmann*, who had [illegible] stud[illegible] mathemati[illegible] anatomy, physics, [illegible] and [illegible] medicine. He w[illegible] [illegible]se re[illegible] was widely extended not only as a writer but as a practical physician, insomuch that the famous Boerhaave, to whom the king of Prussia had applied for consultation, referred him to Hoffmann. For forty-eight years he taught in Halle, where he had founded the Medical Faculty and was the recipient of the greatest applause. He was at different times, for three years, body-physician to King Frederick I., but his residence in Berlin had made him disgusted with his colleagues. He was highly honored up to the time of his death (1742), and was the pride of the University. Hoffmann possessed a masterly eloquence, which brought professors and noblemen to his lectures, and he wrote in a clear, smooth, almost popular style. Although he highly prized the classic writers, he avoided all unnecessary learned citations in his numerous writings but, on the other hand, sought to give them a greater charm by introducing glimpses of other sciences. From his assertions, which he often premised without proof, he knew how to draw conclusions which followed one another with great clearness and in mathematic sequence, and which were all the more convincing and received all the more applause because they concurred with the philosophic ideas of his friends, Leibnitz and Newton. Nevertheless, he desired that all demonstrations in medicine should be either anatomic or physical, and considered that perfect proofs were possible only through the application of mechanics and hydraulics; he regarded the opening of cadavers as indispensable and made many meteorologic notes in order to elucidate the causes of disease. Yet his most important physiologic principle was an hypothesis. In all nature he assumed the existence of an æther which is also the most essential material in the human body, is of the most refined volatility and causes the movements of the organs. In the brain, especially, the æther is separated out of the blood and thence flows through the nerves into all parts of the body. The latter was to him a machine which works "according to laws of the higher mechanics, which are yet to be discovered." Life depends upon the continued movement of the heart and of the arteries, and the circulation of the blood is the origin of the warmth, nourishment and growth, and of all actions. Hoffmann considered every disease as a fault in this movement; if it was too strong there arose cramps, if too week, there followed atony; in the category of cramps, he placed fevers, inflammations, catarrh and diarrhea. From atony he educed all chronic diseases and also dizziness and plethora. The last named he considered as one of the most frequent causes of disease, aside from the air (of swamps and coal gas), the moon and the planets. Every fever arose from a cramp which drove the blood from the outer parts to the inner and in a similar manner caused inflammation, when the cramps prevent the blood from going to certain parts and forcibly drive it to other parts. One of the most frequent inflammations is that of the stomach, which is often mistaken for something else. His therapeutics were based upon the eradication of the cramp and atony. Few remedies but strong ones, was his motto, and he believed himself able to contend against all diseases with ten or twelve remedies. The acute cases he treated with cooling applications as Hippocrates, toward whom he also assumed a critical attitude; in chronic cases, wine, camphor and, contrary to Stahl, quinin and iron were his favorite medicines. Mineral waters, which he assiduously investigated, warm baths and dietetic treatment he prized very highly, but on the other hand, he was exceedingly cautious with opium. His name has been preserved to our day by the so-called Hoffmann drops, the elix. viscerale.

Stahl taught in Halle, whither he had been called by his friend Hoffmann. His branches were botany, physiology, pathology, dietetics, pharmacology and medical institutions. The two were colleagues for twenty-two years, until the increasing popularity of Hoffmann caused an estrangement between them and Stahl, in 1716, went to Berlin as court-physician, where he died in 1734. He was the deepest thinker among the German physicians of his time, but was gloomy, inclined to melancholy and superstition, and a pietist. He possessed boundless pride, which led him to say: "By the grace of God I know what I write." He could brook no contradiction and could not tolerate the successes of his colleague, whom he often flatly opposed. Like Hoffmann, he hated learned citations, but did not approach him either as an orator or a writer. His style was incorrect and prolix; his ideas often obscure and scarcely intelligible. Himself an eminent chemist, insomuch that he is regarded, together with Boerhaave, as the founder of scientific chemistry, yet considered this science as well as physics and higher anatomy as absolutely useless in medicine. On the contrary, he attached the greatest importance to facts, and indeed to the every-day, not the rare, fact which should lie at the bottom of theories. To him the most important thing was to discover the principle and the final cause upon which all forces and movements depend. His fundamental doctrine was that the body, as such, possesses no power whatever to move, but is controlled absolutely by the soul. It directs every movement and impels every process of the body, although it acts without consciousness and without consideration. Rejecting all mechanical ideas, he made the soul the principle of medicine, and with this conception he carried out his system with inflexible consistency. Leibnitz opposed him, saying that the soul can not govern the body independent of mechanical laws. Disease is a movement of the soul, while it, always watchful for the maintenance of the body, counteracts the causes of disease; movements arise from which the disease is composed. According to Stahl and also to Hoffmann, excessive blood is one of the most frequent causes of disease. It is best relieved by blood-letting, as menstruation and hemorrhoids prove, which latter is a wholesome regulation of nature and a remedy for the plethora of the abdomen. Fever was also considered a movement of the soul, which is designed to render unwholesome the feverish irritation which lays hold of the body and to separate it from the body. Even cold is a movement excited to expel the causes of disease, hence fever is often even beneficial to the body. Stagnation and congestion were distinguished from one another. The latter drives the blood so violently into the smallest veins that it stagnates because it can not move freely and easily. While, by this obstruction, nature is driven to even more intense vital movements and inflammation arises. Stahl declared that the vital movements of nature are sufficient for the cure of disease, and therefore considered that the all too great activity of the physician was injurious; he should be the servant of Nature, observe her duty, and then, when he sees the vital movement regular and powerful he should not destroy these wholesome agencies. One must follow the beck of Nature in fevers, which she, for the most part, cures by excretion, therefore the suppression of it should be avoided; hence quinin is injurious. In acute cases he recommended blood-letting and salts, and was an enemy to all powerful remedies (iron, opium and stimulants). In chronic cases he preferred laxatives, aloes, rhubarb and jalap. Like Hoffmann, he sold and extolled several secret remedies, especially balsam pills.

The third who exercised a considerable influence upon German medicine in the first half of the century was the most renowned teacher and the most celebrated physician in Europe, *Hermann Boerhaave* of Leyden (1668–1738). At first designed for the church, he pursued philosophic studies and much mathematics, which at that time was considered the basis of medicine. He maintained himself by giving instruction in these branches. Afterward he was made doctor of philosophy, and through his study of the works of Spinoza he drew upon himself the hatred of all orthodox people, so that the path to the pulpit was cut off from him by the doubt concerning his faith, and he gave up theology and turned to medicine, which he studied almost without a teacher. In 1701 he became lecturer on theoretic medicine in Leyden, later assumed the professorship of botany and chemistry, and in 1741 became director of the Hospital. There he was one of the first to offer clinical instruction, which was at that time still lacking in German universities. His eminent talent as a teacher, his vivid eloquence, the clearness of his lectures, which, contrary to the custom of that time, he gave entirely free, as well as the practical usefulness of his doctrines, soon gained for him a European reputation. Numberless pupils flocked to him from all countries, whom he knew how to inspire with his enchanting personality and his tireless activity for science. No lecture room was large enough to hold them all. So great was the pride of every one in being his pupil, so heartfelt the love of his fellow-citizens, that they illuminated the city when he recovered from an illness. His fame as a physician was unexampled. The whole world consulted him; Peter the Great remained a whole night in a carriage in front of Boerhaave's house in order to speak to him in the morning before the beginning of the lectures; a Chinese mandarin wrote "to Boerhaave in Europe." In spite of all deifying, he retained a rare modesty until his death. Indifferent to all external display, always in the most ordinary clothing, he lived as the simplest citizen and filled his leisure hours with the playing of the lute. "For thirty years he was the medical oracle of the European courts, the idol of his hearers, the object of veneration of the whole literary world, and in spite of his munificence to the poor he left his only daughter more than two million guilders." Haller said of him: "Some indeed, though few, attained to his learning; no one to his godlike, benevolent spirit that wished well to his enemies and those who envied him, and would not belittle even those who opposed him daily." Boerhaave did not arrange his doctrines into a system, but in Aphorisms and Institutions, which were received with extraordinary applause. The simple observation of nature stood uppermost with him, hence his veneration for Hippocrates and Sydenham, though he did not join many of his contemporaries in their one-sided enthusiasm for antiquity. Without prejudice, he took the best wherever he found it, unmindful as to whether or not it coincided with the theory. So, as a selector he created a medicine which, without rigorous consistency, had indeed no important ideas, but proved its value by the sick-bed. He rejected one-sided mechanical elucidation and mathematic demonstration in practical medicine. With his great services in the development of chemistry, it is to be noted that he conceded to it no dominant place, but only that of an auxiliary science to medicine. He first undertook the chemic analysis of urine. Diseases attack either the solid or the liquid parts, which latter soon become acid, alkali or viscous, and the simplest frequently occurring disease is the obstruction of the channels which contain fluids. He regarded inflammation as the stagnation of the red blood in the smallest arteries. Fever, in which he had already employed measurements of temperature, he thought a quick action of the heart with increased resistance of the capillaries, and at the same time the effort of nature to ward off death. Chronic diseases arise in part from defects in the fluid parts, and he distinguished seven kinds of dyscrasia: A sour acidity from which arise diseases of the stomach, acid eructations, sour milk, constipation, pustules, sores, etc., and should be treated with a vegetable diet, exercise, and diluent and absorbent remedies. Then a bitter and an aromatic fat-acidity, an oily and a salt acidity, an alkaline and a glutinous condition. Under these seven heads he classified chronic diseases, of which scurvy was the one he preferred to treat, and he applied to it the specified remedy, which was usually very complex, but sometimes was simple.

The mechanico-dynamic system of Hoffmann, the psychic system of Stahl, and Boerhaave's doctrines, contended in Germany for the honor of the day. The great mass blindly followed these men, to whom a genuine piety was common; it thought only what they thought and was divided into just so many sects. Hoffmann had a large following at home and abroad, especially as his system agreed with Boerhaave's views. The crowd walked by the side of these two men. The error lay in the training of mathematic practitioners who philosophized so subtly concerning the human body that nothing was left but a mechanical and hydraulic machine. Formerly one had to be an astrologer if he would be a physician; now everything in physiology is reckoned algebraically. This mathematic sect was the proudest, for they believed that by their method medicine was given absolute mathematic certainty. The later expression of Schlözer applied to them: "No nation in the world has been snatched from barbarism through mathematics." Stahl's doctrines, which aside from Hoffmann found a great opponent in Haller, were not understood by the majority because too deeply grounded for their time, and they were enthusiastically proclaimed almost wholly by limited intellects and pietistic physicians.

Such was the condition of theoretic medicine when, in the middle of the eighteenth century, the dominance passed to Boerhaave's greatest pupil, Albert von Haller, who, with his doctrine of irritability, gave a new direction to medicine. Boerhaave had the rare fortune to find a whole line of excellent pupils who, throughout their entire lives, adhered to him with the greatest devotion, and although some of them were far more illustrious than he himself, throughout many years they brought out new editions of his works with comments. Of his best pupils Haller and Gaub followed rather his dynamic and theoretic direction, van Swieten and de Haen the practical and the humoral-pathologic.

The Medical Colleges of the United States.

In accordance with the custom of the JOURNAL, to make one number each year largely an "educational number," the Editor recently addressed a circular letter to the Secretary or Dean of the Medical Colleges throughout the United States, requesting them to furnish the JOURNAL with a brief announcement of their college, covering length of term, fees, hospital and clinic advantages, etc.

The responses as presented contain much information, to the student and practitioner alike, concerning the trend of medical education throughout the United States.

ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

The Association of American Medical Colleges requires for all members that candidates for matriculation will be allowed admission, and subsequent graduation, subject to the conditions prescribed by Article III of the Constitution of the Association:

ARTICLE III.

SECTION 1.—Each college holding membership in this Association shall require of each student, before admission to its course of study, an examination the minimum of which shall be as follows:

1. In English, a composition on some subject of general interest. This composition must be written by the student at the time of the examination, and should contain at least 200 words. It should be criticised in relation to thought, construction, punctuation, spelling and handwriting.
2. In Arithmetic, such questions as will show a thorough knowledge of common and decimal fractions, compound numbers and ratio and proportion.
3. In Algebra, such questions as will bring out the student's knowledge of the fundamental operations, factoring and simple quadratic equations.
4. In Physics, such questions as will discover the student's understanding of the elements of mechanics, hydrostatics, hydraulics, optics and acoustics.
5. In Latin, an examination upon such elementary work as the student may offer, showing a familiarity usually attained by one year of study; for example, the reading of the first fifteen chapters of Cæsar's Commentaries, and the translation into Latin of easy English sentences involving the same vocabulary.

SEC. 2.—In place of this examination, or any part of it, colleges, members of this Association, are at liberty to recognize the official certificates of reputable literary and scientific colleges, academies, high schools and normal schools, and also the medical student's certificate issued by any State examining board covering the work of the foregoing entrance examination.

SEC. 3.—Colleges, members of this Association, may allow students who fail in one or more branches in this entrance examination the privilege of entering the first year course, but such students shall not be allowed to begin the second course until the entrance requirements are satisfied.

SEC. 4.—Colleges, members of this Association, are free to honor official credentials issued by medical colleges of equal requirements, except in the branches of study embraced in the last year of their own curriculum.

SEC. 5.—Candidates for the degree of Doctor of Medicine in the year 1899 and thereafter shall have attended at least four courses of medical instruction, each course of at least six months duration, no two courses of which shall have been in the same calendar year.

SEC. 6.—Colleges, members of this Association, are free to give to students who have met the entrance requirements of the Association additional credit for time on the four years' course as follows: 1. To students having the A.B., B.S., or equivalent degree from reputable literary colleges, one year of time. 2. To graduates and students of colleges, of homeopathic or eclectic medicine, as many years as they attended those colleges, provided they have met the previous requirements of the Association and that they pass an examination in materia medica and therapeutics. 3. To graduates of reputable colleges of dentistry, pharmacy and veterinary medicine, one year of time.

SEC. 7.—Colleges, members of this Association, may confer the degree of Doctor of Medicine during the year 1898 upon students who have attended three courses of six months' duration each. Each course shall have been in a separate calendar year.

Fifty-eight colleges have maintained membership by paying their dues for this current year.

1. University of California. 2. University of Louisville. 3. Rush Medical College. 4. Cincinnati College of Medicine and Surgery. 5. Medical Department University of Georgetown. 6. Medical College of Indiana. 7. Medical Department Columbian University. 8. Gross Medical College. 9. Syracuse University. 10. University of Denver. 11. Jefferson Medical College. 12. Creighton Medical College. 13. Kentucky School of Medicine. 14. Iowa College of Physicians and Surgeons; Drake University. 15. St. Louis College of Physicians and Surgeons. 16. College of Medicine, Los Angeles, Cal. 17. Ohio Medical University. 18. Michigan College of Medicine and Surgery. 19. Sioux City College of Medicine. 20. American Missionary Medical College.[1] 21. College of Physicians and Surgeons, Boston. 22. Hospital College of Medicine, Louisville. 23. Detroit College of Medicine. 24. Louisville Medical College. 25. Central College of Physicians and Surgeons, Indianapolis. 26. College of Physicians and Surgeons, Baltimore. 27. Western Pennsylvania Medical College. 28. Medico-Chirurgical College, Philadelphia. 29. Niagara University, Buffalo. 30. Wisconsin College of Physicians and Surgeons. 31. University of Maryland, Baltimore. 32. Baltimore Medical College. 33. University of Iowa. 34. Woman's Medical College, Philadelphia. 35. Arkansas Industrial University. 36. Howard University, Washington, D. C. 37. Starling Medical College, Columbus. 38. University of Minnesota. 39. College of Physicians and Surgeons, Cleveland. 40. University of Buffalo. 41. Toledo Medical College. 42. College of Physicians and Surgeons, University of Illinois. 43. University of Colorado. 44. National University, Washington, D. C. 45. Keokuk Medical College, Iowa. 46. College of Physicians and Surgeons, Hamlin University, Minnesota. 47. Western Reserve University. 48. University Medical College, Kansas City. 49. University of Michigan. 50. Tuft's College, Medical School, Boston.[1] 51. Johns Hopkins University. 52. Woman's Medical College, Northwestern University. 53. Fort Wayne College of Medicine. 54. University of Virginia. 55. University of Oregon. 56. Baltimore University. 57. Willamette University. 58. Barnes Medical College, St. Louis.

J. W. HOLLAND, M.D., Philadelphia, President; BAYARD HOLMES, M.D., 104 East Fortieth Street, Chicago, Secretary; Dudley S. Reynolds, M.D., Louisville, Chairman Judicial Council.

[See also page 643.]

BIRMINGHAM MEDICAL COLLEGE.

BIRMINGHAM, ALA.

This College requires for graduation, a three years' graded course of six months each.

The fee for the first year is $100; for the second year $100, and for the third year $125.

The students have the privilege of attending free the clinics of the Hillman Hospital, Hospital of the Tennessee Coal, Iron and Railroad Co. Several private infirmaries are also institutions to which the students have access. There is given in the College infirmary, a clinic every day (excepting Sunday) from 12 to 1 o'clock, in which special instruction is given, without extra cost, in gynecology and abdominal surgery, diseases of the ear, eye, throat and nose, skin, nervous system and children; also orthopedic and genito urinary surgery.

George A. Hogan, M.D., Secretary.

MEDICAL COLLEGE OF ALABAMA.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF ALABAMA.

MOBILE, ALA.

The thirty-second session begins Oct. 11, 1897, and continues six calendar months. Every facility is offered for thorough medical instruction with a large and commodious college building; splendidly equipped laboratories. Ample clinical facilities. Spacious lecture rooms and magnificent museum. Delightful winter climate.

For further information or catalogue address George A. Ketchum, M.D., Dean, 7 N. Conception St.

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[1] Application for membership.

MEDICAL DEPARTMENT, ARKANSAS INDUSTRIAL UNIVERSITY.

LITTLE ROCK, ARK.

The ninteenth annual course of lectures begins in this institution on Oct. 18, 1897.

Graded course. Four courses of lectures not less than six months each required. Clinical facilities and anatomic material ample. J. A. Dibrell, M.D., Dean.

COLLEGE OF PHYSICIANS AND SURGEONS OF SAN FRANCISCO.

SAN FRANCISCO, CAL.

This college held its first session during 1896-97, and has a full corps of professors, adjuncts, lecturers, demonstrators and assistants. It is located in the center of the most populous district of San Francisco, where clinical material is abundant. There are separate medical and dental courses, both graded, the former occupying four years, but the course is so arranged that a student matriculating therefor may take both courses at the same time and graduate with the two degrees of M.D., D.D.S. Daily clinics are held and the students have entrance to several hospitals. The fee for matriculation is $5; for each preliminary course, $25; for each regular course, $75; for the final examination, $25.

The preliminary course begins in October and ends at Christmas. The regular course begins in January and will continue six months. Advanced standing is given under definite regulations and examination when necessary.

For further information address Winslow Anderson, M.D., Dean, 603 Sutter St.

COOPER MEDICAL COLLEGE.

SAN FRANCISCO, CAL.

The college has handsome and commodious buildings, with fine laboratories and elaborate apparatus for illustrating lectures. An educational qualification or examination is required before admission. Four courses of six months each and one course of three months are necessary to complete the curriculum. Short term begins February 1; long, or regular term, June 1. Graduation exercises takes place in December. The objections to the summer course, which obtain on the Atlantic border, are unknown here. The long dry summer permits the carrying on of dissection and study to much greater advantage than in the winter, either here or in other climates. Excellent clinical facilities are offered. A fee of $130 is charged for each of these courses, $5 for matriculation, $10 for the demonstrator's ticket and $40 for graduation. Henry Gibbons, Jr., M.D., Dean; W. Fitch Cheney, M.D., Secretary.

UNIVERSITY OF CALIFORNIA, MEDICAL DEPARTMENT.

SAN FRANCISCO, CAL.

The course of instruction in the Medical Department of the University of California extends over four years. The course is graded, anatomy, physiology, histology, chemistry and materia medica being completed at the end of the second year. To be eligible for admission the applicant must present credentials equivalent to a diploma from a recognized high school or pass the examinations for admission to the academic branches of the university. Besides the regular clinical work at the City and County Hospitals the faculty conducts a free dispensary clinic in a thickly populated district where material is abundant. During the year ending April 30, 1897, 4,248 new cases were treated at the dispensary. The sessions of the college begin September 1 and continue eight calendar months. R. A. McLean, M.D., Dean.

GROSS MEDICAL COLLEGE.

DENVER, COLO.

The college is a member of the Association of American Medical Colleges and is specially stringent concerning the requirements for admission and graduation. The term begins Sept. 7, 1897, and continues seven months. The course of study extends over four years. The fees are: Matriculation fee, $5; general lecture fee, $75, except for the senior year when the fee is $30. There is no examination fee. Sons and daughters of ministers and physicians are admitted on the payment of one-half of the general lecture fee. There are laboratory fees for material and to cover breakage. Especial advantages are given in laboratory and clinic work. Owing to the recent abandonment of the State School in Denver the larger portion of the active teachers of this faculty have associated themselves with the Gross Medical College. Robert Levy, M.D., Secretary, California Building.

UNIVERSITY OF COLORADO, MEDICAL DEPARTMENT.

BOULDER, COLO.

This college completed its fourteenth annual session June 4, 1897. For the session of 1897 and 1898 the college will conduct but the first two years of a four years' graded course. For the work of the first two years the university is exceptionally well equipped in faculty, room and laboratories. The course is arranged to harmonize with the best scientific work of the day. The two years are largely devoted to laboratory work in chemistry, physiology, anatomy, histology, materia medica, pharmacology, pathology and bacteriology. The next session begins Sept. 7, 1897, and will continue nine months. The tuition fee is $35 per year. This is payable on entering the school. There are no other fees. Further information will be given by addressing L. M. Griffin, M.D., Dean.

UNIVERSITY OF DENVER, MEDICAL DEPARTMENT.

DENVER, COLO.

The Medical Department of the University of Denver will open Oct. 5, 1897, and continue seven months. The course of instruction embraces four separate terms of seven months each. Fees: Matriculation, paid but once, $5; registration, paid annually after first registration, $1; tuition, annually payable in advance, $75; chemical laboratory, $10; dissecting material at cost, not to exceed $5 per part; graduation fee, $25.

Denver, with a population of 150,000, offers excellent clinical advantages for instruction at both dispensary and hospital. Students in impaired health can and do attend the Medical Department of the University of Denver and regain their health in this great health resort. For catalogue address the Secretary, E. R. Axtell, M.D., Barth Block.

THE COLUMBIAN UNIVERSITY, MEDICAL DEPARTMENT.

WASHINGTON, D. C.

The seventy-sixth session of the Medical Department of the Columbian University will begin on Sept. 29, 1897. During the coming year the clinical facilities of the college will be increased by opening a hospital, which is very conveniently located within a few doors of the lecture building. This hospital, when started, will be under the exclusive control of the medical faculty. As heretofore, all possible clinical facilities will be given to the students, and great stress will be laid on the practical work in connection with all of the different branches. E. A. DeSchweinitz, M.D., Dean.

HOWARD UNIVERSITY, MEDICAL DEPARTMENT.

WASHINGTON, D. C.

This college is open to all students who are qualified.

The thirtieth annual session will begin Oct. 1, 1897, and continue seven months.

Tuition is $60, with a small fee for laboratory expenses.

Instruction is given by didactic and clinical lectures, recitations and practical exercises.

Howard University offers special facilities to students. Situated at Washington, D. C., with many libraries and museums open at all times to the student; with the Army Medical Museum, which is the finest in the world, easy of access; with the many hospitals of the city offering ample clinical facilities, and especially the Freedmen's Hospital, located on the grounds of the University.

Howard University can point with pride to the fact that she was among the first to adopt a four years graded course.

Prof. T. B. Hood, Dean; Prof. F. J. Shadd, Secretary and Treasurer.

MEDICAL DEPARTMENT, GEORGETOWN UNIVERSITY.

WASHINGTON, D. C.

This school offers unusual facilities for medical education. By an act of Congress, the various libraries and museums are open to students, and the Faculty frequently make use of these collections for demonstrations. The forty eighth session opens October 4 and will continue seven and one-half months. Instruction is given by lectures, recitations, clinics and laboratory demonstrations. The laboratories are well equipped with the most modern apparatus.

Clinical facilities are ample. The Georgetown University Hospital, now under construction, will soon add greatly to the opportunities for bedside instruction. The lectures are now given during the day, as students are required to give their entire time to their studies. Good [illegible] ined at from $20 to $25 per month. Fees: [illegible] de but once, $5; tuition including labo.

G. L. Magruder, M.D., Dean.

ATLANTA MEDICAL COLLEGE.

ATLANTA, GA.

This is one of the oldest schools in the South. To keep abreast with the demand for higher medical education, this school has within the last five years spent upward of fifteen thousand dollars in equipping chemic, pathologic and bacteriologic laboratories, courses in which are compulsory and a requisite to graduation.

Atlanta, with over a hundred thousand inhabitants, affords an abundance of clinical material. The wards of the City Hospital are open to students and the members of the Faculty are upon the visiting staff. The course consists of three full terms of six months each, taken in separate years. The fees are $100 for each course. The Faculty employs an able corps of instructors, demonstrators and quiz-masters to whom the student pays no extra fee.

MEDICAL DEPARTMENT, UNIVERSITY OF GEORGIA.

AUGUSTA, GA.

The sixty-sixth annual session commences Oct. 1, 1897, and terminates April 1, 1898.

During the three years' graded course, six months in each year, students are thoroughly instructed in all departments of medical science. Facilities for instruction at bedside in practice of medicine, surgery, ophthalmology, gynecology and obstetrics, are unsurpassed by any medical college in America. Three large hospitals are under the exclusive control of faculty of this college, and fully utilized for practical instruction of students. Each member of the graduating class is accorded the benefit of two weeks' residence in the hospitals.

Fees: Matriculation, $5; general course of instruction, $75; practical anatomy, $10; laboratory fees (histology and pathology), $10; diploma, $30. Announcement giving full particulars of the course, furnished on application. Address Eugene Foster, M.D., Dean.

SOUTHERN MEDICAL COLLEGE.

ATLANTA, GA.

The nineteenth annual session will open October 1. The course is six months and three graded courses, in separate years, are required of every applicant for graduation. Each course includes systematic, didactic and numerous clinical lectures, besides the usual laboratory and dissecting room instruction. The faculty consists of fifteen regular professors and thirteen assistants. The clinical advantages are unsurpassed. In addition to an inexhaustible out door clinic, the Grady Hospital, with its 150 beds, is available to advanced students, who have the privilege of attending without charge medical, surgical and gynecologic clinics in the hospital amphitheater, and under the supervision of the visiting physicians and surgeons, a large proportion of whom are members of the faculty. They have almost daily access to the hospital wards.

The fees, including demonstrator and laboratory fees, are $100 per session.

James B. Baird, M.D., Dean.

CHICAGO CLINICAL SCHOOL.

CHICAGO, ILL.

The Chicago Clinical School, formerly called the West Chicago Post-Graduate School and Polyclinic, located at 819 West Harrison Street, has just issued "Bulletin No. 6," giving general information regarding the special courses, for the coming winter. The directors of the School have had in view the accommodation of post-graduate students and have made wise and extensive improvements in their school. The operating rooms are fitted with the most modern apparatus for surgical, gynecologic and ophthalmologic work. The hospital building in which the school is located has a capacity of 125 beds, and no expense has been spared to make the hospital perfect in modern conveniences, both for the requirements of the patient and of the physician and surgeon.

CHICAGO COLLEGE OF DENTAL SURGERY.

DENTAL DEPARTMENT OF LAKE FOREST UNIVERSITY.

CHICAGO, ILL.

The Annual Winter Course of Instruction will begin about October 1, and end about April 1.

Three full winter courses of lectures are required before graduation. Graduates of pharmaceutic and undergraduates of medical colleges in good standing, and graduates of reputable veterinary colleges are admitted to the second year course.

Freshman Year 1897-98: Matriculation fee, $5; general ticket, $100; histologic laboratory ticket, $5; dissection fee (one part) $10. Junior Year, 1897-98: Matriculation fee, $5; general ticket, $100. Senior Year, 1897-98: Matriculation fee, $5: general ticket, $100.

A fee of $5 must be deposited to cover chemicals and breakage in the chemical laboratory.

The building occupied by the Chicago College of Dental Surgery is, in all its appointments, one of the most perfect and complete of its kind. Letters of inquiry should be addressed to Dr. Truman W. Brophy, Dean, 126 State Street.

CHICAGO EYE, EAR, NOSE AND THROAT COLLEGE.

CHICAGO, ILL.

The Chicago Eye, Ear, Nose and Throat College has been founded with the idea of giving post-graduate instruction and of thoroughly fitting its students for practicing the above named branches of special medicine. The College is located in the Trude Building, 67 Wabash Avenue. The central location and easy accessibility from all parts of the city insures a large amount of clinical material. The college equipment is the best money can buy, and the facilities for teaching the above named branches are unsurpassed. The faculty is made up of men who have had wide experience in this line of work and are alive to the needs of men who wish to practice it. For further information and catalogue write to J. R. Hoffman, M.D., Secretary.

CHICAGO POLICLINIC AND HOSPITAL.

CHICAGO, ILL.

The Chicago Policlinic has fallen into line with the other institutions in their endeavor to meet the good times that are coming. They have arranged the work of the institution to meet the requirements of a great variety of medical and surgical interests in their various departments. The Policlinic is in a position to offer what is a great essential in a clinical school—exceptional opportunities for individual handling of cases under expert instruction and unusually extensive facilities for observing after-treatment and the most approved forms of dressing in their own hospital. They are enabled to do this by carrying on a very large amount of hospital and dispensary work, treating, on an average 150 cases a day. Students may enter on a course at any time since the work is so arranged. F. Henrotin, M.D., Secretary, 174 E. Chicago Avenue.

CHICAGO SCHOOL OF GYNECOLOGY AND ABDOMINAL SURGERY.

CHICAGO, ILL.

This is a post-graduate school for special and practical instruction in gynecology, diseases of the abdomen and abdominal surgery. All teaching is clinical.

Monthly courses are given the year round. Rectal, genito-urinary and gastro intestinal diseases will be taught. Practitioners may enter at any time.

"Touch" courses and clinics for physical diagnosis will be conducted from 9 A.M. to 2 P.M. The afternoons will be devoted to operative clinics at the varying hospitals with which the faculty are associated.

Arrangements may be made at the School for operative and practical work on the cadaver.

The fees are from $35 to $75, according to courses chosen.

The small classes allow individual advantages in gynecologic examinations and observations at operations. Byron Robinson, M.D., 100 State Street, Secretary.

THE COLLEGE OF PHYSICIANS AND SURGEONS.

SCHOOL OF MEDICINE, UNIVERSITY OF ILLINOIS.

CHICAGO, ILL.

The fall term of the College of Physicians and Surgeons of Chicago (Medical Department of the University of Illinois) begins September 21. The introductory address will be delivered by Prof. Adolph Gehrmann. The term ends April 19. The fees are $110. Women are admitted on an equality with men.

There are six large fully equipped laboratories. The West Side Hospital adjoining and connected with the college building affords abundant clinical facilities, with daily clinics in the college amphitheater and outdoor obstetric clinics.

Six annual scholarships of the value $100 each are awarded to students in the college. Four years graded course.

W. E. Quine, M.D., Dean, D. A. K. Steele, M.D., Actuary; Wm. Allen Pusey, M.D., Secretary, 103 State Street.

HARVEY MEDICAL COLLEGE.

CHICAGO, ILL.

The course of study is graded to extend over a period of four years; is given by fifty professors; illustrated by lectures, laboratory work and quizzes, between the hours of seven and ten o'clock every week-day evening. Special attention is given to anatomy. Individual cadavers furnished [illegible] Every student is obliged to perform operations [illegible]

The actual daily practice in medicine [illegible] immediate supervision of the physicians [illegible] pensary and out practice, is required [illegible] ance upon twelve obstetric cases [illegible]

Fees are low, and including [illegible] exceeds $100. By advance payment [illegible] is made. For further information address [illegible] M.D., Secretary, 167 S. Clark Street.

JENNER MEDICAL C[illegible]

[illegible]

Jenner Medical College is a [illegible] education in medical science may be [illegible] It is recognized by the State Board of Health [illegible] fifth year. Its course of four terms [illegible] each—September 7 to June [illegible] hours put in by its students [illegible] the Association of American Medical Colleges [illegible] mence at 7 and continue to [illegible] The facilities for laboratory and clinical [illegible] to date. In connection [illegible] Jenner Hospital, where bedside instruction [illegible] students, 355 Washington Boulevard.

The fees are: Matriculation [illegible] $5; general fee, $75 each year [illegible]

NORTHWESTERN UNIVERSITY [illegible]
(CHICAGO MEDICAL [illegible]

[illegible]

This school was the first in this country [illegible] ard of preliminary education [illegible] of instruction: and to grade the curriculum.

Four years of study are required [illegible] cants for admission must present [illegible] science, or accredited high schools [illegible] required for entrance to the College [illegible] western University.

A feature unique to this school is the [illegible] instruction and the [illegible] dents can obtain individual instruction.

Instruction is given by lectures, recitations [illegible] laboratory and clinical methods. [illegible]

The laboratory building contains [illegible] laboratories.

The faculty consists of thirty-nine professors and [illegible] instructors and demonstrators.

College opens Oct. 5, 1897. Commencement [illegible] The fees are: Matriculation $5; [illegible] M.D., Dean.

NORTHWESTERN UNIVERSITY [illegible] SCHOOL

[illegible]

Examination for admission begins Sept. [illegible] ester Oct. 7, 1897.

The course is four years, graded.

A matriculation fee of $5 is required [illegible] and a final examination fee of $3[illegible]

An addition to the college buildings [illegible] tion will double the laboratory and [illegible]

College clinics will be given [illegible] Zeisler; in pediatrics by Professor [illegible] fessor Merger; in obstetrics by [illegible] surgery by Professor [illegible] Professor Fiske; in surgery by Professor [illegible] Hook; in laryngology by [illegible] cine by Professors [illegible] by Professor Brower. [illegible] will be given at Cook County Hospital [illegible] Woman's Hospital [illegible] pital, and at the Mary Thompson Hospital [illegible] Children.

POST-GRADUATE MEDICAL SCHOOL [illegible] TAL OF CHICAGO

[illegible]

This college is now [illegible] [illegible] post-graduate teaching [illegible] departments, including [illegible] advantages, which are not [illegible] exclusively clinical, with [illegible] and [illegible] working faculty. [illegible] of the city. With a [illegible]

ATLANTA MEDICAL COLLEGE.

ATLANTA, GA.

This is one of the oldest schools in the South. To keep abreast with the demand for higher medical education, this school has within the last five years spent upward of fifteen thousand dollars in equipping chemic, pathologic and bacteriologic laboratories, courses in which are compulsory and a requisite to graduation.

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James B. Baird, M.D., Dean.

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THE COLLEGE OF PHYSICIANS AND SURGEONS.

SCHOOL OF MEDICINE, UNIVERSITY OF ILLINOIS.

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HARVEY MEDICAL COLLEGE.

CHICAGO, ILL.

The course of study is graded to extend over a period of four years; is given by fifty professors; illustrated by lectures, laboratory work and quizzes, between the hours of seven and ten o'clock every week-day evening. Special attention is given to anatomy. Individual outfits furnished in all laboratories. Every student is obliged to perform operations on the cadaver.

The actual daily practice in medicine and surgery, under the immediate supervision of the physicians in charge of the dispensary and out-practice, is required of every senior. Attendance upon twelve obstetric cases is a requisite to graduation.

Fees are low, and including all laboratory extras no year exceeds $100. By advance payment of fees a deduction of $15 is made. For further information address Frances Dickinson, M.D., Secretary, 167 S. Clark Street.

JENNER MEDICAL COLLEGE.

CHICAGO, ILL.

Jenner Medical College is a co-educational school where an education in medical science may be gained by evening study. It is recognized by the State Board of Health and is now in its fifth year. Its course of four terms, of more than nine months each—September 7 to June 18—makes the total number of hours put in by its students in excess of the requirements of the Association of American Medical Colleges. Lectures commence at 7 and continue to 10 o'clock, six evenings each week. The facilities for laboratory and clinical work at Jenner are up to date. In connection with the college is conducted the Jenner Hospital, where bedside instruction is provided for the students, 385 Washington Boulevard.

The *fees are*: Matriculation (paid but once) $5; laboratories, $5; general fee, $75 each year. E. Perry Rice, M.D., Secretary.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL. (CHICAGO MEDICAL COLLEGE.)

CHICAGO, ILL.

This school was the first in this country to enforce a standard of preliminary education; to adopt longer annual courses of instruction; and to grade the curriculum.

Four years of study are required for graduation. Applicants for admission must present diploma from colleges of arts, science, or acredited high schools, or pass the examination required for entrance to the College of Liberal Arts of Northwestern University.

A feature unique to this school is the grading of clinical instruction and the maintenance of small clinics, so that students can obtain individual instruction.

Instruction is given by lectures, recitations, conferences, laboratory and clinical methods. Elective courses are afforded.

The laboratory building contains finely planned and equipped laboratories.

The faculty consists of thirty-nine professors and forty-three instructors and demonstrators.

College opens Oct. 5, 1897. Commencement is June 16, 1898. The *fees are*: Matriculation $5; annual $125. N. S. Davis, M.D., Dean.

NORTHWESTERN UNIVERSITY WOMAN'S MEDICAL SCHOOL.

CHICAGO, ILL.

Examination for admission begins Sept. 27, 1897; first semester Oct. 7, 1897.

The course is four years, graded.

A matriculation fee of $5 is required; an annual fee of $75, and a final examination fee of $30.

An addition to the college buildings in course of construction will double the laboratory and clinical facilities.

College clinics will be given in dermatology by Professor Zeisler; in pediatrics by Professor Abt; in gynecology by Professor Mergler; in obstetrics by Professor Root; in orthopedic surgery by Professor Ridlon; in ophthalmology and otology by Professor Fiske; in surgery by Professors Graham and Van Hook; in laryngology by Professor Rhodes; in general medicine by Professors Danforth and Edwards; and in neurology by Professor Brower. Hospital clinics and bedside instruction will be given at Cook County Hospital and also clinics at the Woman's Hospital, the Wesley Hospital, the Detention Hospital, and at the Mary Thompson Hospital for Women and Children.

POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL OF CHICAGO.

CHICAGO, ILL.

This college is now entering upon its ninth year. The facilities for post-graduate teaching are thorough and complete in all departments, including hospital, clinical and laboratory advantages, which are not excelled anywhere. Teaching is exclusively clinical, with abundant material and small classes and large working faculty. It is located in the medical center of the city. With a continuous course throughout the year, practitioners can matriculate at any time with equal advantage. There is a large hospital in the main building and extensive outside hospital connections. The laboratories are unsurpassed in equipment. Systematic courses are given the practitioner under the direct supervision of Prof. Theo. A. Edwin Klebs (late of the University of Zurich and widely known through the researches which resulted in the discovery of the diphtheria bacillus).

An illustrated bulletin will be furnished upon application to Franklin H. Martin, M.D., Secretary, 2400 Dearborn street.

RUSH MEDICAL COLLEGE.

MEDICAL DEPARTMENT LAKE FOREST UNIVERSITY.

CHICAGO, ILL.

The curriculum of this school of medicine requires a proper preliminary education and four years of study in college, devoted to laboratory, didactic and clinical instruction, to recitations and to manual training in the use of instruments and appliances.

Instruction is given in two capacious, well lighted edifices. The new building contains five large laboratories, in which are conducted the practical laboratory courses in anatomy, physiology and histology, chemistry, materia medica, pathology and bacteriology.

The old building is devoted to instruction by clinics, didactic lectures, and by numerous important practical courses in manual training in manipulations and in the use of the instruments employed in medicine, surgery, obstetrics, and the specialties.

For further information and for announcements apply to the College Clerk, or to the Secretary, J. H. Etheridge, M.D., 31 Washington St.

THE CENTRAL COLLEGE OF PHYSICIANS AND SURGEONS.

INDIANAPOLIS, IND.

The nineteenth annual session of The Central College of Physicians and Surgeons will open Wednesday, Sept. 15, 1897, and continue *for six full months, on the four years system.* The College Free Dispensary, located in the college building, together with the City Hospital, St. Vincent's Infirmary and the City Dispensary, afford an abundance of clinical material. Classes are so divided as to enable the instructors to give personal instruction to each student. Each senior attends at least four cases of obstetrics under the direction of the professor of that department. The laboratories are generously equipped. Professors' and laboratory fees complete, $60. Joseph Eastman, M.D., LL.D., President; S. E. Earp, B.Sc., M.D., Secretary.

FORT WAYNE COLLEGE OF MEDICINE.

FORT WAYNE, IND.

This college has issued its "Nineteenth Annual Announcement," and has a four years' graded course of six months each year. General lecture fee, including laboratory, dissecting and hospital tickets, each year $70.

This college was the second in this country to require a four years' graded course before conferring the degree of Doctor of Medicine.

Clinics are held in the St. Joseph and Hope Hospitals, also once a week in the State Institute for Feeble Minded Youth, and daily in the College Dispensary. Session of 1897 98 opens Sept. 14, 1897.

The faculty consists of twenty-two professors, with a number of lecturers, demonstrators and clinical assistants.

The clinical advantages are good, with sufficient material for demonstration. The college has always maintained a high standard of requirements.

Address all communications to C. B. Stemen, M.D., Dean 25 Broadway; or W. W. Barnett, M.D., Secretary, 25 West Wayne St.

MEDICAL COLLEGE OF INDIANA.

DEPARTMENT OF MEDICINE OF THE UNIVERSITY OF INDIANAPOLIS.

INDIANAPOLIS, IND.

This college was organized in 1869 and will open its twenty-eighth session on Sept. 28, 1897. It offers a *four years'* graded course, the classes being rigidly separated; women admitted on the same terms as men; clinical facilities first-class; free dispensary in the college building, maintained and operated by the faculty; new building erected *especially for* the institution and adapted to the requirements of advanced medical education; *new clinic rooms, modern in every respect,* at both hospitals.

The faculty numbers twenty, with sixteen lecturers, assistants and demonstrators. For all information address Joseph W. Marsee, M.D., Dean, 206½ E. New York St.

IOWA COLLEGE OF PHYSICIANS AND SURGEONS.

MEDICAL DEPARTMENT OF DRAKE UNIVERSITY.

DES MOINES, IOWA.

This college has a four years' graded course, principally laboratory work; the last two years clinical work.

The school is located in the largest city in Iowa and affords corresponding clinical advantages.

The regular fall and winter session begins Sept. 21, 1897, and continues twenty-six weeks. For announcement or information, address O. D. Benson, M.D., Secretary, Sixth and Locust Sts.

KEOKUK MEDICAL COLLEGE.

KEOKUK, IOWA.

Keokuk Medical College was founded in 1890 by a corps of experienced medical teachers; graduated its first class in 1891 and has graduated large classes each subsequent year. It has now an active alumni of over three hundred.

The Faculty is composed of twenty professors and assistants. The requirements for admission and graduation are of high grade. The course is graded and extends over a period of four separate calendar years. The college building, in all its equipment, is modern. St. Joseph's Hospital is controlled by the College, for all clinical purposes; abundant clinics in all departments. Session opens September 14. Oliver D. Walker, M.D., Secretary.

MEDICAL DEPARTMENT OF THE STATE UNIVERSITY OF IOWA.

IOWA CITY, IOWA.

The Medical Department of the State University of Iowa, at Iowa City, opens its twenty-eighth session on September 15, and continues it until March 30. The new University Hospital, for which an appropriation was made by the last General Assembly, and which is managed by this Department, is rapidly nearing completion. It embodies the latest and best ideas in hospital architecture and in structure and equipment will be without a superior in the West. Clinic patients are received from all parts of Iowa as well as from many of the Northwestern States. The didactic and laboratory instruction is not made subordinate to the clinical. The large and well-furnished laboratories afford special advantages for practical work. The annual fee, which includes all university charges, is $65.

COLLEGE OF PHYSICIANS AND SURGEONS (MEDICAL DEPARTMENT OF KANSAS CITY UNIVERSITY).

KANSAS CITY, KANS.

The fourth annual session of the College of Physicians and Surgeons will open Sept. 15, 1897, and continue for six months. The school is well equipped for teaching modern medicine and surgery with first class hospital connections where all surgical operations can be seen; also an abundance of medical cases of all the various diseases can be seen daily. The faculty is composed of practical men, familiar with the needs of medical students. For catalogue or other information, address J. W. May, M.D., Dean, or E. M. Hetherington, M.D., Secretary, Kansas City, Mo.

KANSAS MEDICAL COLLEGE.

TOPEKA, KANS.

Session began Sept. 14, 1897, and continues twenty-six weeks. It is a three years' school.

The trustees and faculty own the college building and ten beautiful lots adjoining. Aside from the college clinic and free dispensary, students are required to attend the clinics at Christ's Hospital, State Insane Asylum and Salvation Army Hospital. There are two other hospitals in the city to which students have access, and two private hospitals, making the clinical facilities equal to any college in the country. Kansas has now an excellent anatomic law. Tuition in full for the first year is $65; second year, $65; third year, $35. Board and room rent from $3.50 to $5 per week. J. E. Minney, A.M., M.D., Dean; R. S. Magee, M.D., Secretary.

HOSPITAL COLLEGE OF MEDICINE.

MEDICAL DEPARTMENT OF CENTRAL UNIVERSITY.

LOUISVILLE, KY.

The twenty-fourth annual session of the Hospital College of Medicine will begin Jan. 3, 1897, and continue six months. The curriculum is graded and attendance upon four full courses is required.

College graduates in arts or science who have pursued certain biologic studies; graduates in dentistry, pharmacy and veterinary surgery are admitted to advanced standing. Practical instruction, including laboratory work in chemistry, histology, osteology, pathology, bacteriology and anatomy, with bedside instruction in medicine, surgery, gynecology, obstetrics and diseases of the eye, ear, nose and throat, is a part of the regular course. Hospital and clinic advantages are unsurpassed. For catalogue and further information address P. Richard Taylor, M.D., Dean, 229 West Chestnut Street.

KENTUCKY SCHOOL OF MEDICINE.

LOUISVILLE, KY.

This College is midway between the North and the South and holds its sessions from January to June inclusive. It began in 1817 as the Medical Department of Transylvania University, and took its present name in 1850. With a progressive and experienced faculty of thirty teachers, ample and thoroughly equipped laboratories and a large modern hospital of its own, recently erected adjoining the college, this school is offering facilities for practical and thorough instruction unsurpassed in this country. Advanced students, in sections of about six, are drilled every day in actual work in the indoor and outdoor departments of the College Hospital. The requirements for entrance, graduation, etc., conform to those of the Association of American Medical Colleges. The fees are: Matriculation, $5; tuition, $75; laboratories, each $10; examination each year, $10. For catalogue address Samuel E. Woody, M.D., Dean.

MEDICAL DEPARTMENT, TULANE UNIVERSITY OF LOUISIANA.

NEW ORLEANS, LA.

This institution, founded in 1834 as the Medical College of Louisiana, became in 1884 the Medical Department of the Tulane University of Louisiana. It is the oldest college in the Southwest. The next annual course of instruction will begin *Oct. 14, 1897. It possesses well-equipped laboratories for* chemistry, pharmacy, practical anatomy, operative surgery, microscopic anatomy, pathology and bacteriology, and working rooms for practical physiology and gross pathologic anatomy. These admirable laboratories, now added to the unrivaled practical advantages for clinical, anatomic and pathologic studies given by the Charity Hospital, enables the Medical Department to provide its students with unsurpassed advantages for their medical education. The Faculty solicits the special attention not only of students, but also of graduates of other colleges, to the unequaled clinical and anatomic advantages. The fees amount to a total of $465 for a three years' course. For other information address S. E. Chaille, M.D., Dean.

NEW ORLEANS UNIVERSITY MEDICAL COLLEGE.

NEW ORLEANS, LA.

New Orleans University Medical College is located near the center of the city. The course of instruction covers four years of six months each. Tuition is $30 per session, which entitles to attendance on all lectures, daily clinics and hospital privileges—the hospital wards being in the second story of the main building. It is the only school in the far South open to all irrespective of race or sex.

The mild winter season with its long period of daily sunshine makes New Orleans a delightful climate for students subject to catarrhal or pulmonary troubles. Session opened September 14.

BOWDOIN COLLEGE, MEDICAL DEPARTMENT.

BRUNSWICK, MAINE.

Its seventy-eighth annual course will begin Thursday, Jan. 6, 1898, and continue until the following June 26.

Its course of lectures includes anatomy, physiology, chemistry, pathology and practice, surgery, materia medica, obstetrics, diseases of women, diseases of children, medical jurisprudence, mental diseases; surgical and medical clinic on Thursdays and Saturdays of each week, also clinical lectures and instruction in diseases of eye and ear; good laboratory facilities in chemistry, histology and bacteriology; a well equipped anatomic cabinet.

Matriculation fee, $5; lecture fee, $78 each for first and second courses, $50 for third course; diploma fee, $25. Dissection material furnished at cost. Price of board, including room and incidentals, from $4 to $5 weekly. For full information send for catalogue to Alfred Mitchell, M.D., Secretary.

BALTIMORE MEDICAL COLLEGE.

BALTIMORE, MD.

The preliminary fall course begins September 1; regular winter course October 1.

Excellent teaching facilities; magnificent new college buildings; superb lecture halls; large and completely equipped laboratories; capacious hospitals and dispensary; lying-in department for teaching clinical obstetrics; large clinics.

Send for catalogue, and address David Streett, M.D., Dean, N. E. cor. Madison Street and Linden Avenue.

BALTIMORE UNIVERSITY, SCHOOL OF MEDICINE.

BALTIMORE, MD.

The next session will open October 1, and continue six months. The second session will open about April 15 and continue until August 1. The fees for the first session will be $70 and the fees for the second $45. We have ample hospital facilities and large clinics in both the indoor and out door department dispensary. The instruction consists in didactic lectures, clinical teaching and bedside instruction, bringing the student in close contact with all the different phases of disease, the recognition and treatment, and unexcelled opportunities for witnessing surgical operations and manipulation upon patients. The Baltimore University Hospital is owned by the Faculty of this School, and in close proximity. Ample opportunity for witnessing obstetric cases is constantly afforded, and it is run as a temperance institution. Our college is a member of the Association of American Medical Colleges. H. H. Biedler, M.D., Dean.

COLLEGE OF PHYSICIANS AND SURGEONS OF BALTIMORE.

BALTIMORE, MD.

The twenty-fifth annual session opens Oct. 1, 1897. The length of the term is six months. Having adopted the four years' graded curriculum in 1895, in advancce of the mandate of the national Association of Medical Colleges, the school is now well organized on this plan. The cost of attendance upon the lecture course is $100. The diploma fee is $30.

The instruction consists of clinical and didactic lectures, recitations, ward classes in medicine, histology, pathology, bacteriology and physiology, and anatomic demonstrations. The college and hospital facilities comprise the college building proper; the Baltimore City Hospital; the Hospital for the Colored Race; the Maternité Hospital; the Out door Department of Maternité Hospital; the City Hospital Dispensary and Bay View Asylum.

The Faculty have added a Pasteur department, for the treatment of rabies.

THE JOHNS HOPKINS MEDICAL SCHOOL.

BALTIMORE, MD.

The required period of study is four years. Only those are admitted as candidates for the degree who possess a degree in arts or science from an approved college and have had at least a year's collegiate training, with much laboratory work, and have acquaintance with Latin and a reading knowledge of French and German. In the methods of instruction especial emphasis is laid upon practical work in the laboratories and in the dispensary and wards of the hospital. Abundant clinical material is afforded by the Johns Hopkins Hospital and Dispensary. Especially advantageous for thorough clinical training are the arrangements by which the students engage in practical work in the Dispensary, and throughout the fourth year serve as clinical clerks and surgical dressers in the wards of the Hospital. The charge for tuition is $200 per annum.

Inquiries may be addressed to the Registrar of the Johns Hopkins Medical School.

UNIVERSITY OF MARYLAND, FACULTY OF PHYSIC.

BALTIMORE, MD.

The ninety-first annual session of the University of Maryland, School of Medicine, will begin October 1, and end April 20, 1898. It offers a four years' graded course, methods of instruction eminently practical and splendid laboratory equipment. The magnificent new University Hospital, which is under the exclusive control of the Faculty, offers unsurpassed clinical advantages. The advanced classes are divided into small sections, so that each student receives individual instruction in all the practical branches of medicine. The Lying-in Hospital, which has probably the largest clinic in the South, offers unusual facilities for the teaching of obstetrics. For catalogue and other information address C. W. Mitchell, M.D., Dean, 1021 Cathedral Street.

WOMAN'S MEDICAL COLLEGE OF BALTIMORE.

BALTIMORE, MD.

The Woman's Medical College of Baltimore was founded in 1882. Session begins October 1 and ends June 1. Four years' attendance is required for graduation. There are thirty-four instructors and assistants. The clinical advantages include the Hospital of the Good Samaritan, the Maternité, the Presbyterian Eye, Ear and Throat Hospital, Bay View Hospital and a large dispensary service. Instruction is given in psychiatry, embryology, laboratory work in histology, embryology, pathology, bacteriology, chemistry and pharmacy. Fees for a full course, $100, with reduction of 25 per cent. to missionaries. Five dollars is required for breakage and $30 for final examinations. The rules of the Association of American Medical Colleges are strictly enforced. For terms and catalogue, address Eugene F. Cordell, M.D., Secretary, 1100 McCulloh Street.

COLLEGE OF PHYSICIANS AND SURGEONS.

BOSTON, MASS.

The College is now in its eighteenth year. It was the first regular college in New England to admit both men and women to equal privileges. A four years' graded course is required, under the rules and requirements of the Association of American Medical Colleges, including didactic lectures, recitations, conferences, clinical teachings, and practical work in laboratories and dissecting room.

The regular session begins in September, and ends in June.

The lecture fee is $100 per year, except the first year, which is $75, (complete in advance, $300).

The College is located near the Boston City Hospital, and possesses other good clinical facilities, in which it gives each student experience and special training in general practice. The faculty comprises thirty-two professors, aided by special instructors and assistants. Augustus P. Clarke, A.M.,M.D., Dean; George F. Shurtleff, M.D., Registrar.

TUFT'S COLLEGE MEDICAL SCHOOL.

BOSTON, MASS.

It is the only regular co-educational medical college in New England where diplomas are recognized by the State Medical Society.

It has four years' graded course of eight months each. Entrance examinations (with a few exceptions) are required.

It has a new building, just finished, and thoroughly equipped laboratories, lecture rooms, amphitheater and dissecting rooms, separate study rooms for both sexes, dispensary in the building, and is near City and St. Elizabeth Hospitals for clinic facilities.

Next term commences Wednesday, Sept. 29, 1897. For further particulars, address C. P. Thayer, M.D., Secretary, 74 Boylston Street.

DETROIT COLLEGE OF MEDICINE.

DEPARTMENT OF MEDICINE.

DETROIT, MICH.

The Medical Department of this institution requires for admission a diploma from a reputable high school, or its equivalent. The course of study covers a period of four years of seven full months each. The first two years are devoted to the preliminary and fundamental branches, the last two to the general and technical study of the practice of medicine and surgery. The recitation system of teaching is largely employed. Laboratory instruction including also pathology, bacteriology, physiology and operative surgery, is made a special feature of the course. Practical obstetric work is required of senior students. Harper and St. Mary's Hospitals, attendance at which is compulsory, furnish an abundance of material of all kinds for clinical instruction in all branches. The total fees average about $100 per year. The next session opens Sept. 29, 1897. H. O. Walker, M.D., Secretary.

MICHIGAN COLLEGE OF MEDICINE AND SURGERY, DETROIT.

DETROIT, MICH.

The regular session opens Sept. 21, 1897, and continues six months. The period of study has been increased to a carefully graded course of four years.

The fees are within reach of all, averaging $75 per year. Students have access, free of charge, to the Detroit Emergency Hospital; Free Dispensary; Detroit Eye and Ear Infirmary; clinic for obstetrics, which provides senior students two or more clinical cases; clinic for venereal diseases; gynecology, skin, nose and throat, nervous system, children, thorax, surgery and clincal medicine.

An ambulance service is mantained exclusively in connection with the hospital, thus furnishing an opportunity both to witness the primary treatment of injuries and to perfect themselves in the details of dressing, nursing and [illegible] treatment. All accident and ambulance [illegible] are d[illegible] [illegible]efore the class.

On an average, 15,000 patients are treated annually in the Free Dispensary.

UNIVERSITY OF MICHIGAN.

DEPARTMENT OF MEDICINE AND SURGERY.

ANN ARBOR, MICH.

The course of medical instruction in this institution has, since 1890, consisted of four years of nine months each. The course is graded; the first two years being devoted to the fundamental branches of chemistry, physics, anatomy, physiology and hygiene by means of didactic lectures, quizzes and laboratory work; the remaining two years to special branches and clinical instruction.

One of the chief features of the instruction received here is the thorough practical knowledge which the student obtains in the various required laboratory courses.

The State hospitals, which were established here mainly to afford facilities for clinical instruction, furnish abundant material for acquiring practical experience in the observation and treatment of medical and surgical cases, and junior and senior students have unusual freedom of access to the wards. V. C. Vaughan, M.D., Dean.

HAMLINE UNIVERSITY,

COLLEGE OF PHYSICIANS AND SURGEONS.

MINNEAPOLIS, MINN.

This is the oldest institution of medical learning in Minnesota. The course is four years; the sessions of eight and a half months each. Matriculation fee is $5. Annual tuition for first three years, $65; for the fourth year $35; graduate course $50. No extra charges for laboratories or special courses. The faculty is made up of the ablest men selected from the profession of both Minneapolis and St. Paul. The college building is situated in the immediate neighborhood of the three chief hospitals of Minneapolis, and the hospitals of both cities are available for clinical instruction, giving ample material in all lines. The course is very thorough and rigid; the standard high; the moral tone especially good, and an unusual spirit of fellowship between the faculty and students exists. All laboratories have been refitted with the best apparatus necessitated by rapid growth, the enrollment having increased 70 per cent the past year. Leo M. Crafts, M.D., Dean.

UNIVERSITY OF MINNESOTA; COLLEGE OF MEDICINE AND SURGERY.

MINNEAPOLIS, MINN.

The Medical Department opens September 21. The course covers a period of four years of study, each year representing eight months in actual residence.

The studies are graded throughout the four years, with careful reference to the relations which the subjects naturally bear to each other. The work of the first two years deals with the laboratory branches; that of the third and fourth years include the principles and practice of medicine and surgery with their specialties and the application of scientific or laboratory methods to clinical experience. The hospitals of Minneapolis and St. Paul are open to the students *without fee*, and their clinical facilities are unexcelled. More than twenty-five hospital positions are open to graduates of this college through competitive examination. Level fees: First and second years, $100 each; third and fourth years, $75 each; graduation fee, $10.

For further information address Parks Ritchie, M.D., Dean.

BARNES MEDICAL COLLEGE.

ST. LOUIS, MO.

The Barnes Medical College of St. Louis presents strong claims for the confidence and patronage of the profession. Its new building is one of the most commodious and expensive structures devoted to medical teaching. Its laboratories of histology, physiology, chemistry, pathology, bacteriology and anatomy are among the largest and best equipped of the kind in the world. Its faculty is composed of carefully selected instructors, men of ability and of unblemished reputation, who are widely and favorably known.

Matriculates for the last session numbered 511. A four years' graded course of instruction is required. The tuition is exceedingly moderate, and special terms are given to sons of physicians and ministers. The college is centrally located and clinical advantages are excellent.

BEAUMONT HOSPITAL MEDICAL COLLEGE.

ST. LOUIS, MO.

The regular session begins September 21 and continues for six months. The course extends over three years and is graded. Laboratory exercises are obligatory in chemistry, physiology, uranalysis, histology, pathologic anatomy and bacteriology.

Clinics are regularly held at the City Hospital, the Alexian Brothers' Hospital, St. Mary's Infirmary and the Missouri Pacific Hospital. Other public institutions with which teachers in this school are connected also offer clinical advantages. Prominence is given to laboratory work and to clinical teaching.

Fees (payable in advance): Matriculation fee (paid but once), $5; fee for the junior year, $50; fee for the intermediate year, $70; fee for the senior year, $80; laboratory fee (yearly), $10. No additional charge will be made for hospital tickets, anatomic material or diploma. F. J. Lutz, M.D., Dean.

ENSWORTH MEDICAL COLLEGE AND HOSPITAL.

ST. JOSEPH, MO.

The Ensworth Medical College and Hospital is a partially endowed institution. The college department is well fitted for medical instruction; is up with the times as respects its curriculum, and possesses suitable rooms for lectures and laboratory work. Three terms of six months each constitutes its course of instruction, which is given by lectures and recitations. It seeks and desires students well equipped for the study of medicine by a liberal education. On Sept. 13, 1897, it entered on its twenty-first session. The hospital can accommodate 250 patients. It is well supplied with all necessary means. It is under the charge and special direction of a committee of the faculty. Tuition fees, $50; laboratory fee, $5; examination for degree, $25. Thomas H. Doyle, M.D., President; Hiram Christopher, A.M., M.D., Dean.

KANSAS CITY MEDICAL COLLEGE.

KANSAS CITY, MO.

The Kansas City Medical College, established in 1869, enters upon its twenty ninth annual session with the coming year. A three-years' graded course is established, each school year beginning September 14 and continuing twenty six weeks. The college building is well located, conveniently arranged and contains new and well equipped laboratories. Both lecture and recitation systems of instruction are employvd. The instruction is eminently practical, bedsides teaching being the feature. The dispensary service is large and the material fully utilized. The hospital and clinical facilities are excellent; a part of the courses completed each year. The fees are moderate, half the lecture fee charged to sons of physicians.

For information and announcement address the Dean, J. D. Griffith, M.D., or the Secretary, Franklin E. Murphy, M.D.

MARION-SIMS COLLEGE OF MEDICINE.

ST. LOUIS, MO.

This college will continue to offer a high class course of medicine in keeping with the facilities which the institution possesses. The laboratory instruction, clinic inctruction, didactic lectures and reviews and quizzes are utilized to their utmost.

The Rebekah Hospital, which is upon the college grounds, affords students an opportunity for witnessing a great variety of operations, while the City Hospital, Insane Asylum, City Almshouse, Pius Hospital, Lutheran Hospital and Grand Avenue Dispensary provide abundant clinical instruction.

The session begins Sept. 28, 1897, and ends April 10, 1898. Fees are as follows: Matriculation fee, $5; entire lecture fee, $50; final examination fee, $25; dissecting ticket, $10; chemical laboratory fee, $5; microscopic laboratory fee, $5; lecture ticket, for sons and brothers of physicians and sons of clergymen, $25; lecture fee for all courses, including matriculation, dissection and examination fee, if paid in advance, $150. Y. H. Bond, M.D., Dean; H. W. Loeb, M.D., Secretary.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE STATE OF MISSOURI.

COLUMBIA, MO.

Announcement.—Session opens Sept. 14, 1897. Length of term nine months. Fees, $20 for first year and $50 each for second and third years. Good board at the university clubs at $2 per week. Laboratories are the leading feature of this department. They consist of physics, chemistry, biology, physics, anatomy, pathology and bacteriology. All laboratories are conducted by able men, living upon adequate salaries, and *not* practicing, but giving their entire time to teaching and investigation.

Requirement for admission, in lieu of a diploma from a literary or scientific college or high school, is an examination in each of the following branches: History, English (on the grade of Longman's "School Grammar"), mathematics (algebra), Latin (equal to one year in a high school).

For further information address A. W. McAlister, M.D., Dean of the Faculty.

ST. LOUIS MEDICAL COLLEGE; MEDICAL DEPARTMENT OF WASHINGTON UNIVERSITY.

ST. LOUIS, MO.

Session begins Sept. 23, 1897, and ends April 28, 1898.

Our laboratories are well equipped and admirably adapted for the comfort and instruction of 400 students. Our clinical facilities in medicine are of the best, and include our clinics, private hospitals and a full share of work in the city institutions.

Many years' experience as an advanced school of high standard has perfected the curriculum. Henry H. Mudd, M.D., Dean, 2604 Locust Street; John B. Shapleigh, M.D., Secretary, 2608 Locust Street.

UNIVERSITY MEDICAL COLLEGE.

KANSAS CITY, MO.

Recognizing the advantage derived from an extended course of study, the graduates of this College are required to pursue the study of medicine at least four years, and must have attended three full courses of lectures.

The clinical advantages, offered the student by the various hospitals of the City, attract to this College matriculates from every State of the Union.

The teaching corps comprises no less than forty teachers who are men of recognized ability in their departments.

The course of study begins Sept. 14, 1897, and continues six months, and the cost of the general lecture ticket, including all laboratory and practical work, is $75.

As the faculty consists of members who constitute the staff of the various hospitals, it offers the student unusual opportunities for special study in each department. C. F. Wainwright, M.D., Dean; John Punton, M.D., Secretary.

JOHN A. CREIGHTON MEDICAL COLLEGE.

OMAHA, NEB.

The next term in this institution begins September 28, and will open under the most favorable auspices as the new building (one of the best in the country) has just been completed and furnished and equipped for teaching medicine according to modern ideas.

This college has exceptionally fine clinical advantages, having exclusive control of the clinical material in the St. Joseph's Hospital (a hospital of 300 beds). Being situated in the heart of the city the dispensary clinics are also very large. Two internes are appointed (by competitive examination) to St. Joseph's Hospital, from the graduating class. The course is a graded one consisting of four terms of seven months each. Large and thoroughly equipped laboratories offer unsurpassed advantages for the study of histology, pathology, bacteriology, etc. The anatomic rooms are large, well lighted and ventilated, with plenty of material always on hand. D. C. Bryant, M.D., Secretary.

OMAHA MEDICAL COLLEGE.

OMAHA, NEB.

The Omaha Medical College will enter upon its seventeenth annual session October 1, next.

The course is graded, extending over four years of seven months each. The system of instruction embraces didactic and clinical lectures, recitations, laboratory work in chemistry, histology, pathology, bacteriology, physiology and anatomy.

The facilities and equipment are thoroughly up to date. The building is new and has lecture-room and laboratory capacity for 250 students. A well patronized out door dispensary is connected with the College.

Clinical instruction is given in the Omaha, Clarkson, Immanuel, Douglas County and Presbyterian Hospitals, in all of which the staffs are made up from the College faculty.

The fees are $65, for each course, and a $30 examination fee divided among the different years.

Dissecting material is abundant. W. O. Bridges, M.D., Secretary, 1623 Douglas Street.

ALBANY MEDICAL COLLEGE.

MEDICAL DEPARTMENT UNION UNIVERSITY.

ALBANY, N. Y.

Four years' strictly graded course. Instruction is by lectures, recitations, laboratory work, clinics and practical demonstrations and operations. The Faculty is composed of thirteen professors, assisted by five adjunct professors, three clinical professors, six lecturers and seventeen instructors. Hospital advantages are excellent. Fees: Matriculation, $5 each year; lectures $100 per session; laboratory courses, $50; graduation fee, $25. Regular winter season begins September 28; commencement the third Tuesday in April. For catalogues and further information, address Willis G. Tucker, M.D., Registrar, 4 Lancaster Street.

BELLEVUE HOSPITAL MEDICAL COLLEGE.

NEW YORK CITY.

The new College building, which will be occupied before the close of the session of 1897-98, will afford much larger facilities for teaching than have hitherto been enjoyed by the College and will provide additional lecture rooms, laboratories and rooms for section teaching, dissections and demonstrations. The lengthening of the session to thirty two weeks and the extension of time of study from three to four years will enable students to devote more time to laboratory work than heretofore.

The collegiate year now consists of thirty-two weeks, with the usual holidays, beginning Sept. 27, 1897. The fees for lectures for each year remain at $150. Since the last session some important changes have been made in the arrangement of the Faculty, and in additions to the corps of teachers.

THE BROOKLYN POST-GRADUATE SCHOOL OF CLINICAL ELECTRO-THERAPEUTICS AND ROENTGEN PHOTOGRAPHY.

BROOKLYN, N. Y.

This clinic is intended to practically supplement the study of theory and electrophysics by instructing the physician how to treat patients with electricity—how to prescribe, dose, and apply all forms of medical currents, and operate and properly care for apparatus.

The plan of instruction recognizes the value of time to post-graduate and visiting students, and aims to impart the useful essentials of technique as quickly as possible. Therapeutic technique with galvanic, faradic and static currents will be demonstrated by object lessons without didactic lectures, all theory and physiologic instruction being prepared in printed form. Clinics Monday, Wednesday and Friday afternoons from September 17, to June 1. Term for course of three weeks in therapeutic technique $30. Single clinic $10. X ray complete instruction in manipulation of Crookes' tubes, demonstrating maximum effects, one session only required, $15. Special or particular courses of instruction arranged as desired to suit physicians with limited time. For further particulars address, S. H. Monell, M.D., 865 Union Street.

COLLEGE OF MEDICINE, SYRACUSE UNIVERSITY.

SYRACUSE, N. Y.

The college year begins on the first Tuesday in October and ends on the second Tuesday in June. It is divided into two terms about equal in length.

The annual tuition fee of $125 includes all laboratory courses and material, clinical clerkships, bone loan, microscopes, other laboratory instruments, library, reading rooms and other college appointments, for either instruction or the convenience and pleasure of the students.

Its building is new and large with the latest and best equipments, including a generous cold storage plant furnishing wholesome anatomic material at all seasons.

Its graduates are among the most successful candidates for license before the New York Examining Board. Chancellor Upson of the Regents, unsolicited says: "It it admitted by all competent judges to be unsurpassed in this State."

LONG ISLAND COLLEGE HOSPITAL.

BROOKLYN, N. Y.

The regular term for session 1897-98 will commence Sept. 29, 1897, in the new Polhemus Memorial Clinic.

Send for announcement, after June 10, to J. H. Raymond, M.D., Secretary of Faculty, Long Island College Hospital, Brooklyn, N. Y. Alex. J. C. Skene, M.D., President.

MEDICAL DEPARTMENT, NIAGARA UNIVERSITY.

BUFFALO, N. Y.

The Faculty is composed of twenty-one professors, three associate, three adjunct professors, six lecturers, one demonstrator and eight instructors and assistants.

Every student must attend an extended course in the laboratory of pathology, histology, chemistry and bacteriology.

Especial attention is given to bedside instruction and no student can report for graduation until he has successfully cared for at least seven cases of labor.

Clinical material is obtained from twelve hospitals and two dispensaries. Term begins Sept. 28, 1897; commencement exercises May 11, 1898.

Fees: Registration fee, to be paid each year, $5; general course of instruction, one year, $75; dissection (first two years) each year, $10; histologic laboratory, $10; pharmacal laboratory, $5; chemic laboratory (first two years) each year, $10; pathologic laboratory, $10; bacteriologic laboratory, $10; examination fee, each year except senior year, $5; examinations, senior year, $15.

President, John Cronyn, M.D.; Registrar, Alvin A. Hubbell, M.D.; Secretary, Harry A. Wood, M.D.

NEW YORK POLYCLINIC MEDICAL SCHOOL AND HOSPITAL.

A CLINICAL SCHOOL FOR GRADUATES IN MEDICINE AND SURGERY.

NEW YORK CITY.

The session opened Sept. 15, 1897. The lecture rooms immediately adjoin the wards, thus enabling the students not only to witness the operations but the after-treatment. The hospital contains seventy-nine beds, chiefly occupied by surgical and gynecologic cases. In the various dispensary classes 200 patients a day are treated.

Faculty: Surgery, Professors Wyeth, Fowler, Dawbarn, Van Arsdale and Townsend. Medicine, Professors Page, Kaztenbach, Van Valzah and Adler. Gynecelogy. Professors Munde, Gill Wylie, Goffe, Pryor and Krug. Diseases of children, Professors Holt and Seibert. Diseases of the skin, Professors Robinson and Bronson. Diseases of the nose, throat and ear, Professors Gleitsmann, Pomeroy, Myles, Asch and Sheppard. Diseases of the eye, Professors Webster and Marple. Diseases of the mind and nervous system, Professors Grey and Sachs. Obstetrics, Professor Ayers.

General ticket, $100 for six weeks; $150 for three months. For further information apply to W. R. Townsend, M.D., Secretary.

THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

NEW YORK CITY.

This institution has just entered upon its sixteenth year. Five hundred and thirteen physicians from all over the continent have attended the courses at the institution during the past year. More than one thousand operations were performed in the Hospital, which is one of the largest in the city, containing special wards for babies and children, while about twenty thousand patients were treated in the outdoor department. Recent discoveries have revolutionized medical and surgical methods and a man whose medical education ended fifteen years ago is not a physician or surgeon within the present meaning of the term. Post-graduate medical instruction is for the purpose of furnishing to these graduates in medicine a means of refreshing their knowledge. It supplies them with the opportunity of coming in direct contact with disease by means of special courses in all the departments of medicine and surgery.

THE NEW YORK SCHOOL OF CLINICAL MEDICINE.

NEW YORK CITY.

This school, which was organized less than two years ago in order to meet in our own country the demand for individual post graduate instruction, which hitherto was obtainable only in Europe, is enjoying unprecedented success. The work is wholly clinical. Matriculates are admitted into the classes as assistants, and are thus placed in direct contact with the patients, to examine and treat them, assist at and even perform operations under the guidance of the professors, who are all well-known specialists in their several branches. Only three or four physicians are received into each class—as many as the teacher can personally instruct. Fees are from $10 to $25 per course. The courses are four weeks in length.

UNIVERSITY MEDICAL COLLEGE (MEDICAL DEPARTMENT OF NEW YORK UNIVERSITY).

NEW YORK CITY.

The session begins on Thursday, Sept. 30, 1897, and continues until May 18, 1898.

The curriculum consists of a four years' graded course. Instruction is given by lectures, recitations, clinical and bedside teaching and laboratory courses. The four years' course obviates the overcrowding which obtained under the previous system.

The University Medical College is entitled to utilize, for clinical teaching, its quota of the vast quantity and variety of clinical material of the great city hospitals, viz., Bellevue, City Maternity, Gouverneur, Harlem, almshouse, workhouse, Incurables, Randall's Island, Fordham.

Fees; Matriculation, $5; fee for all required exercises of the year (including dissection, laboratory courses, physical diagnosis, operative surgery and practical obstetrics), $175 a session.

THE WOMAN'S MEDICAL COLLEGE OF THE NEW YORK INFIRMARY FOR WOMEN AND CHILDREN.

NEW YORK CITY.

The Woman's Medical College of the New York Infirmary for Women and Children, 321 East 15th Street, was founded in 1865 by Drs. Elizabeth and Emily Blackwell.

The college course is four years, beginning October 1; fees for the entire course, $515. Instruction is by lectures, recitations and practical work in laboratories, and by clinics in the Dispensary and Infirmary connected with the College. During 1896-97, 13,640 patients were treated in the Dispensary and 752 in the Infirmary. Operations and clinics in the city hospitals are free to students of this College. Emily Blackwell, M.D., Dean.

NORTH CAROLINA MEDICAL COLLEGE.

DAVIDSON, N. C.

The North Carolina Medical College has recently completed a new brick and granite building which will add very much to the efficiency of the work done. Class room work and thorough drilling in the fundamentals are the special features of this school. The length of term is eight months.

Tuition fee $75; matriculation $5.

THE CINCINNATI COLLEGE OF MEDICINE AND SURGERY.

CINCINNATI, OHIO.

The Cincinnati College of Medicine and Surgery opens Sept. 27, 1897, and continues seven months. The fees are $75. Special attention is given to laboratory and clinical methods during a four years' graded course. Hospital instruction is at the City, St. Mary's and the Jewish Hospitals. Two hours daily are given to clinical work at the College. *Women admitted.* W. E. Lewis, M.D., Secretary, 409 E. Fifth Street.

THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS.

MEDICAL DEPARTMENT OF THE OHIO WESLEYAN UNIVERSITY.

CLEVELAND, OHIO.

The College opens Sept. 22, 1897. Women are admitted on equal terms with men.

The course is four years, of eight months each; general ticket $100. This includes all expenses except the examination fee and a small sum for material used in the laboratories. The laboratories are all splendidly equipped, and presided over by the most competent teachers.

The medical management of the Cleveland General Hospital is in the hands of the Faculty. This Hospital is one of the most liberal, and has the largest patronage in the wards and dispensary of any institution in the city. The didactic and clinical lectures of the senior year are all delivered in the amphitheater of this building, thus affording students an opportunity to see practically all the emergency cases, both medical and surgical, that are admitted. Joseph F. Hobson, M.D., 429 Prospect Street.

LAURA MEMORIAL COLLEGE.

CINCINNATI, OHIO.

The College has been partially endowed, and is therefore not dependent upon the fees of students for its proper support.

The course consists of four years, of seven months each, each session beginning October 1 and closing May 1.

The students have exclusive access to the clinics and wards of the Presbyterian Hospital. They also attend the clinics at the Cincinnati Hospital, and have bedside instruction at the same institution.

The laboratories are all new and perfectly appointed. A special feature is a pharmacologic laboratory for experimental research, and a laboratory in skiagraphy.

The general lecture fees are $50 per year.

Graduates of the institution have exclusive opportunity for interneships in the Presbyterian Hospital, and may enter the competetive examination for interneship in the Cincinnati Hospital and in Christ Hospital. John M. Withrow, A.M., M.D., Dean.

THE MEDICAL COLLEGE OF WESTERN RESERVE UNIVERSITY.

CLEVELAND, OHIO.

This school graduated its first class in 1844. Its course in medicine is four years, of eight months each.

The requirements to enter are practically the same as for entrance to Adelbert College, the literary-scientific college of the university. The requirement for graduation with the degree of "Doctor of Medicine" is, that every branch included in the course shall have been completed to the satisfaction of the Faculty of the college and trustees of the university. This college has large hospital and dispensary clinical opportunities; large and thoroughly equipped laboratories; teachers in theoretic branches who devote their entire time to teaching, and who themselves have had high training and experience as teachers. It has (annually) thirteen hospital appointments at its disposal, with others open to its students on competition.

For information as to the cost of the course see advertisement in JOURNAL. G. C. Ashmun, M.D., Dean.

MIAMI MEDICAL COLLEGE.

CINCINNATI, OHIO.

The Miami Medical College of Cincinnati, a member of the American Medical College Association, has a course of four years, with a seven months' term each year. The fees are: Matriculation $5, paid once; lecture fees, annually, $100; Cincinnati Hospital ticket, annually for three years, $5. The special advantages of this school are its excellent facilities for clinical instruction. Twelve members of the faculty deliver bedside and amphitheater lectures at the Cincinnati Hospital, the great general municipal hospital, and the college has under its own control the Miami Maternity Hospital—a free lying-in hospital—and the Ophthalmic Hospital Building where are held its own general and special clinics on medicine, surgery, ophthalmology, otology, laryngology, gynecology, dermatology and neurology. A. P. Dundridge, A.M., M.D., is Dean; Joseph Eichberg, M.D., Secretary.

OHIO MEDICAL UNIVERSITY.

COLUMBUS, OHIO.

The phenomenal growth of the Ohio Medical University is a source of pride to those who have labored to the end of establishing a strictly high grade institution. For this success due credit must be given to the university system of teaching adopted in all departments, which has proven far superior to the old lecture plan with final examinations.

The curriculum covers four years' work, in terms of seven months each, with requirements for admission and graduation fully abreast with the highest grade colleges.

Clinical facilities are abundant, the various hospitals connected with the university furnishing during 1896, 462 medical and 816 surgical cases. This does not include 30 obstetric cases and special clinics at the Ohio Penitentiary and State Hospitals.

STARLING MEDICAL COLLEGE.

COLUMBUS, OHIO.

The fifty first annual course of lectures will commence on Sept. 15, 1897, and continue until April 13, 1898.

The course is graded and covers a period of four years. Instruction is given by lectures, recitations, clinical teaching and practical demonstration.

Thorough laboratory instruction is given in histology, anatomy, chemistry, physiology, bacteriology, pathology, embryology and biology.

The requirements for graduation conform to the standard of the State Board of Medical Examination and the Association of American Medical Colleges.

For catalogue or fuller information address Thos. C. Hoover, M.D., Registrar, 249 E. State St.

TOLEDO MEDICAL COLLEGE.

TOLEDO, OHIO.

The seventeenth annual session of the Toledo Medical College begins Sept. 30, 1897. Four courses of six months each are required. The new and commodious college building, four stories high, has every equipment and modern convenience. It is situated between the Toledo and St. Vincent Hospitals, one square from each, the former with 100, the latter with 200 beds, and has full use of both, also of the Woman's Retreat and Foundling's Home. It has a continuous free dispensary with a large clinical attendance. The fees are $50 for general ticket, or $175 for four or more years. Considering the individual instruction possible in a school of its size, no more thorough course in medicine can be obtained anywhere. Wm. J. Gillette, M.D., Secretary.

UNIVERSITY OF CINCINNATI.

DEPARTMENT OF MEDICINE, MEDICAL COLLEGE OF OHIO.

CINCINNATI, OHIO.

The Medical College of Ohio during the past year became the Medical Department of the University of Cincinnati, but retained the name which it has held since its foundation by Daniel Drake in 1819. The new building contains the lecture halls and the laboratories, which have been splendidly equipped. A thoroughly modern clinic building has been erected on the grounds and has proved to be admirably adapted for its purpose.

The course consists of four years of seven months each. The fee of $100 includes all required laboratory work and dissections. The clinical advantages are very great and positions in six of the hospitals are open to graduates of the college. W. W. Seely, A.M., M.D., Dean; James S. Hyndman, M.D., Secretary, 22 W. Ninth St.

MEDICAL DEPARTMENT, UNIVERSITY OF OREGON.

PORTLAND, OREGON.

The Medical Department of the University of Oregon is located in the city of Portland, is a member of the Association of American Medical Colleges, its requirements being those laid down by that organization. Since 1896 it has been a four course school. It has a corps of well qualified instructors, there being fourteen professors and eight adjunct lecturers. The chemic and bacteriologic laboratories and dissecting department are specially complete.

Good Samaritan, St. Vincent and the Multnomah County Hospitals are utilized for clinics, which are frequent, and the material varied and abundant.

The fees are graded according to class entered. Matriculation is $5, fee for each course varying from $130 to a free ticket for the fourth year to those who attend all four courses in this school; examination fee is $30. S. E. Joseph, M.D., Dean.

MEDICAL DEPARTMENT, WILLAMETTE UNIVERSITY.

SALEM, OREGON.

The Medical Department of Willamette University is permanently located at Salem, the capital of the State, and is now entering upon its thirty-second year. The course of instruction continues through four years, in accordance with the highest and best standard of modern advancement.

The regular course of instruction will begin on Wednesday, September 29, and continue for six consecutive months. Students must conform to the requirements of the Association of American Medical Colleges for matriculation and graduation.

Fees: First year, matriculation fee, $5; lecture fee, $100; demonstrator's fee, $5; breakage fee in laboratory (returnable if not used), $3. Second year, lecture fee, $100. Third year, lecture fee, $75. Fourth year, lecture fee, $20; examination fee, $30. W. H. Byrd, M.D., Dean.

THE JEFFERSON MEDICAL COLLEGE.

PHILADELPHIA, PA.

The course is a graded four years' curriculum. It consists of didactic lectures and recitations by the faculty, laboratory work under the charge of a large corps of demonstrators and assistants, and clinical lectures in every special field, with ward classes conducted in the college hospital. The institution is provided with its medical hall and museum, its laboratories, recently much enlarged and fitted out at great expense, and its hospital, where over three hundred patients are treated daily. The maternal department maintained in a separate building, utilized over two hundred cases of midwifery last year for the instruction of the graduating class. The winter course lasts nearly eight months.

The annual fee is $150, the matriculation fee, $5 (paid but once). No diploma fee. J. W. Holland, M.D., Dean.

THE MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.

PHILADELPHIA, PA.

This college enters upon its seventeenth year October 1. The results of open competitive examinations and of those of the State Examining Board have shown beyond question that its graduates can hold their own with the most favored institutions. The completion of the new clinical amphitheater, the finest and largest in the country, greatly adds to the facilities for clinical teaching, upon which together with laboratory training the college lays special claim to superiority. Other marked improvements have been made and, most important of all, the addition to the faculty staff of several well known and skilled instructors will be a guarantee that the institution will maintain its position in the forefront of American medical colleges.

The tuition fees range from $145 for the first year to $100 for the fourth.

PHILADELPHIA POLYCLINIC AND COLLEGE FOR GRADUATES IN MEDICINE.

PHILADELPHIA, PA.

Practical individual instruction, clinical and demonstrative, is given to physicians only, during the entire year.

The post-graduate department offers opportunities for observation and study, alike to experienced practitioners who desire to acquaint themselves with the most recent developments in medical science and art or to take up special lines of practice, and to recent graduates who wish to become particularly familiar with medicine and surgery in its dispensary and the methods employed in hospital wards.

Courses may begin at any date. The fee for any one branch is $15. A general ticket for all clinical branches, $90. M. J. Stern, M.D., Secretary.

UNIVERSITY OF PENNSYLVANIA, DEPARTMENT OF MEDICINE.

PHILADELPHIA, PA.

The one hundred and thirty-second annual session will begin Friday, Oct. 1, 1897, at 12 M., and will end at commencement, the second Thursday in June.

The curriculum is graded, and attendance upon four annual sessions is required. College *graduates* in arts or sciences who have pursued certain biologic studies, are admitted to advanced standing.

Practical instruction, including laboratory work in chemistry, histology, osteology and pathology, with bedside instruction in medicine, surgery, gynecology and obstetrics, is a part of the regular course and without additional expense.

For catalogue and announcement containing particulars, apply to John Marshall, M.D., Dean, Thirty-sixth Street and Woodland Avenue.

WESTERN PENNSYLVANIA MEDICAL COLLEGE.

MEDICAL DEPARTMENT OF THE WESTERN UNIVERSITY OF PENNSYLVANIA.

PITTSBURG, PA.

This college offers graded courses of eight months, session of 1897–98, twelfth year, commencing Oct. 5, 1897.

Four years required for graduation. Instruction eminently practical. Clinical facilities afford advantages to students. *New* college and clinical buildings with extensive laboratories freshly stocked with every needed appliance in all departments. Hospital operative clinics, maternity clinics and dispensary out-door clinics are given daily. Laboratory work is continuous. Quizzes given regularly. For particulars address T. M. T. McKennan, M.D., Secretary, 524 Penn Avenue.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA.

PHILADELPHIA, PA.

The forty-eighth annual session opens Sept. 29, 1897. A four years' graded course of lectures, quizzes, bacteriologic and clinical work offers superior advantages. Students are admitted to the clinics of city hospitals. Address Clara Marshall, M.D., Dean, 1712 Locust Street.

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA.

CHARLESTON, S. C.

This College, founded in 1828, offers a three years' graded course, good hospital advantages, well equipped chemic, pathologic and bacteriologic laboratories, modern dissecting room, excellent teaching facilities and ample clinical material. Every facility afforded for a thorough course of instruction by lectures, demonstrations, quizzes, laboratory work and frequent clinic.

Lectures begin Oct. 1, 1897. Commencement exercises April 1, 1898.

Fees: First year, matriculation $5, lectures $100, laboratory fee $5; second year, lectures $100, laboratory fee $5; third year, lectures $80, laboratory fee $5. No further charge for dissecting and hospital ticket or diploma fee.

Women admitted to medical and pharmaceutic courses.

For catalogue and other information address Francis L. Parker, M.D., Dean, 70 Hassell Street.

CHATTANOOGA MEDICAL COLLEGE.

MEDICAL DEPARTMENT OF GRANT UNIVERSITY.

CHATTANOOGA, TENN.

On September 15 the College opens the regular annual course of instruction. The session will continue twenty-six weeks of actual teaching. It has an ample teaching corps of twenty-three instructors, with six well equipped laboratories and such clinical facilities as can only be afforded by a population of a city of this size. It promises to its patrons a splendid opportunity for a thorough preparation for the practice of medicine. The fees are reasonable ($50 for professor's ticket), having been arranged so as to encourage the worthy young man in his efforts to obtain a medical education. Through the three year graded course the student receives all positive instruction possible by placing special emphasis upon individual laboratory training, as well as by didactic lecturing and recitations. J. R. Rathmell, A.M., M.D., Dean; G. Manning Ellis, M.D., Secretary.

MEHARRY MEDICAL COLLEGE.

NASHVILLE, TENN.

The twenty-second annual session of Meharry Medical Department of Central Tennessee College, Nashville, Tenn., will open Sept. 13, 1897.

This institution is designed for the education of colored physicians, and more than half of the regularly educated colored physicians of the Southern States are numbered among its alumni. It has a graded course of study of four sessions. The College has well equipped laboratories and good clinical advantages are furnished. There are fifteen members in the faculty. One hundred and fifty-two students were enrolled the past session.

For catalogues or further particulars address G. W. Hubbard, M.D., Dean.

MEMPHIS HOSPITAL MEDICAL COLLEGE.

MEMPHIS, TENN.

This College was organized in 1878, and has more than 1,200 graduates.

Its corps of instructors consists of ten professors, fifteen assistants and a full corps of quiz-masters to carry on free quizzes and reviews.

The fees are $75 for full set of tickets, including all laboratory work.

The length of term is six months, beginning in October and closing the last of the following March. It possesses clinical advantages in two hospitals, in addition to the College Dispensary, which latter has over 4,000 patients each session. The attendance for the session of 1896–97 was 316 students, the largest number of regular medical students that attended any Southern college.

For further information address W. B. Rogers, M.D., Dean.

SEWANEE MEDICAL COLLEGE, UNIVERSITY OF THE SOUTH.

SEWANEE, TENN..

This College is now engaged in its sixth annual course of lectures extending from June to the ensuing January.

The present class is exceedingly encouraging both in numbers and quality, and gives assurance of a grand success.

The requirements, rigidly exacted, are for entrance, ample preliminary education, and for graduation, attendance upon three annual courses of lectures.

The elevated mountain location of the institution insures health, comfort and favorable conditions for study during the summer and fall seasons.

The establishment of a charity hospital, now in preparation, with sanitariums and an out-door department, will furnish the much needed clinical facilities and render the equipments perfect.

The college fees, per session, are from $55 to $65; graduation fee, $25. For information address J. S. Cain, M.D., Dean.

TENNESSEE MEDICAL COLLEGE.

(MEDICAL AND DENTAL DEPARTMENT.)

KNOXVILLE, TENN.

The Faculty embraces eighteen professors and seven lecturers and demonstrators. The session for 1897–98 begins Oct. 1, 1897, and ends April 1, 1898.

Fees: Medical department, $65; dental department, $100, per session. Three years' attendance is required.

Members of the Southern Medical Colleges Association, National Association of Dental Faculties and National Board of Dental Examiners.

All departments are equipped with the most modern appliances. Temperate climate; a medium between the extreme North and the South. J. C. Cawood, M.D., President.

UNIVERSITY OF NASHVILLE, MEDICAL DEPARTMENT.

NASHVILLE, TENN.

Throughout the south and southwest, for nearly half a century, the name of this institution has stood for superiority in medical education. Though well along in middle life, progress continues to be the watchword. The new college building is complete in every appointment for the most modern and thorough instruction and the personel of the faculty such as to commend and retain the confidence of all.

From present indications the coming session promises to be the most successful in the history of this school. William L. Nichol, A.M., M.D., Dean.

UNIVERSITY OF TENNESSEE, MEDICAL DEPARTMENT.

NASHVILLE, TENN.

Preliminary term opens September 6. Regular session begins October 4. Commencement will be held the latter part of March, 1898.

This college gives a three years' graded course.

The instruction consists of didactic lectures, clinical teaching, practical instruction and examinations or quizzes.

From four to five didactic lectures are delivered daily. Two clinical lectures are given daily, one in the City Hospital and one in the clinical amphitheater at the college.

Clinical facilities: The City Hospital, Davidson County Hospital and the College Dispensary clinics.

Laboratory courses in chemistry, microscopy, bacteriology, pathologic anatomy and surgery are compulsory.

Practical anatomy, laboratory work and clinical instruction are emphasized, and ample facilities for their study are provided. Fees: First year $100; second year, $100; third year $115. For information address Paul F. Eve, M.D., Dean, 614 Broad St.

VANDERBILT UNIVERSITY, MEDICAL DEPARTMENT.

NASHVILLE, TENN.

This institution has had twenty-three years of prosperity. In building, equipments and teaching corps she easily stands among the first of the medical schools of the land. Through the influence of his wife, Commodore Vanderbilt was induced to establish a university in the South. He selected Nashville as the most suitable location for such an institution. To his princely gifts the late William H. Vanderbilt added largely. The first department of the Vanderbilt University to begin work was the Medical Department. Her alumni, numbering now about 2,600 are to be found in various parts of the country and many of them are already famous as medical men.

UNIVERSITY OF TEXAS, MEDICAL DEPARTMENT.

GALVESTON, TEXAS.

The Medical Department consists of the Schools of Medicine, of Pharmacy, and of Nursing. The School of Medicine offers instruction under twenty competent specialists, extending over a period of four years, leading to the degree of M.D. Women are admitted.

Tuition in all departments of the university is free. A matriculation fee of $30, payable but once, is charged.

The session begins October 1. The school possesses a complete equipment. For information address, Geo. T. Winston, M.D., President.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF VERMONT.

BURLINGTON, VT.

With its forty-fourth session, beginning in January, 1898, and continuing until July, this school inaugurates the four year system of graded study as a requisite for graduation. The Mary Fletcher Hospital affords ample clinical facilities. Laboratories for chemic, histologic and bacteriologic work; an abundance of anatomic material, and apparatus for surgical and obstetric manikin practice are provided. Entrance examinations are required before matriculation. The Faculty *includes eminent specialists from distant cities.* The number of students last session was 253; graduates 53. The annual lecture fee is $100: examination, $25; matriculation, $5. Address B. J. Andrews, M. D., Secretary.

MEDICAL COLLEGE OF VIRGINIA.

RICHMOND, VA.

The Medical College of Virginia is one of the oldest and best known medical institutions in the South. Extensive additions have recently been made whereby its facilities have been much extended. The City Free Dispensary and Old Dominion Hospital, under the control of the Faculty, adjoin the College. Dental and pharmaceutic departments have recently been established and will be in operation at the opening of the coming session. The Faculty (Christopher Tompkins, M.D., Dean) consists of eighteen professors and nineteen lecturers, demonstrators and instructors. The course of instruction covers three sessions of seven months each, but will most probably be extended to four next year. Fees for each session, $90. The session began on Sept. 21, 1897.

UNIVERSITY COLLEGE OF MEDICINE.

RICHMOND, VA.

This institution, with Hunter McGuire, M.D., LL.D., President, is now in the fifth year of its existence. Twice since its establishment the building has been enlarged, and now extensive buildings are being added for laboratory purposes, etc. When completed at the opening of the next session, September 30, the institution will have accommodation for 500 students.

It embraces three degree-conferring departments, medicine, dentistry and pharmacy, each with independent Faculties, the whole teaching staff consisting of fifty-one professors and instructors. There were 274 students last year.

The course is a well graded one and consists of three terms of eight months each; the tuition fees for the whole course in medicine being $225. This institution has the benfit of the clinical material afforded by two hospitals and two dispensaries.

UNIVERSITY OF VIRGINIA, MEDICAL DEPARTMENT.

CHARLOTTESVILLE, VA.

The session began September 15 and will continue nine months. The course of study extends over three full sessions, and is graded as follows: 1., Chemistry, biology, descriptive anatomy. 2. Physiology, bacteriology, pathology, regional anatomy, materia medica, obstetrics. 3. Gynecology, surgery, therapeutics, practice, ophthalmic surgery, hygiene and medical jurisprudence.

The utmost attention is paid to securing accurate instruction. The practical work is done under minute individual supervision. The tuition fees for the three years amount to $120, $100 and $60 respectively. The other necessary expenses are from $25 to $35 per month.

The University of Virginia is situated in the beautiful and healthful region of Piedmont, Va. For fuller information apply for catalogue to P. B. Barringer, M.D., Chairman of the Faculty.

THE SOUTHERN MEDICAL COLLEGE ASSOCIATION.

[Received too late for insertion on page 632.]

The Southern Medical College Association makes the following requirements, viz.:

Every student applying for matriculation must possess the following qualifications:

He must hold a certificate as the pupil of some known, reputable physician, showing his moral character and general fitness to enter upon the study of medicine.

He must possess a diploma of graduation from some literary or scientific institution of learning, or certificate from some legally constituted high school, General Superintendent of State Education, or Superintendent of some County Board of Public Education, attesting the fact that he is possessed of at least the educational attainments required of second-grade teachers of public schools; provided, however, that if a student, so applying, is unable to furnish the above and foregoing evidence of literary qualifications, he may be permitted to matriculate and receive medical instruction as other students, and qualify himself in the required literary departments, and stand his required examination, as above specified, prior to offering himself for a second course of lectures.

The foregoing certificate of educational qualifications, attested by the Dean of the medical college attended, together with a set of ticket showing that the holder has attended one full course of medical lectures, shall be essential to attendance upon a second course of lectures in any college belonging to the Southern Medical College Association.

1 189—

Dean of . . . . :

DEAR SIR—Mr . . . . . . of . . . . . . , is a gentleman of good moral character. I recommend that he be allowed to enter upon his medical studies in your college. He has been my pupil . . months.

Yours, [Sign here]. . . . . M.D.

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2 189- -

Dean of . . . .

DEAR SIR—I have examined Mr . . , of . . . . . and find his scholastic attainments equal to those requisite for a second-grade teacher's certificate in our public schools.

Yours, ...

Supt. of Pub. Instruction.

WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS.

MILWAUKEE, WIS.

The next session in this school will begin on Wednesday, September 15, and continue until March 29, 1898. Attendance upon four full courses of lectures is required before graduation. The annual dues including laboratory deposits amount to about $80. The laboratory and clinical facilities of this institution are fully up to the requirements of the present advanced state of medical science. W. H. Washburn, M.D., Secretary.

SOCIETY PROCEEDINGS.

British Medical Association.

Proceedings of the Section on Public or State Medicine at the Sixty-fifth Annual Meeting, held at Montreal, Canada, August 31 to September 4, 1897.

WEDNESDAY—SEPTEMBER 1.

The Section convened at 10 o'clock, A.M., in the lecture room of the Redpath Museum, President E. P. LACHAPELLE, M.D., Montreal, in the Chair.

Among those present from the United States were Drs. Benjamin Lee of Philadelphia; C. O. Probst of Columbus; Felix Formento of New Orleans; Henry D. Holton of Brattleboro, Liston H. Montgomery, Arthur R. Reynolds and N. S. Davis, Jr., of Chicago; Lt.-Colonel Alfred A. Woodhull, U. S. A., and Murray G. Motter of Washington, D.C.; G. D. N. Hough of New Bedford, Mass.; E. C. Rivers of Denver, Colo.; Wolfred Nelson of New York, and J. C. Shrader of Iowa City, Iowa.

Dr. LACHAPELLE, after extending a hearty greeting to the Section, read a résumé or synopsis of his paper entitled

THE PROGRESS OF SANITATION IN CANADA.

The speaker analyzed all the sanitary legislation in Canada from the time of Louis XIV. to the present, and the hygienic measures under the French régime, 1603 to 1763. Thus in 1667 the King of France established for the Civil State a system of registration of births which is still in force in the Province of Quebec. The same law appertains also to baptisms, marriages and burials. In 1667 the question of food was considered and as a first step in this direction the inspection and price of bread was decided upon. In 1707 meat had to pass inspection regulations equivalent to our modern stamping. In 1748 there were regulations relative to foundlings until they were 18 or 20 years of age.

Following this he spoke of the typhus fever epidemic of 1795 in Ireland, which demanded the urgent protection of the colony and vessels coming from infected ports and the manner in which they were inspected and quarantined. From 1815 to 1821 the government appointed medical vaccinators and granted prizes for a memoir on the advantage of vaccination, etc. In 1832 hygienic measures received a stimulus by the appearance of cholera and a quarantine station was established at Grosse Isle. In 1849 more precise laws were adopted, because of a second invasion of this disease and since the Confederation (1867 to 1897) positive systemization has prevailed in the provincial governments throughout Canada.

Regarding Federal sanitation, all matters relating to foreign countries and to commerce are of Federal jurisdiction and accordingly sanitary laws were passed at Ottawa in reference to immigration and quarantine, the prevention of contagious diseases in animals, the suppression of food adulteration, the compilation of statistics, etc.

In the first year of the Confederation (1868) the Federal government enacted an "Immigration Act" destined to be completed (1871) by the "Quarantine Act," and rendered most effective subsequently. Mention was made of the eight well organized quarantine stations of the government, viz., Grosse Isle, Quebec; Halifax, Nova Scotia: St. John, N. B.; Sydney, Cape Breton; Hawkesbury, Nova Scotia; Chatham, N. B.; Charlettetown, Prince Edward Island, and William Head, B. C., including a detailed description of how the various staffs of these ports see to the inspection and disinfection of vessels, to the vaccination of passengers, to the detention in quarantine when required, etc.

Regarding contagious diseases in animals, the federal station (1884–1896) provides for the quarantining of exported animals and for the repression of epidemics among them.

The "Adulteration Act" appoints food analysts, to whom any person may submit samples; it also has some provisions respecting milk supplies and other foods (1884–1889).

As to provincial sanitation and municipal authority regulations the law varies in different Provinces. Certain Provinces, such as Manitoba and British Columbia, possess special organizations, while in the Northwest Territories and Prince Edward Island there are no provincial boards of health, although there exist sanitary laws investing extended powers in the Lieutenant-Governor in council and in the municipal authorities. In a word, hygienic laws in the Northwest Territories are adapted and elastic as occasion requires. Ontario and Quebec are perhaps the best managed Provinces. The Provincial Board of Ontario was founded in 1882; that of Quebec in 1886. These two boards have enabled public hygiene to make the greatest progress in Canada. In Ontario compulsory vaccination of all children over four months of age has been provided for by the statute and school teachers may require a certificate of vaccination from pupils. The Provincial Government has the entire control of vital statistics (1896), the compiling being done by the secretary-treasurer of each municipality. Here also the Food Act is very explicit in cities. In the Province of Quebec vaccination is obligatory by statute in four cities, but any other municipality may render it compulsory. The keeping of the registers of the civil state is still, as in the days of Louis XIV., confided to the care of the clergy of whatsoever denomination and it is from these gentlemen that each month the Provincial Board of Health receives the certificates establishing the causes of death and those reporting the marriages and births. From these reports the Board compiles its statistics. The Provincial Board has power to make regulations to supplement in a certain measure the federal laws. In relation to the prevention of contagious diseases, hygiene in factories, sanitation in general, including the suppression of nuisances, etc., the Quebec Provincial Board has issued permanent and very precise regulations and has formulated in them a standard of effectiveness that must be attained by the municipal boards. Apart from these permanent regulations it has, besides, the eventual powers of making special regulations during the prevalence of epidemics.

In both Ontario and Quebec the Provincial Boards may exercise the power conferred upon the local boards if such local boards neglect or refuse to perform their duties.

In Ontario the interpretation and the enforcing of the "Factory Act" is left entirely to the inspectors.

The appoval of plans of aqueducts and drainage devolves on the Provincial Board in the Provinces of Quebec and Ontario. In Quebec the law regulates the disposal of the dead and enacts that the sites for cemeteries shall be chosen by the Provincial Board.

Speaking of other Provinces briefly: New Brunswick (1887) and Nova Scotia (1893), possess somewhat identical organizations. The Lieutenant Governor in council having the right to legislate on sanitary matters, but only in Nova Scotia can the Lieutenant-Governor exercise his veto. The sanitary laws of New Brunswick (1887–9) very much resemble those of the Province of Quebec, as they confer on the Provincial Board the power to make regulations respecting the prevention of contagious diseases, the inspection of food and of insalubrious industries, drainage and the repression of nuisances. The registration law (1887) provides for the publication of vital statistics. In Nova Scotia, the authority of the Provincial Board with regard to contagious diseases is simply advisory. It may, however, during an epidemic, substitute itself for inefficient municipal boards. Manitoba (1893) admits of a special organization which seems to suit the needs of a country whose population is disseminated over a vast area of territory. Its Provincial Board is composed of five members, a veterinary surgeon and four physicians. For the needs of local administration, the four physicians are titled inspectors, and the Province is divided into four districts. In each district the authority of the inspector is supreme. British Columbia has (1895) a Provincial Board which according to the statute seems to be only advisory, but which nevertheless has established very complete and very effective regulations; for instance it has a measure which surpasses those of any other Province, prohibiting the discharge of sewage into any river. Prince Edward Island has no Provincial Board. It has a gool law respecting vaccination, and by its "Health Act," local boards are appointed in two cities, and the Lieutenant-Governor in council is empowered to appoint a board of health in each county. In the Northwest Territories a law relating to hygiene was passed in 1882. Its means are only preventive. The Lieutenant Governor can hinder any person within the Territories from leaving a locality in which there exists a contagious disease. He can also delay at the frontiers any suspicious outsider. He can divide up the Territories into sanitary districts, and appoint medical health officers if he judge such measures expedient.

The regular order of scientific business was then proceeded with.

Dr. P. H. Bryce read a paper,

HOW FAR SHOULD MANDATORY MEASURES GO IN DEALING WITH: 1, MEASLES; 2, WHOOPING COUGH; 3, TUBERCULOSIS; 4, LEPROSY; 5, CHICKENPOX.

A brief analysis of his paper is as follows:

In Ontario the law, so far as it relates to chickenpox, is a dead letter on account of the mildness of the disease. Regarding measles, in 1894, sixty-five cases died in the entire Province of Ontario; in 1895, forty-one cases; in 1896, forty-three cases.

The writer assumed that the public is not prepared to be quarantined for this disease, as the gravity of the disease will not warrant it. Notwithstanding this, he recommended the following rules for school children for measles or whooping cough: 1. Daily notification to the health office, by the school authorities, of every absentee. 2. The truant officer should visit the home of the child immediately, for investigation. 3. A visit by a medical man to diagnose the disease if any exists. 4. Compulsory notification by the household (this will readily corral the disease, and practical isolation be made at once). 5. Notification, by the teacher, of any further cases of disease occurring in the school, and their immediate removal. 6. Home isolation by means of placards. 7. Disinfection of the house. 8. Closing of the school as a last resort.

Regarding whooping cough, it is contagious long before "cough" has shown itself, or where spasmodic coughing takes place.

As tuberculosis causes more deaths than any other disease, insist on notification of all cases of this kind being made to the health office. Insist on the regulation of the tubercularized, viz., to remain at home, to remain away from factories, etc. Establish hospitals or homes or sanitaria throughout the Province for them.

Leprosy cases need to be isolated.

Dr. C. O. Probst said that we are in the dark as to the cause of whooping cough, yet we can prevent the spread of the disease. He called attention to the fact that in the eleventh census of the United States, 9,256 cases of measles died, 8,432 cases of whooping cough, fifteen cases of leprosy, while 102,199 died from consumption. It is difficult to prescribe mandatory laws in the control of measles and whooping cough, as public opinion is against it. Although we should require notification of whooping cough, yet we have no isolation hospitals for such cases. Apparently, then, notification may not amount to a great deal. Closing the public schools does not protect the children unless the disease is epidemic. The prevalence of these diseases is due to their mildness. He advocated double notification referred to, placarding the homes of the sick and other domiciliary measures. In leprosy, he was in favor of the National Government establishing a place for the segregation of lepers. In tuberculous subjects we can not, unfortunately, isolate these cases. Their sputa should be disinfected. In tuberculosis of lower animals we can enforce mandatory measures in the sale of unsound meat and impure milk, or slaughter the diseased animals when found so by the tuberculin test. There is a close connection between breathing impure or foul air and consumption. Capitalists and others must be made to perform their duty and those in authority should be held responsible.

Dr. H. Handford of England was not in favor of mandatory measures for these mild types of disease. In England many think there is too much legislation already. We need in this branch of medicine in England a Minister of Health.

In scarlet fever the removal of a case can be made compulsory by a magistrate's order, but in his city of 250,000 inhabitants he does not think that such an order has ever been issued. He advocated education and persuasion of the parents on the part of the attending physician, that their confidence may be gained and a case removed voluntarily. Health officers are inclined to be looked upon as officious. He was, however, in favor of mandatory or compulsory measures regarding the disposal of impure milk and impure meat; as in England there are laws governing this, also governing tuberculosis. Leprosy is a clinical curiosity in England. He thinks that what applies to whooping cough applies practically to measles, although in measles the mortality varies greatly. In cities 43.05 deaths in every 1,000 cases occur, while but 6 cases in every 1,000 cases of measles die in country districts; in some cities in England, however, the mortality may reach 49. Notification in England is required by law, and it is a double notification, both by parents and teachers.

Dr. William Oldright of Toronto agreed in part with the last speaker. He thinks we lose sight of much of the educational idea, but he thinks compulsory measures are also necessary. He said that whooping cough is more dreaded than measles in some families and cited a number of illustrations in support of his statement. Regarding tuberculosis, as a usual thing it is not properly dealt with. Rooms at health resorts frequented by tuberculous patients should be more thoroughly disinfected. The same rule holds good regarding the disinfecting of rugs, carpets, etc., in sleeping-cars and hotels, which should be washed oftener; as a rule, this is rarely done.

More isolation hospitals should be established for scarlet fever and diphtheria cases, and with these comes in the mixed infection class; when we come in contact with such a case, where one variety is exposed to the other the case may become more complicated. If placarding is done it should be thorough and not inefficiently. Placards on milk wagons, stating that the dealer deals only in pure milk, is a strong inducement for the people to patronize such firms.

Dr. Ebenezer Duncan of Glasgow thinks tuberculosis is the most important of these diseases to combat. He believes the greatest amount of good can be obtained by increasing the cubic space for breathing pure air and that overcrowding should be condemned. If thorough ventilation is carried out there is not much chance of infection; good feeding should go with this, then notification in case of death. He did not think it was possible to carry out effective mandatory measures with regard to measles and whooping cough.

Dr. Thomas Carr of Braintree, England, urged the necessity of disinfecting the sputa of tuberculous cases. Regarding measles and whooping cough we are not yet ready to isolate these cases in a large district. In 80 per cent. of the towns in England where notification has been tried, it has been abandoned.

Dr. Alexander Johnson of Glasgow—If we attempt to remove cases of measles or whooping cough to isolation hospitals, the plan is likely to fall through and then we are placed in an unfavorable light. Public sentiment is with the people in this matter. Measles is scarcely at all contagious after the eruption has appeared. In whooping cough it is more infectious when the secretions or sputa are abundant and such cases should by all means be isolated.

Dr. Wolfred Nelson of New York—Leprosy is in no sense contagious. I have seen the disease in the Island of Trinidad and the Isthmus of Panama and have known sisters of charity to nurse the disease twenty-six years and be in constant attendance and not a single case developed among them. It is simply a newspaper sensation to state that this malady is contagious, and as intelligent medical men we should add no additional burdens to these unfortunates by sending them away from their former surroundings and family.

Dr. Benjamin Lee of Philadelphia replied to the last speaker by saying or inquiring, if leprosy is not contagious, in what manner do you account for its propagation from person to person? The health authorities of Cape Colony have recently published an exhaustive report on the prevalence of leprosy in that country, in which they strongly sustain the doctrine of contagion. Negative testimony may wipe out positive testimony, although not reliable.

Dr. John A. Macolmson of Middleborough, Eng., thought we could advance public health matters best by educating the people concerning all kinds of disease.

Dr. Felix Formento of New Orleans concluded the discussion by referring to the cases of leprosy he had seen in his city. The disease seemed to be transmitted by heredity or contagion.

Dr. James T. Neech of Atherton, Eng., read a paper on

THE PERIOD OF INFECTION IN SCARLET FEVER.

He thought six weeks too short a period for the specific poison, infection or microbe to cease to multiply, even though desquamation may be complete. Infectivity can be retained in the fluids of the body indefinitely. Complete elimination in the shape of spores is not secured by the emunctory organs. According to his experience the minimum period of contagion is four to eight weeks; the maximum period six months; the average is thirty-nine to sixty-five days. He has known cases discharged from hospitals, as in the above periods of time, convey the disease. He believes the infection is stored up in the secretions of the nose, lungs, lymphatic glands, etc. He had obtained bacteriologic results in hospital cases at the expiration of eight weeks and even thirteen weeks, and he cited one hospital case of 181 days' convalescence wherein the disease had been conveyed. In all cases he advocated that the clothing should be sterilized by steam.

Dr. Johnston of Glasgow, in the discussion, thought eight weeks for hospital cases a short enough time in which a patient could be deemed free from the germs of the disease, and even then his clothing [illegible] be [illegible] and dis[illegible] [illegible]withstanding [illegible]es, 2 per [illegible] infection away with them. He cited an illustration of this kind, that had been in the hospital for three months and then discharged cured, that infected and spread the disease through an entire household. He suggested that these cured cases should be required to sleep alone for two or three months.

Sir James Grant of Ottawa said that formerly, when there was no sewerage he could trace the origin of scarlet fever to defective drainage. If he should attend a case of scarlet fever he should not think of attending a case of obstetrics short of six weeks. His idea is that the kidney gives the most trouble. The period of infection is not thoroughly defined yet, for the disease may be propagated for a very indefinite period.

Dr. Malcolmson recited a case of infection of scarlet fever that had been retained in a hospital fourteen or fifteen weeks that spread the disease after being discharged as cured. The result was that the health authorities were sued and a heavy judgment was obtained.

Dr. Adam Frederick John Mickle of Christ Church, New Zealand, said: It is not desirable to keep children in a town hospital for too long a period after convalescence from scarlet fever. As soon as convalescence is well established, say in three weeks, and sometimes earlier, they should be removed to the country, as complete recovery will be much quicker in a pure atmosphere; other means can be used to eliminate the poison or infection, such as hot baths; these will hasten the period of complete recovery. Regarding the danger of attending midwifery cases, while attending a case of scarlet fever, I do not think the danger so great as it is usually believed to be. During a very severe epidemic of scarlet fever lasting nine months, which I had to contend with about twenty years ago, I also attended midwifery cases in considerable number and never had any bad results. If asepsis is carried out there is no danger. In some instances the children were laid down with scarlet fever in a room with the mother, where she was confined, and yet I did not see a bad result in a single case of midwifery during the whole epidemic, notwithstanding the scarlet fever swept the children like a plague in the first few weeks of the epidemic. This was doubtless due to the insanitary condition of the town, which was practically without drainage, and the houses being small and on the Scotch system of flats, there was much overcrowding and, lastly, people will not submit to too much isolation.

CADAVERIC FAUNA

Was the subject of an illustrated paper read by Dr. G. de N. Hough of New Bedford, Mass. He divided the said fauna into: 1, workers of the first stage of putrefaction; 2, workers of the second stage; 3, workers of the third stage; 4, consumers of the dried tissues; 5, consumers of the remains of the other workers. These parasites were given in their respective orders of diptera, coleoptera, lepidoptera, etc.

UNDERGROUND ZOOLOGY AND LEGAL MEDICINE.

A study of 150 disinterments with additional experimental observations, by Dr. Murray Galt Motter of Washington, D. C. The author had experimented and made his observations on bodies that were buried from one year and eleven months up to seventy-one years. The subject is a new one and his paper, medico legally, very interesting. He proved the same kind of beetles, flies and other insects and germs had been found upon bodies whether they had been buried in June or in January, which would disprove the theory that a body supposed to have been buried in either of these months was in reality buried six months subsequently or previously, as the case might have been. He found tetanus germs active after the body had been buried three years.

SELECTIONS.

Medical Education in Canada.—"The general question of medical education is one of great importance and of unceasing interest, nor is this interest confined to the profession; it is becoming universal. The needs of medical education are fortunately being more fully realized by those who on account of their wealth and influence are in a position to render that substantial assistance which is so requisite. The time was when every medical school was a purely proprietary concern 'run' for the money that was in it. We feel in Canada, and I think I can speak for the profession in the neighboring republic, that this day is passed, that high-minded philanthropists like Sir Donald Smith (now Lord Strathcona and Mount Royal), the late John Henry Molson, the McDonalds, the Drakes and others with us, and the Johns Hopkins, the Stanfords, the Vanderbilts, the Rockefellers, the Miss Garretts and others with them are beginning to realize that unendowed instruction in medicine must lead to imperfect results, and that private endowment, in the absence of state aid, has become an absolute necessity to a proper medical training. I am not an advocate for state aid to universities, and I rejoice that the University to which I have the honor to belong is not so dependent, as it might thus be deprived of those gifts of private munificence to which I have just referred. All honor to those far-seeing, open-handed men and women who are giving of their abundance in order to elevate the standard of medical education and by so doing benefit their kind. As Gould very tersely puts it in one of his clever articles: 'I think our reliance must be upon private bequest, and these can be secured only as we interest the rich. We must never weary in showing the neglect of the greatest, most palpable, most certain means of doing good. There is a strange fatality in men, an unaccountable inability of seeing the need that lies nearest, the good that is dearest. There is more money today devoted to astronomy than to the prevention of disease. It is positively wonderful to think that men should be more interested in stars and constellations than in their bodies and their physiologic life.' A question which is now-a-days agitating the minds of those especially interested in medical education is the kind of ground-work which is likely to bear the most direct relation to the future studies of the medical student. I think it is now conceded by all that he is placed at a greater advantage who first passes through an arts or a science course. I am happy to be able to report that from 15 to 20 per cent. of those who are studying medicine in this country today have had a collegiate training in either arts or science. Which of the two should the parent or guardian choose? Had I a son whose instincts were in the direction of medicine I think I should choose for him the science course. The late Professor Huxley thought it was a most self-evident proposition that the educational training for persons who proposed to enter the medical profession should be largely scientific; not merely or even principally because an acquaintance with the elements of physical or biologic science is absolutely essential to the comprehension of human physiology and pathology; but still more because of the value of the discipline afforded by practical work in these departments in the process of observation and experiment, in inductive reasoning and in manipulation. . . . What deters so many from taking a full course in Arts or Science before entering Medicine is the length of time consumed before the doctorate degree is reached, although I hope the time is not far distant when every graduate in medicine in Canada shall of necessity be also a graduate in arts or science. . . . We have in the Dominion of Canada no fewer than eleven medical schools, including one for women only, all having the power of granting degrees and all connected directly or by affiliation with university bodies. To enumerate them: Beginning with the Atlantic Provinces, we have in Halifax the medical school attached to Dalhousie University, the only medical school in the Maritime Provinces; in this province there are four schools, Laval in Quebec, Laval in Montreal, McGill and Bishop's in Montreal; in Ontario, four schools, namely, the Royal College of Physicians and Surgeons, Kingston; the University of Toronto Medical Faculty, Trinity Medical College, and the Ontario Woman's Medical College, in Toronto; in London, Ontario, the Western University Medical Faculty; and lastly, in Winnipeg, the Manitoba University Faculty of Medicine. All told, we had in Canada, during the last winter sessions 286 teachers, including professors, lecturers, and demonstrators, and 1736 students. The tendency for the past few years has been to increase the teaching staff quite out of proportion to the increased number of students. Taking McGill we find that there are in the present year 53 teachers for 388 students, being a proportion of nearly one to eight. Laval, in Montreal, has 36 teachers and 197 students, a still greater proportion. The Toronto School of Medicine had during the past year 41 teachers and 293 students. We find that this proportion compares well with the larger schools in the United States; thus, in 1893, there were in Harvard Medical School 71 teachers to look after 471 students; at the Columbia Medical College in New York with 661 students there were 105 teachers (1 to 6); in the University of Pennsylvania the teaching staff in the same year comprised only 84 members with 825 students, being a little over 1 to 10. What does this mean? Ten years ago when McGill had 237 students, a staff of 23 professors and demonstrators was considered sufficient. Why are so many more thought necessary now-a-days? The number of subjects are differently taught, the old fashioned daily didactic lectures are now given two or three times a week only; but I should be sorry to see them further reduced in number, for I believe that so many are absolutely necessary. It is in the dissecting room, the chemic, physiologic, therapeutic and pathologic laboratories that we see the change. These which before were for the most part only 'side shows' are now made to hum with the practical work which is done within them. . . .

"In order to make the clinical instruction more complete and more thorough, chemic and bacteriologic laboratories have been added to the pathologic departments of our hospitals. . . . The question sometimes arises, however, May the student not be getting too much of a good thing? Is it not possible that laboratory teaching may be overdone? because, as Welch very truly says, 'The student whose knowledge of a subject is derived exclusively from laboratory courses is likely to lose his perspective in details, to acquire only a fragmentary knowledge of the subject, to fail to comprehend the general bearing of observed facts, and not to acquire the general principles and systematic conceptions which are essential. Laboratory work should be accompanied and supplemented by the reading of text books and by lectures.' I am convinced that with us in Canada laboratory work is not overdone, but, on the contrary, in some departments needs and deserves further encouragement. I hope every laboratory teacher in the country realizes that the object of a college is to give a good general education, and not to make experts in various branches. I have long felt myself, however, that the didactic lectures were being unfairly dealt with. There is a feeling abroad that they should be practically elbowed out of sight. I think the didactic lecture has its place in the medical course; and while I quite feel that the old plan of compelling students to listen to five didactic lectures a week in all of the great subjects was a mistake, I still feel that a good lecturer can teach in this way a certain something which can not be imparted by practical instruction or by recitations. The personal influence of a good lecturer very often makes an impression which nothing else can make; and if such lectures are made also demonstrative, as by the use of diagrams, the lantern, experiments, etc., they must of necessity fill a very important place in the medical course. . . . The facilities for clinical teaching in the larger cities of Canada are admirable. Speaking for the city of Montreal, we have in the five general hospitals, the Hotel Dieu, Montreal General, Notre Dame, Royal Victoria and Western Hospitals, nearly 800 beds. The number of students attending the three medical schools was last session 646; and considering that only about half—those of the third and fourth years—have access to the wards, there will be at least two beds for each student. The number of outdoor patients attending the five hospitals daily would aggregate at least 300, so that there can be no possible cause for complaint regarding both the quantity and quality of clinical material available in this city."—T. G. Roddick, M.D., M.P.

A National Memorial to Jenner.—A meeting was recently held in London to establish a memorial to the great Jenner, with the Duke of Westminster as chairman. Lord Herschell, late president of the Royal Commission on Vaccination, in moving the first resolution, "That the present is an appropriate time to inaugurate a work of national utility in honor of Edward Jenner," said that a hundred years ago smallpox was periodically committing ravages which we could now hardly realize. Jenner introduced to the world his discovery that inoculation of cowpox would prevent attacks of the disease, and at the end of the first quarter of the century a marked change was seen not only in this country, but in many of the countries of Europe. From the outset there had been those who doubted the efficacy of vaccination, and the Commission on the subject, over which he presided for many years, had just issued its report. A vast amount of material was considered, and it fell to his lot to have to digest that material, analyze it, and submit a report for the consideration of his colleagues. When he approached that task he approached it with the determination to follow the results to which the facts led, whatever they might be, and he was surprised at the force of the evidence in favor of vaccination. From the "Blue Book" he quoted figures in favor of vaccination which, he said, it was difficult for human reason to resist. Jenner's character and veracity had been attacked by some people who pointed out that he asserted or expected that vaccination would be permanent in its effects, while everybody now admitted that absolute permanency did not exist. The only way to tell whether it would be permanent or not was by experience, and those who availed themselves of the experience of a century of vaccination, to assail Jenner, who necessarily did not possess that experience, were the same persons who very often refused to yield to the teachings of experience when they inquired now what had been the effects of vaccination. Jenner was the first to illustrate a principle which seemed destined to play an important part in the history of preventive medicine. Surely this alone was a high tribute to Jenner and the value of his discovery. His name was held in reverence by the highest men of science and the most civilized countries in the world. Some of those countries had commemorated his centenary. Jenner was an Englishman and were Englishmen to be behindhand in testifying their admiration of the man and their sense of the benefits he had conferred on humanity? Prof. Michael Foster who seconded the resolution, said he would like to re-echo the words of Lord Herschell and claim for Jenner's work scientific merit. Except, perhaps, for the fact that the labors of Dr. Monckton Copeman and others tended to minimize the dangers of vaccination, relatively little progress had been made in the principles laid down by Jenner till the time of Pasteur. Jenner was governed by the idea we now call the doctrine of attenuation, a doctrine revived by Pasteur and which had become the basis of our great progress at the present time. Lord Lister took occasion to correct a mistake which he made in his presidential address to the British Association at Liverpool. The mistake, he said, had been made a very great deal of in the newspapers, and had been taken advantage of by the antivaccination party in distributing a leaflet to that meeting. The statement was to the effect that smallpox was absolutely unknown in the German army as a result of the revaccination of all recruits. He had quoted from memory after reading an authority on the subject and if he had stated that "fatal" smallpox was absolutely unknown in the German army he should have been speaking the literal truth. Such being the case, he did not think it necessary to rectify in a public manner the mistake he had made when a letter appeared in the *Times* calling attention to this mistake. He had since obtained the official documents from which the writer of this letter had taken the facts to convict him. Now he asserted that from 1874-75 to 1886 87 the only death from smallpox that occurred in the German army was that of a man who was proved not to have been properly vaccinated. If, instead of deaths, he took the cases, in 1886-87 there were 7 out of 344,000 men, in 1885-86 there were 6, in 1884-85 there were 7, and so on. He thought, therefore, he had not made any very serious blunder after all. The writer of the letter had also contended that vaccination had had no influence whatever in diminishing the death rate from smallpox in the German army. He (the speaker) had examined the official statistics and found that from 1874 75, when the Compulsory Revaccination Law was passed, the mortality from that cause in the army had become absolutely *nil*. Not only so, but, as a German authority himself had been lately saying, Germany might now be said to be practically free from smallpox. He was glad to take this opportunity of correcting his mistake, because it enabled him to support the principle of vaccination from German statistics. He pointed out the value of research on the lines laid down by Jenner, giving as examples Dr. Koch's treatment of rinderpest in South Africa, M. Haffkine's inoculation in connection with the bubonic plague, the experiments of Dr. Yersin, and the results obtained by the use of antidiphtheric serum in this country, which had saved a multitude of young lives.—*Lancet*.

On the Teaching of Surgery.—The address presented to the Section on Surgery at the recent meeting of the British Medical Association by Christopher Heath, F.R.C.S., called attention to the remarkable recent progress in abdominal surgery. Twelve years ago neither appendicitis nor Kraske's operation for removal of the rectum was mentioned in the "Dictionary of Practical Surgery," and Kraske's original paper was only published in 1885. In British surgery appendicitis dates from a paper read by Treves before the Royal Medical and Chirurgical Society in February, 1888. In speaking of the infrequency of perineal lithotomy today he said: "Looking back over forty years of professional life, nothing surprises me more than the change which has come over the treatment of calculus. In my student days, to see Fergusson cut for stone by the lateral method was to witness an operation as near perfection as was conceivable, and the dexterity and rapidity with which the calculus was extracted was only marred by the frequency with which death from septic causes spoiled the skill of the surgeon. To have one's first lithotomy was an event in the life of the young surgeon, and every now and then a reputation was spoiled by some *contretemps* in the public performance of the operation. Later, I was the frequent witness of my colleague, Henry Thompson's skill in using the lithotrite to break up the calculus in a series of 'sittings.' Then came 'litholapaxy,' or rapid lithotrity, which we owe to Bigelow, the great American surgeon; and lastly that recurrence to the old high or suprapubic operation which was due to the Scandinavian surgeon, Petersen. Hence the student of today rarely, if ever, sees a perineal lithotomy, and as a consequence his interest in the anatomy of the parts concerned in the operation has greatly diminished." Teachers in anatomy find it difficult to secure neat dissections from the student as various museums contain excellent preparations in spirit, a condition of affairs to be deplored in that the essential to advance in surgery is a working knowledge of anatomy. In Great Britain also anatomic teaching is getting more into the hands of anatomists who are not surgeons, and other than surgical relations care thus emphasized. The same being true in physiology and chemistry, when these gentlemen happen to become examiners this tendency to specialize becomes very marked, and the unfortunate medical student becomes the victim of science (falsely so called), and sometimes develops into that marvelous being, a London B.Sc.

Bacterioscopic Work on the Bacillus of the Plague.—Dr. Wilson of the Hoagland Laboratory, Brooklyn, has for some time been engaged upon experimentation as to the viability of the plague germs. The culture with which his experiments were made was obtained through the kindness of Dr. W. F. Arnold, U. S. Navy, who obtained it from Yersin in China, and brought it directly to the United States, renewing it at San Francisco. Upon obtaining the culture, it was transferred to suitable media, and test was made as to its virulence on susceptible animals such as guinea-pigs, mice and rabbits; the results showed that it was still very virulent. The method used was that of Sternberg. A series of 5 c.c. cultures in beef tea were made in tubes of a uniform shape and size, and these were allowed to incubate for twenty-four hours. They were then exposed for ten minutes (a previously ascertained time being allowed to bring the temperature of the culture up to that of the bath) in a water-bath at the following temperatures: One at 50, one at 52, one at 54, one at 56, one at 58 and one at 60 degrees C. From each one, after cooling down to the temperature of the room, transfers were made into fresh beef tea, and these transfers placed in the incubator. After twenty-four hours in the incubator, it was seen that the ones exposed at 50, 52, 54, 56 and 58 degrees showed a good growth. The one at 60 did not grow. Another series was started at points between 53 and 60, with the result that the ones at 58, 58.5, 59 and 59.5 showed a growth, while the one at 60 did not grow. This would seem to fix the normal death rate at 60 degrees C. or about 140 F., for ten minutes' exposure under moist heat. It was decided to use infected articles of different absorbing properties, and consequently different degrees of dessication, so as to approach the natural conditions as nearly as possible. Cover-glasses, pieces of filter paper and small pieces of wool blanket, were chosen for these reasons, and also because the same articles were used in the cholera experiments in 1892. These articles were first sterilized and then infected, each piece with a drop of a twenty-four hour bouillon culture. They were then left in a dark closet over night to dry, and the next day placed in an oven. Every hour a piece of glass, paper and blanket was removed and tested as to its vitality. Dr. Wilson's experiments showed that the bacillus died out before the end of the first hour on the glass; before the end of the fourth, on the paper; and was living at the end of the sixth hour, on the blanket. Experiment was also made to ascertain how long the bacillus would survive on the glass, paper and blanket at the temperature of the rooms (21 degrees C.) in a dark closet excluded from the action of the sunlight. A series of test-tubes was taken and their closed ends broken open. Pieces of cover-glass, filter paper and blanket were then placed in the tubes, the ends of which were plugged with cotton and then carefully sterilized. The object of this was to secure a normal circulation of air. The pieces of paper, glass and blanket were then infected, each with a drop of a twenty-four hour old culture, and the tubes placed in a dark closet. At intervals of seven days these infected pieces have been removed and placed in fresh media. On all these materials the bacillus has survived up to the date of this report, forty-two days. His conclusions were: 1. The thermal death-point of this organism is one or two degrees higher than that of the majority of pathogenic bacteria of the non-sporulating variety. 2. Differing widely from cholera, sunlight and dessication can not be relied on to limit the viability of this bacillus under commercial circumstances. 3. Rags, nails, ballast and general merchandise coming from infected ports should be subjected at either the port of departure or the port of entry to a thorough system of disinfection. Experiments have been made in this series of Dr. Wilson only with carbolic acid. It has been found that an exposure for two hours, to a 1 per cent. solution of carbolic acid, suffices to destroy the life of the bacillus. This observation has subsequently been confirmed by Kinyoun. The morphology, cultural characteristics and pathogenesis of this bacillus has never been carefully worked out under favorable laboratory surroundings. The details of this work will shortly be published. Dr. Wilson refers briefly to the researches of others, as follows: "Some work has already been done in this direction by Kitasato and Yersin, but it was done under adverse circumstances and the results obtained were not final. Kitasato found that cover-glass preparations of the contents of a bubo exposed to the air of a room at 23 to 30 degrees C. showed no growth after four days. Other cover-glass preparations exposed directly to the sun's rays showed no growth after three or four hours. He found that beef tea cultures heated for thirty minutes in a water-bath up to 80 degrees C., were destroyed. At 100 degrees C., in the vapor apparatus, they were destroyed in a few minutes. It will be seen that these experiments were made only with thin films; and in the first or dessication experiment no effort was made to exclude the sunlight, and in the second or sunlight experiment the film must undergo dessication at the same time."

PRACTICAL NOTES.

The Summer Diarrheas of Infants.—As the result of a bacteriologic and anatomic study of the summer diarrheas of infants, Booker (Johns Hopkins Hospital Reports, Vol. vi, 1897) reaches the following conclusions: 1. The conditions for the development of bacteria in the intestine of infants affected with summer diarrhea are different from those obtaining in the healthy intestine of milk-fed infants. These conditions are favorable to more varied bacterial vegetation, to a richer growth of varieties of bacteria, found inconstantly and in small numbers in the healthy intestine and to a more uniform distribution through the intestine of the two constant varieties of milk-feces bacteria: the bacillus lactis aerogenes and the bacillus coli communis. 2. No single micro-organism appears to be the specific exciter of the summer diarrhea of infants, but the affection is generally to be attributed to the result of the activity of a number of varieties of bacteria, some of which belong to well-known species and are of ordinary occurrence and wide distribution, the most important being the streptococcus and the proteus vulgaris. In the superficial epithelium of the intestine is apparently to be found the chief protection of the mucosa against the invasion of bacteria. 3. The pathologic lesions found in the intestine and other organs of the body in the summer diarrheas of infants indicate that bacteria exert a direct injury upon the tissues in some instances, whereas in others the damage is brought about indirectly through the production of soluble poisons. 4. The pathologic lesions of the inflammatory forms of summer diarrheas of infants are of a serious nature and show great variety. In many cases the intestinal lesions are very extensive, not infrequently much of the thickness of the mucosa being entirely destroyed; in other cases the intestinal lesions are slight and the more serious damage is recognizable in other organs. The number of organs that may be affected and the variety of lesions furnish an explanation for the great variation in the clinical features and the difficulty experienced in making a reliable prognosis. 5. When the summer diarrhea of infants passes into an inflammation of the stomach and intestine it is no longer a mere affection of the gastro-enteric canal, but a general infectious disease or intoxication in which other organs of the body participate, either as the result of an invasion of the body by bacteria, as is often the case in the lungs, or from the effects of poisons absorbed from the intestine, as occurs in other organs. 6. A correspondence between the clinical features and the bacteriologic findings and anatomic changes exists in many cases, so that three principal forms of summer diarrhea of infancy may be distinguished, viz., dyspeptic or non-inflammatory diarrhea, streptococcous enteritis and bacillary gastro enteritis. Dyspeptic diarrhea is free from the phenomena of inflammation and is characterized by lumpy, acid stools which contain no leucocytes or epithelial cells and have among the bacteria chiefly bacilli coli communes, with a few bacilli lactis aerogenes. This is the mildest form of summer diarrhea, but it frequently shows a tendency to progress further and it is often the first stage of the inflammatory forms of the disease. Streptococcous gastro-enteritis is characterized by symptoms of general infection, extensive ulceration of the intestine partaking of a suppurative character, frequent slimy stools which contain great numbers of leucocytes, with the predomination of streptococci, although it is rarely if ever a pure streptococcous infection. In a few instances streptococci so largely predominate in the wall and contents of the intestine that no other organism can be considered as having important bearing on the affection. In most cases there are a great number of bacilli with the cocci, and their activity is probably more or less felt, although the prevailing influence is exerted by streptococci. There is often a considerable difference in the course of the disease in cases having the characteristic features of a streptococcous infection, some patients responding readily to treatment, while others are not influenced by it in the slightest degree and continue steadily to grow worse until the disease reaches a fatal termination. It is probable that the streptococci found in these cases are not always of the same species, though no attempt has been made to differentiate between them. Bacillary gastro-enteritis is characterized by a general toxic condition, less extensive inflammation and ulceration in the intestine, more or less frequent watery or pasty stools, containing but few if any leucocytes and in which bacilli greatly predominate. It is, however, very seldom that one variety of bacillus is so greatly in excess as to preclude the attaching of importance to the presence of other organisms. As a rule a number of varieties of bacilli and some streptococci are found. In typical instances any one of these three forms of the disease may be easily recognized, but there are many transitional cases which apparently do not belong to any one of these forms and which are probably due to a more decided mixed infection, in which no one bacterium especially predominates and the disease-phenomena are influenced by the activity of a number of varieties of bacteria. Little is known of the effect of alterations in the quantity and quality of the normal ferments and juices of the alimentary tract upon the digestive disorders of infancy, but there are grounds for the belief that such changes may be of important consideration in these affections.

Successful Extirpation of a Ruptured Spleen.—At a meeting of the Medical Society of Cologne Plücker (*Deutsche medicinische Wochenschrift*, Aug. 12, 1897, suppl., p. 154) reported the successful extirpation of a ruptured spleen by Bardenheuer. An analysis of the results of this operation shows that these were most unfavorable from removal of the leukemic spleen, with a mortality of more than 90 per cent.; then follow essential hypertrophy of the spleen, with a mortality of 57 per cent., malarial hypertrophy, with a mortality of 55 per cent., echinococcus cysts of the spleen, with a mortality of 40 per cent., and finally sarcoma of the spleen, with a mortality of 30 per cent. The total result was made the more favorable by the cases of simple cyst of the spleen and wandering spleen, which were operated on without a fatality. A plea was made for conservative surgical treatment, especially for simple cysts and wandering spleen. Open wounds of the spleen offer a favorable prognosis, whereas subcutaneous injuries are very often fatal. Of the latter, injuries of the malarial spleen are to be separated from those of the healthy organ. Among twenty-four cases of rupture of the malarial spleen recovery ensued in six, while of twenty-eight cases with subcutaneous injury of the healthy spleen recovery ensued in two or three. The case reported occurred in a man 44 years old, who fell a distance of thirteen feet. When seen the patient presented symptoms of shock, with a small, running pulse and inaudible heart sounds. The sixth and seventh ribs on the left side were found to be fractured and crepitation could be heard. There was severe pain in the precordium. Under appropriate treatment improvement took place in the pulse and in the general state. On the other hand absolute dulness on percussion developed in the dependent portions of the abdomen upon the left side, extending upward to the axilla, but not involving Traube's semilunar space. There was also dulness posteriorly on the left side of the chest up to the level of the spine of the scapula, with bronchial breathing and diminished vocal fremitus. The urine was normal and the stools contained no blood. On the eleventh day the patient, who had been gradually improving, complained of sudden pain in the abdomen and in the precordium. The pulse was small and 140. Dyspnea was marked and diaphragmatic breathing was suspended. The abdomen was distended, but under appropriate treatment improvement took place. Exploratory puncture of the left side of the chest now disclosed the presence of blood. The temperature rose and tenderness and dulness on percussion in an area as large as the palm of the hand were found below the ensiform cartilarge. The heart was displaced upward and to the right. It was believed that rupture of a hemorrhagic extravasation had taken place into the subphrenic space with suppuration. Accordingly a trap-door flap, attached posteriorly, was turned back and the two lower ribs resected. The kidney was found intact. The peritoneum above was felt to be thickened and its division exposed a cavity filled with blood coagula, closed off below from the peritoneal cavity, and bounded above by the concavity of the diaphragm. In the midst of this hemorrhagic collection lay the spleen, almost double its normal size, with its capsule torn in several places. An attempt to bring the viscus into the wound was atten- [illegible] 'th rupture pedicle, without, however, notewc [illegible] hage.

ration had begun in the extravasation. The removed organ displayed a large oblique fissure from above downward on its concave aspect. At the hilum there was also a stellate laceration and the main vessels had been torn through. The large cavity was tamponed after removal of its contents. The further progress of the case was uneventful. The wound gradually closed and the patient bore the loss of his spleen well. Examination of the blood after the operation showed a diminution in the hemoglobin, without any alteration in the relation between the red and colorless corpuscles. In the course of two months there was a distinct increase in the number of colorless cells, and at the same time the peripheral lymphatic glands became enlarged. The thyroid, however, showed no change. The general condition was good. Further glandular enlargement did not take place, and that which was present grew less.

On the Local Anesthetic Use of Eucain.—Dr. P. Silex of the policlinic of Dr. Schweigger at Berlin, reports favorably concerning the ophthalmic use of eucain, in the *Therapeutische Monatshefte* for June. He says that a little more than a year ago Dr. Vinci introduced his first preparation to the attention of the surgeons at the policlinic and an investigation of its merits has been made during the year. "As a result of these trials I was enabled to say that the remedy is very useful, and preferable to cocain. A solution subsequently placed at my disposal from another source, which also bore the name eucain A, I was obliged to throw aside, as I previously stated, because it caused extremely violent pain in the lids, and very severe reddening of the conjunctiva. Consequently I found myself at variance with the opinion given by me at the time to my colleague Vinci. As, however, I observed equal care and precaution on both occasions, and there was no difference in the clinical material, I concluded that the solutions of eucain A were not the same, and that perhaps one was not so free from acid or something, as the other. Dr. Vinci was quite right when he wrote that the investigations in the clinic gave a good result; on the other hand I could not ignore the unpleasant symptoms which I subsequently observed. Respecting eucain B, I am now in the position to make a further favorable report. It has been employed for the last two and one-half months by Professor Schweigger in various operations on eyes, especially in forty-nine cases of senile cataract, with satisfaction. Anesthesia is complete, vascular injection is moderate. Corneal cloudiness does not appear, although it is necessary that instillation should be made as shortly before operation as possible. Four drops suffice within five minutes before the operation. If instillation of the ordinary 2 per cent. solution be too long continued, a very marked hyperemia of the conjunctival vessels appears, and on cutting through the conjunctiva the abnormal flow of blood may conceal the field of operation. Whether the vascular repletion favorably influences the healing of the wound is not yet decided, but in this respect the anemia caused by cocain was determined by Mellinger to have a deleterious effect. If it be necessary for any reason to anesthetize the iris, which can not be effected by the instillation of either cocain or eucain into the conjunctival sac, after incising the cornea a few drops can be injected into the anterior chamber by means of a broad-mouthed pipette. In two minutes at latest the iris becomes devoid of feeling, as I have convinced myself upon two rabbits, as well as in an operation upon a man for cataract."

Dangers in Lean Meat.—Practical experience, as well as theoretic considerations, lead to the conclusion that a lean meat diet continued for any length of time is incompatible with health. Leading medical teachers in France are sounding the note of warning against the use of an exclusive meat diet in diabetes, a disease for which lean meat was formerly supposed to be almost a panacea. A close study of the history of these cases has shown that an exclusive meat diet is not infrequently a cause of death, through the accumulation of so great a quantity of ptomains within the body that the kidneys are unable to cope with them. Professor Boofelt says: "It is the duty of the physician who places his patient upon a lean meat diet to inform him of the fact that he is living close to the border line, and that his situation is like that of a man walking along the brink of a precipice; that he must on no account submit himself to the influence of an anesthetic without first undergoing a few days' preparation, including an entire change of diet; and the truly wise physician will further instruct his patient that it can not be safely adopted as a continuous dietary without the risk of constitutional injury.—*Public Health Journal*, August, 1897.

Success of Stypticin in Arresting Uterine Hemorrhages.—Ten pages in the *Therap. Woch.* of August 8, are devoted to a classified review of forty-nine cases of hemorrhage from the uterus treated with stypticin (cotarninum hydrochloricum, obtained from "narcotin"), at Dr. S. Gottschalk's private gynecologic clinic in Berlin. The results in all but ten cases were "good" or "very good;" one "dubious," nine "nihil." He has had an equally favorable average in 120 cases thus treated to date, and considers it "ideal" in climacteric hemorrhages. If an immediate result is desired he injects a syringe of a 10 per cent. aqueous solution into each gluteus (total, 0.2 stypticin). But the usual method is per os, in pills, powders, gelatin capsules or drops, four to five times a day, each dose 0.05 gram. No inconveniences were observed from its use except in the case of one hysteric patient, who vomited and was unable to sleep after taking one powder. The price has fallen from 6 marks to 50 pfennigs per gram.

Stigmata of Degeneration in Epilepsy.—Dr. A. Ferree Witmer before the Philadelphia Pediatric Society, under head of morphologic deviations from normal, classed asymmetries of skull and face, dental anomalies, inflammations of the skin and marked pallor without organic disease. As functional deviations from normal, he noted retarded puberty, various anomalies of the menstrual function, gluttony, merycismus. For the purely psychic stigmata he applied severer tests, as directed to the attention, memory and association. He required the writing of as many words as possible in one, two and five minute periods respectively; from memory a spoken, written and a simple sentence when read, and as the last of the tentative series the writing down of the associations of some familiar word, *e. g.*, city, hospital, etc.

The Specific Action of Quinin in Malaria.—Dr. E. C. Register, of the *Charlotte Medical Journal*, stoutly maintains that malarial fever, without complications, will subside after the plasmodia disappears from the blood. After a close study of the crescentic and ring-shaped bodies, he says that the alleged failure of quinin is due to its imperfect absorption when given by the stomach and when the temperature is over 102 degrees. In continued malarial fever, if distinct intermissions are produced by antipyrin, acetanilid and phenacetin, the crescentic and ring-shaped bodies will disappear after the administration of quinin as readily as the spheric bodies in an ordinary case of intermittent fever.

Treatment of Non-Tuberculous Arthropathy with Artificial Venous Stasis.—Prof. A. Bier has found his "congestive treatment" of tuberculous joint affections so effective that he has been led to try it on others, and reports its success in various rheumatic and gonorrheal joint troubles, especially the more recent cases. The passive congestion of the part must be intense, and if swelling and blisters occur, so much the better for the result. As soon as the pain will permit, he applies passive movements to the joint, while continuing the constriction, followed by active movements and massage after the elastic band is removed.—*Semaine Méd.*, August 18.

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SATURDAY, SEPTEMBER 25, 1897.

FOREIGN MEDICAL TRAINING FOR RECENT GRADUATES.

The JOURNAL has already editorially deprecated the too general tendency to consider a brief European sojourn the correct culmination of an American medical education, regardless of the actual scientific profit thus to be derived. In this educational number it is worth while to offer a few words, in addition to what has already been said upon the subject, to emphasize certain points and to touch upon others that were not fully treated in the former utterances.

As has already been said there is an advantage to be obtained by the physician from foreign travel and study if the traveler is fitted by education and natural gifts to receive it. This is not always or even often the case with the recent graduate however, and there are some positive disadvantages in this fashion of ostensibly finishing off an American medical college course with a European trip. It is, in the first place, a direct disparagement of an American medical education in the eyes of foreigners, which a decent patriotic pride should make one wish not to offer; all the more, in view of the fact that as good a professional education can be obtained in any of our great medical centers as anywhere else on earth. Leading foreign teachers have remarked this and have expressed surprise at the prevalent fad, and their judgments were made up from actual knowledge of American medical teachers and teaching facilities and acquaintance at least by reputation with the eminent physicians that America has produced. Those who have most helped to make this reputation are mainly those who have established their own before making a European tour or who were specially prepared by education and training for obtaining the best that Europe could give them before leaving their own country to seek professional knowledge abroad. It would be well if our contribution of medical tourists were all of that type.

At present it is the fashion to visit German medical centers, as it is there that medical students have learned to look for the great lights in medicine at the present time. However this may be. the average American is at a positive disadvantage in Germany from lack of, or imperfect, acquaintance with the language, and without this it is hardly possible to see how he can profit by his German residence. Too often all he gains is a small stock of foreign affectations and an altogether undue valuation of the "made in Germany" trademark in medical matters. It usually takes the victim some little time to outgrow this and a few never quite succeed and suffer in consequence in the estimation of sensible people. It is true that the young physician may find that he obtains a slight prestige among a certain class of patrons by exploiting the supposed European polish his professional education had received, but this is a factitious advantage that is yearly losing its spell and it is doubtful whether the game is worth the candle.

Travel is said often to widen the views and broaden the culture, and so it may do, provided the individual is fitted by training and has the leisure and opportunity to obtain what benefit can be obtained in this way. One can best obtain this benefit when he is thoroughly prepared by having already had what culture could be given him in his own country, for this is a case where the saying "to him that hath shall be given," is most emphatically true. Medical culture follows the same rule and it can be safely assumed that the average recent graduate is hardly yet in the situation to derive the most advantage in a professional way from a residence abroad. He should first, at least, learn the language of the country to which he goes and have some general acquaintance with its medical literature. No medical college course, however thorough, can insure him these accomplishments; they come from prior and after study, and a knowledge of foreign medical literature is scarcely to be attained until after graduation. With it, a foreign tour is largely a superfluity, but it can be made all the more profitable to the tourist. With a fair knowledge of European medical literature the American physician has a great advantage over the average foreigner, who as a rule knows little of what is done in scientific medicine in this country.

In all our great medical centers there are ample opportunities for the graduate student to acquaint himself with the best results of the best work in all languages, not merely that of Germany, which by no means includes everything, and this almost or quite without expense. There has been a great advance in this respect within the past twenty years, and any actual necessity of going abroad to complete one's medical education certainly does not now exist, whatever may have been the case in former years. As regards scientific culture from foreign travel, it is to be hoped that the time will soon come when European physicians will see it to their advantage to visit this country and study our methods and facilities of medical instruction, and that a real reciprocity will come to be the rule in matters of this kind. In the meantime we can, in probably a majority of cases, consider a medical graduate's foreign tour as a pleasure excursion rather than a serious business enterprise.

THE ADVANTAGES OF HOSPITAL INTERNESHIP.

This is a subject to which but little attention has been given by the journals; perhaps it is because the editors think that the average medical student has neither the time nor the inclination to read anything of a medical nature outside of the prescribed limits. The average student does not read the journals to any extent, but on the other hand, does he try for a hospital position? It is the exceptional man that looks far into the future, who sees the rapid strides of ex-hospital men in the profession, that can make the necessary sacrifice of time and money to obtain the desired end.

A few years ago, the general hospital of one of our largest western cities, drawing its clientelage from a population of over a half million people, a radius of a few miles, a city, a center of medical education, graduating between three and four hundred students annually, gave notice in all the medical colleges, that twelve appointments would be made after a competitive examination. Fourteen came up for the examination, for a position of eighteen months standing, the last six of which would be as house physician or house surgeon, in a hospital accommodating 500, numbering always at least 350 in the house, taking all classes of cases. The same condition of affairs prevails in all the large cities, viz., that only a small proportion of graduates receive hospital training.

Why is it the students are so blind to their own interests? Merely because, in many instances, the value of such an education has not been impressed upon them by those whose opinion they respect. It is the professors of the colleges who should place this subject before their students in the strongest possible terms. It is for the welfare of any college that its graduates should do well, and surely a man of experience will take a higher rank in a community than a man without, especially if that experience be aided by common sense. That a college should progress, it must maintain or increase its matriculation, unless endowed. In the attempt to do this, their highest bid for patronage as printed in the annual announcements, recognized alike by college and prospective student, is the number of their professors who have hospital positions and, especially of late, the number and location of their students who have secured hospital appointments. Is not the latter of far greater importance to the student than the former?

Many students become imbued with the idea that they can not afford the time; that they have their own way to make, and that immediately after graduation, they must rush into the country; to these it may be said that instances are being multiplied of men stepping out of a hospital into a lucrative country practice. Their air of confidence in meeting every emergency, the constant application of the methods they have unconsciously absorbed during their hospital life, soon obtains for them suitable recognition. To obviate this difficulty of losing time, some of the colleges that are requiring four years of attendance for graduation, will take the last year in a hospital in lieu of attendance on the lectures and clinics.

As for the small number who can not or will not apply themselves, whose sole object is in "getting through," in order that they may have framed that inaminate piece of sheepskin without which no graduation is complete, and, hanging it up in their office, imagine that they are physicians, nothing whatsoever need be urged.

There are always some to whom the expense is a serious obstacle, who have just enough money to carry them through college and perhaps for a month or two afterward. To those it may be of interest to know that in every large general hospital, while the internes receive no regular salary for their services, yet there are numerous sources of small if uncertain income, at least sufficient to supply their few wants. Coroner's cases, the signing of insurance certificates, assisting in operations, giving of anesthetics, emergency calls to private cases, an occasional private case of their own, all contribute their mite to the interne's slender income.

The practical experience obtained is not to be measured by pecuniary consideration. Frequently the statement is heard that "a year's experience in a large public hospital is worth ten years of private practice;" even this is placing it upon too low a level. A man in private practice is lucky if he sees twenty-five cases of typhoid fever during his first three or four years of practice. In a large hospital, that number of cases at one time, during certain seasons of the year, is no rarity. Surely the study and comparison of these cases would have an impression so profound as never to be completely eradicated. What a knowledge can be obtained of physical diagnosis by the daily examination of from twenty to twenty-five pathologic chests, continued month after month, new cases constantly presenting themselves! Even a large clinic is no comparison; the noise and bustle, the hurry of the examination, the absence of any particular interest in the case, the fact that the cases are frequently not seen for four or five days if ever again; all these tend to make any impression but a fleeting one.

The personal instruction of the visiting staff; men for the most part of the highest reputation in the several specialties with which they may have identified themselves, is a matter of the greatest importance. One does not learn the difference between bronchial and cavernous breathing by intuition or by reading about them in books; it is only when such differences have been pointed out practically by a competent instructor, that any variation is detected at all, and then only frequent trial will finally enable slight differences to be appreciated; but when once gained, the knowledge is never lost. The value of knowing men who rank so high is not without its advantages; very frequently a staff surgeon becomes so accustomed to his house surgeon, that a career is opened for the latter as soon as he leaves the hospital.

Finally, what can be of more value to a student of medicine, after prolonged study of the case during life, than to follow it to the postmortem room, and find his diagnosis confirmed or determine wherein he has erred? How often a case apparently clinically easy of diagnosis, presents conditions undreamed of when the autopsy is made. One comes more and more to believe that the man who never makes a mistake in clinical diagnosis, is the very man who does not make postmortems.

At the last annual meeting of THE AMERICAN MEDICAL ASSOCIATION, President SENN, in his address, said that he hoped to live to see the time, and he thought it would occur within the next twenty-five years, when European students would be coming to the United States for medical education, rather than that young American physicians should go abroad for what they can obtain as well if not better at home. If such an education can be obtained in this country, surely it is in the large hospitals rather than anywhere else.

Of late, hospital experience is beginning to be looked upon as a thing of value. In some of the large colleges, notably Johns Hopkins of Baltimore, men are not graduated without having served some time in their own hospital. In applying for a medical commission in the Army or Navy, the applicant is always requested to send in certificate of hospital service, if any, and due credit is given for the same.

Let us by all means have ex-hospital men in our community. Let the college professors encourage their students to compete for the positions, and having climbed one step of the ladder of fame, they will be encouraged to mount to the summit.

Let us have a Department of Public Health!

YELLOW FEVER IN THE OLDEN TIME.

In a rare pamphlet[1] before us we learn that "New York sustained in sixteen years (from 1791 to 1807) thirteen attacks of yellow fever, causing the death of at least five thousand persons, and each time compelling the flight from their homes and occupation of many thousands of the population. And it is another interesting fact that, since the year 1807, New York has been visited by it but twice, viz., 1819 and 1822, and the latter visitation was on the opposite side of the city, against which no complaints of nuisances could be made; and the commencement of this period of exemption was, moreover, coeval with the enforcement of a law for the filling up of *these* slips and the general improvement of those ancient haunts, in which the opponents of its importation so clearly saw the domestic source of the disease." This begins the statement of the *domestic origin* theory, coupled with a sneer at NOAH WEBSTER in his work on "Pestilence" that during the Revolutionary War our country was not visited by yellow fever which "*he* [italics are not ours] would doubtless attribute to an interposition of Providence, though he does not hold so in express language. He speaks of it simply as a 'striking fact' in the middle of his labored efforts to prove the source of nearly all epidemics to lie in domestic local circumstances in combination with meteoric influences and the appearance of comets. A more rational solution of the circumstance may, we think, be found in the fact that during the war nearly all foreign commerce was suspended." The next point is well put in a sharp sentence, to-wit, "upon the borders of the city in the immediate vicinity of the shipping, while the neighborhoods of filth and nastiness were exempt, particularly 'the Collect' in Center Street."

Then again from this pamphlet we glean that not sooner than 1805 were infected vessels prohibited from coming within 300 yards of the Island of New York after being discharged of their cargoes. The supplementary law of 1806 more explicitly restricts the vessels from the West Indies and the Mississippi, arriving between June and October, to only four days' detention at quarantine, and prohibits intercourse between their crews and the city of New York except under regulations of the Health Officer. These were the days of sailing vessels with their prolonged voyages, dirty holds, cramped berths, huddled crews and damp cargoes. Thus there were now acknowledged to be some other transmitters of pestilence besides the individuals as well as a recognition of the law that the longer the quarantine the greater the danger. Another report of the same [illegible], which the same body [illegible] Aug. 5, 1807 [illegible] of the preceding year [illegible] tion of the New Orleans Sanitary Commission of 1853, that there is a miasmatic origin of the fever, intensified by both a high temperature and a high degree of humidity. Here is introduced the metaphoric "shears of fate," a harmless instrument when either blade is missing. To this our author replies that, if a law, it is certainly inoperative in New York city or any of its environments. His citations are the epidemics inclusive of the one of 1819, in all of which the visitations had their location on the southeastern margin in the vicinity of the wharves of the East River. Besides these instances, Brooklyn in 1809 had lost between thirty and forty lives in a well-defined area of about two hundred yards semi-diameter, the center of which was a vessel from Havana, on board of which the first case occurred. The first American novelist, Brown, many years ago wrote a most interesting chapter on the adventures of his hero in the Philadelphia epidemic of 1799, the same in which Benjamin Rush won imperishable renown.

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[1] [illegible]

In 1822 the fever shifted its nidus to the western margin of the city, on the Hudson River, the "residence of a population, aristocratic at least in cleanliness and the elegancies of life." At that time *the domestic origin* theorists were forced to yield the field even to the surrender of the graveyard of Trinity Church. The recital of the episodes in the epidemic of 1856 is exceedingly interesting and the name of a pioneer sanitarian, the late Dr. Elisha Harris, is given a merited prominence for the best of work. But as we have hardly room even for scant justice, we must abide with only summaries. We learn that the total number of cases during the summer and autumn of 1856 was 538, more than one-third of whom died of "black vomit." The whole number of cases which occurred within a circle of five miles radius, having its center at the Marine Hospital, counted up to a figure not much below an additional six hundred. After the due crediting of the rigid quarantine laws, much of evil is attributed to the prevalence of winds sweeping along the lines of the pestilence and the function of the tides in floating the débris of ship refuse to the shores with their zig-zag docks and reeking sewers.

Charleston, Norfolk, Baltimore, Philadelphia and Providence have their share of attention as pictures with grewsome details in this gallery of epidemiology, but enough has already been written in proof of Solomon's wisdom that " there is nothing new under the sun." We are also to bear in mind that this pamphlet adheres closely to the subject of preventive sanitation, and has naught to say of the Antilles as the cradle of the disease, or even of the northern portion of the west coast of Africa. Not so, however, of the sailor quarters, always so close to a harbor.

Let us have a Department of Public Health!

THE MONTREAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

There was something peculiarly appropriate in the fact that the British Medical Association should hold its first meeting outside of the British Islands in the jubilee year. The jubilee enthusiasm possibly emphasized the sincerity and fervor of the patriotic emotion everywhere manifest, and as the President of the Association, Dr. Roddick, said, the meeting would be a powerful influence in knitting together even closer the bonds uniting the great colony to the mother country. It was in truth, as he said, "a great immigration scheme." There was a remarkable consensus of circumstances uniting to bring about a noteworthy unity and unselfishness and to render the meeting quite unique. Canada felt honored by the choice of the meeting place; the railroads wanted travelers and shippers; the country desired immigrants and settlers; and the medical profession by its own good will was able to unite all these and other powerful interests to subserve the common aim, to give a heartiness and good will to the welcome, and to carry to a successful conclusion the great labor of entertaining their visitors. The number of members and invited guests was about 1,200, and with their families there were certainly over 2,000 people to be entertained. For a city relatively small, and a country not so rich as our own, it must be confessed that the work was wonderfully well done. The hotels were taxed, but private hospitality made comfort for all. We heard of some who hired one or more entire houses for their guests. Another hint of the spirit that was active, is the fact that Montreal's most honored citizen and benefactor, Lord Strathcona and Mount Royal, returned from Scotland where he was spending the summer to open his house and help entertain the members of the Association. To Drs. Adami, Springle and Benoit, the most hard-worked but most admirable of secretaries, and to Drs. Armstrong and Birket of the Excursion Committee, every visitor was indebted for foresight, energy and zeal that made the meeting the pronounced social success all are agreed it was.

Lord Lister was certainly the most honored guest, and his presence at every meeting seemed almost to partake of a religious reverence. His feeling was kept distinctly human however by the most charming modesty and kindness on the part of our hero of science, and who through all the adulation preserved a simplicity and self-forgetfulness of bearing that endeared him to all.

This is neither the time nor place to say much of the scientific proceedings, much of which we have already laid before our readers. The interest in professional things is suggested by the fact that in several sections the attendance was from one hundred to two hundred, and during one session the number at the surgical section was as high as 350. The address in medicine by Dr. Osler drew a great audience, which of course, was delighted with the distinguished physician's review of "British Medicine in Greater Britain." Another historical address was that on surgery, delivered by Dr. W. Mitchell Banks. The address of the President, Dr. Roddick of Montreal, was a masterly résumé concerning the medical life and resources of Canada.

We heartily congratulate our Canadian confrères upon the perfect success of their meeting. Every such gathering brings nearer and more certain the attainment of the ideals of our guild, and hastens the coming of the day when all men, as now all physicians, shall be conjoined in a common beneficent work for future humanity.

AMERICAN STUDENTS IN GERMANY.

The United States Ambassador, Hon. Andrew D. White, having established himself at Berlin, has had his attention called to certain new regulations affecting American students at the German medical centers. The governments of Prussia and all other German states having universities, have made alterations in the terms admitting the attendance of medical students at the clinics. Under the new regulations a considerable proportion of American medical students will be shut out, and it is reported that a medical board of Berlin and Brandenburg has presented a request that still more restrictive rules be enforced. It is the object of these petitioners to draw the lines so close that students from the smaller American medical colleges will need to pass a preliminary examination before they can secure certain clinical and didactic privileges. A prominent German newspaper that has endorsed the movement has expressed the opinion that even in the United States it is a matter of surprise that so much laxity has been displayed, and for so long a time, regarding the admission of American students to so many advantages without any adequate examination as to the fitness of those persons to the instructions that they seek. It is also stated that Mr. Ambassador White has begun an inquiry into the nature and effects of the new regulations.

CORRESPONDENCE.

LETTER FROM MOSCOW.

The Twelfth International Medical Congress.

Moscow, Aug. 29, 1897.

To the Editor:—Numerically the Congress was a great success. In fact, the vast throng everywhere present detracted largely from the comfort of each individual member. The Reception Committees were unprepared to receive the great horde of physicians that poured into the city by every incoming railway train.

The consequence was that for the first day or two after the Congress opened everything connected with its organization seemed to be in a state of perfect chaos, und many of those arrived late had great difficulty in procuring lodgings.

However, the medical profession of Moscow worked with an untiring zeal for the individual comfort of each member, and during the last days of our stay we were most sumptuously entertained.

For the meetings of the general sessions there was no building in Moscow that would seat more than one-third of all the members. Delegates were given tickets for all three of the sittings and of the ordinary members not one-half ever got inside of the National Theater, where the meetings were held.

Of the ten great men whose names were down to address the general sessions, those of Virchow and Lombroso seemed to elicit the greatest amount of enthusiasm. When they arose to speak such were the demonstrations of applause that it was some minutes before they could be heard.

The latter spoke in very bad French and in spite of the warm acclamations with which his appearance on the platform was received, the doctrines that he enunciated, which when crystalized, meant that the criminal was a sick man and was deserving of a physician and not an executioner, were received with many smiles of incredulty by the vast throng that listened to him.

At all the meetings it must have been a source of embarrassment to those who spoke English, to observe what an attitude of unrest took possession of the audience as soon as they began to speak. Dr. Lauder Brunton of London delivered his address in French, which though not exactly Parisian in style, his subject matter was excellent and he was listened to with rapt attention.

The Russian would naturally say, that as we ignore in the main our own language, and use one that is more widely known to the scientific world we expect outsiders to conform to the same rule. Professor Senn's case was an exception, for his subject was one that the medical world recognizes Americans as authority on, and he delivered it in a manner that commanded the strictest attention even from those who did not understand English.

Professor Murphy's address before the surgical section on the suturing of blood vessels was also listened to with marked attention. Dr. Frank's illustration of his absorbable intestinal coupler elicited a great deal of interest among surgeons, and such men as Kocher and many others honored him by calling on him to give repeated explanations of the workings of his ingenious device.

Among those who spoke at the last meeting of the general session was Professor Leyden on pulmonary tuberculosis and though he was warmly received when he began, he read his address in such a low and monotonous tone of voice that not one in ten of those present could understand distinctly what he said. From such an eminent authority we naturally expect too much and hence I believe his audience was disappointed because he had so little to tell them that the well informed did not already know.

Of the sixteen sections into which the work of the Congress was divided, that of surgery seemed to draw by far the largest audience. The section on internal medicine was just across a hall from that of surgery and the contrast in the number present at these sittings was at all times most marked. When von Bergmann was reading his paper on brain surgery the hall in which he spoke was filled to suffocation, though his address must, on account of its extremely conservative tone, have been a disappointment to the enthusiastic brain surgeon. The number of those present could not have been less than seven hundred and fifty.

At the same time, in the section on internal medicine the subject of diabetes was being discussed by the best men in that section and by actual count there were just ninety present. This illustrates the tendency in medicine to neglect that branch under which must be classified a vast majority of all cases of disease that we are called upon to treat.

The brilliant success that surgeons claim to be constantly achieving in their branch of medicine has blinded the average young physician to the ordinary everyday ailments of humanity and he turns away with disgust from the consideration of any disease that can not be eradicated with the scalpel.

When Bergmann or Kocher mounted the platform to speak they were received with a deafening round of applause such as one is accustomed to hear when a great actor like Irving or a singer like Patti appears before the footlights in a theater.

Across the hall, when a Ziemssen, a Leyden, a Pavy or a Widal rose to speak no such enthusiasm was manifested. Next to the surgical section that of obstetrics and gynecology was the most fully attended.

In the section on internal medicine Professor Thayer of Baltimore read a paper on "Gonorrheal Endocarditis," which was well received. He illustrated his paper by the clinical history of several cases and mounted specimens of blood, where the symptoms were of an obscure septic type, but which a postmortem showed to be due to gonorrheal infection, producing an endocarditis and other symptoms of general infection. His paper was discussed by several eminent men, who confirmed the facts therein claimed, going even farther in their views in favor of recognizing in a gonorrheal contamination a factor in many obscure cases of infection, and one man claimed that 90 per cent. of joint diseases in the adult, not traumatic in character, were produced by gonorrhea.

Though there were about fifty women physicians in attendance at the Congress, Mme. Antonchevitch's paper entitled "Contribution à la symptomatologie des maladies du pancreas," was the only one I heard read by a woman doctor.

She had a poor command of French and her attempt to deliver it without notes was well nigh a failure. The cardinal idea in her paper was that diseases of the pancreas are extremely difficult to diagnose, that the symptoms of an increased salivation is pretty constantly present, especially when the stomach is empty. This increased secretion apparently from the salivary glands is in fact a redundant secretion from all the alimentary tract as far down as the cardiac opening of the stomach. The secretion, she told us, was often so excessive that an effort at vomiting was necessary to throw it all off.

In my last letter from Edinburgh I spoke of my disappointment in not being able to get a single idea from that renowned city of medical lore on the subject of the treatment of croupous pneumonia. I am glad to inform the readers of the Journal that I have at last found a panacea that will jugulate that terrible disease with almost mathematic certainty. After listening for days to the learned dissertations on the symptomatology and pathology of internal diseases, waiting in vain to catch something that would throw some light on their therapeutic management, I was more than delighted when Dr. Spiklai mounted the stand and read his paper on "Le traitement des maladies croupeuses avec la pilocarpine."

The author claims that all exudations thrown out by mucous surfaces are liquified by this agent and in this condition are readily thrown off or absorbed. Its therapeutic application thus becomes a wide one. It is a sovereign remedy in inflammatory diseases of the genito-urinary tracts in both sexes, and when used early will prevent the later septic developments that follow in the train of many of those diseases. But in croupous affections of the air-passages it acts with a rapidity and efficiency that no other remedy or remedies can equal. In laryngeal croup, tracheotomy and intubation can be dispensed with if pilocarpin is used early and properly. That terrible disease, croupous pneumonia, he cures in from three to four days. The only contraindication in the use of the agent is in severe cases of heart lesion, and even in these, the remedy if used carefully is a perfectly safe one. W. S. Caldwell, M.D.

Antistreptococcic Serum in the Mixed Infection of Tuberculosis.

New York, Sept. 16, 1897.

To the Editor:—Your issue of September 11, contains the very interesting article on "Streptococcic Infection and Marmorek's Serum," by Geo. W. Cox, M.D., of Chicago. In the discussion following the reading of the paper, Dr. Cox states that there is no work on the subject that he knows of, except his communication.

May I take the liberty to call his attention to some experimental and clinical work done in that line by myself over a year and a quarter ago? The results of these experiments I communicated to the Academy of Medicine of New York at its meeting of Jan. 21, 1897, in a paper entitled "The Hygienic, Educational and Symptomatic Treatment of Pulmonary Tuberculosis," which subsequently appeared in the *Medical Record* of February 13.

Three years ago, when I began visiting the European sanatoriums for consumptives for the purpose of studying this phase of phthisio-therapeutics, I noticed that the newly arrived tuberculous patients, who came there with a rather high temperature, after a few days of rest in the open pure air of the sanatorium, experienced an evident general improvement and very marked reduction of temperature, and this without any antipyretic medication whatsoever. I could not account for this sudden reduction of temperature except by the gradual cessation of the mixed infection, or to speak in bacteriologic language, of the association of micro-organisms, especially that of the bacilli of tuberculosis with the streptococci." It is well known that in the higher altitudes the microbes of suppuration, such as the streptococcus and the staphylococcus, are almost totally absent. Thus it seemed rational therapeutics to attack this perhaps the most offending partner in the mixed infection of tuberculosis.

I wrote to Dr. Marmorek and, through his courtesy, I was promptly furnished with the serum directly from the Paris Pasteur Institute. Prof. Biggs, Director of the Bacteriologic Laboratory of the Health Department of New York, very kindly allowed me to test the antistreptococcic action of Marmorek's serum by a series of experiments on animals in the New York laboratory. These having been satisfactory, I began my clinical experiments.

For the benefit of the many readers of the Journal, who may not have read my article in the *Medical Record* of February 13, I may be allowed to summarize rapidly the result of my experiments with consumptives when there were clinical and bacteriologic evidences of mixed infection. The action of the serum was not always uniform. With patients whose temperature rose over 102 degrees F. for several days, I did not obtain any results. When, however, there was a temperature of only 101 degrees F., or a trifle over, with streptococci in the sputum, a first injection of ten cubic centimeters reduced the temperature from one to one and a half degrees. A second of ten cubic centimeters brought it down to nearly normal. A third, fourth, fifth and sixth of five cubic centimeters each, given first every twenty-four hours, then at longer intervals, helped to maintain the normal or nearly normal temperature, and a general better feeling was experienced by the patient. However, I think it will require much more experimentation to fix the real value of the antistreptococcic serum. Its action seems to depend not only upon the make of serum used,[1] but also upon the degree of virulence of the toxins produced by the streptococci in the system. The earlier the injections are made the better seem the results. I should like to encourage its use in pulmonary tuberculosis whenever there is a mixed infection, and when after a short trial absolute rest, fresh air, and the usual antipyretics have failed.

955 Madison Avenue. S. A. Knopf, M.D.

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[1] Marmorek: "Le Streptocoque et le Serum Antistreptococcique," Annales de l'Institut Pasteur, July, 1895.

Merieux (Lyon) and Niemann (Berlin): "Ueber Antistreptokokken-Serum," Berliner klinische Wochenschrift No. 49, Dec. 7, 1896.

Widal's Typhoid Agglutination Reaction.

St. Paul, Minn., Sept. 19, 1897.

To the Editor:—I have read with a great deal of interest an editorial appearing in your issue of September 18, entitled "Evidence which tends to weaken the value of Widal's Typhoid Agglutination Reaction." I had read the discussion upon this subject which took place at the last meeting of the American Medical Association, and was very much impressed with the fact that where the most careful work has been done there has seemed to be the least divergence of opinion as to the value of this reaction, and the general nature of the reports made as well as the special report made by the Committee seemed to me to leave but little that could cast any doubt upon the specificity of the reaction. The discussion at the recent meeting of the British Medical Society in Montreal, to which I listened with a great deal of interest and instruction, still more firmly established the value of this test. There would really seem to be but two sources of error in the performance of this test at the hands of competent and careful men. One is the fact that the reaction may be absent upon certain days of the disease; this is really very rarely the case and merely indicates the necessity for making more than the one test where a negative result is obtained. The second lies in the fact that occasionally an impure culture, supposed to be typhoid, may give misleading reactions.

There can be no doubt that over refinement in technique has led to some errors of observation, and that on the other hand the acceptance of reports from general hospitals where this test has been performed by several different men leads to error of observation for precisely the same reason that we find similar errors constantly occurring under the same condition where other clinical tests are involved. My own experience based upon the use of the very simplest technique as outlined in my papers published in the *Medical Record* of November 14 and Dec. 5, 1896, has continued to be in all respects favorable to the test which, as I stated at that time, I believe to be worth all the other symptoms of typhoid put together as a means of differential diagnosis. I wrote this letter merely because the editorial question seems to me to unduly magnify certain un important differences of opinion upon the question of technique and thus obscure the more important fact that there is but little actual difference of opinion as to the immense clinical value of the test. Yours truly,

Chas. Lyman Greene, M.D.

Chelidonium Majus for Inoperable Cancer.

Chicago, Sept. 20, 1897.

To the Editor:—In a previous number of the Journal I gave an account of the plan of treating inoperable cancer advocated by Dr. Denicenco of Russia. The method consists of injections of two parts of extract of celandin to one of glycerin. The mixture is thrown into the substance of the tumor and also painted on the surface, and some of it taken by the mouth.

Prof. John V. Shoemaker of Philadelphia publishes in the Journal of September 4 an account of five cases in which he tried Denicenco's plan, without getting any effect whatever on the tumors.

On the other hand I tried it in one case, and found that the tumor sloughed out as if destroyed by a caustic, with a great relief of the patient from pain and distress, corresponding closely to the experience of Dr. Denicenco.

Professor Shoemaker's great eminence in pharmacology and therapy insures the carefulness of his tests, yet the total failure to produce any caustic effect in the tumor shows that something was wrong. Perhaps the sample of chelidonium furnished him was inert, or the mixture may have deteriorated after it was made. Dr. Denicenco says his mixture must be constantly renewed, as it rapidly loses strength if kept.

I knew one instance where a well educated physician used for three weeks a fluid extract instead of a solid one, thus making his mixture far too weak. It produced no effect whatever, *but when he injected a preparation three times stronger* the tumor soon mortified and sloughed out, to the great relief of the patient.

The facts thus far show that a good article, prepared in full strength and not allowed to stand long after the mixture is made, will display its caustic power. It is necessary the herb should be fresh, or at least not very old.

Dr. Denicenco claims that in addition to the local destruction of the primary tumor "the glands become normal." If this is true it is very important, but it seems at first glance at least improbable. I have not had a chance to test the correctness of this statement about the glands, because the latter organs in my case were internal and out of reach.

At present, if there is any value in this plan, it is only for cases which are inoperable, or in which the patient will not consent to operation.

The article of Dr. Denicenco (or Denissenko, as some render the name) first appeared in the *Wratch* of St. Petersburg.

Edmund Andrews, M.D.

65 Randolph Street.

Venesection and Oxygen.

Chicago, Sept. 20, 1897.

To the Editor:—Apropos of the paper by Dr. J. W. Hoff on "Blood-Letting as a Therapeutic Remedy," in the August 28 issue of the Journal, and the letter of Dr. F. Walton Todd in issue of September 18, I am led to relate some of my experiences with blood-letting.

I have perhaps not bled more than a half dozen patients, but have been many times deterred from doing it on account of the popular prejudice against blood-letting.

I have records of two cases which I think especially worthy of report.

The first is that of a man about 30 years old, admitted to Cook County Hospital, Chicago, in August, 1888, during my service as house physician. The patient was suffering from sunstroke. He was unconscious, breathing stertorously, somewhat cyanotic, with pupils dilated and pulse full and bounding. A vein at the elbow flexure was opened and blood allowed to flow until the patient breathed quietly—perhaps twenty to thirty ounces in all. After thirty minutes the patient was conscious and able to talk. Recovery was rapid.

The second case is that of a young man, aged 19. On June 8, 1893, at 9 p. m. I was called and found him suffering great thoracic pain. He had a severe rigor during the afternoon. Temperature 101 F.

June 9—Temperature 101-103, pulse 110; delirious. Pneumonitis left lower lobe.

June 10—Temperature 101, pulse 100. Flighty, but otherwise appears to be doing well.

June 11—Was called in haste at 2:30 a. m. Found the patient gasping for breath; bronchi and throat choked with mucus; respiration 48, pulse 150 and very weak; cyanosis; axillary temperature 105 F.; patient comatose and could not be roused. Spir. ammon. aromat. and spir. frumenti given hypodermically every fifteen to thirty minutes; appeared to cause improvement in all respects. However, at 7 a. m. he relapsed into a worse state than before; respiration 60; lungs, bronchi, trachea and pharynx choked with mucus; pulse 165 per minute, but full; temperature not taken, but apparently very high.

At this juncture I called Dr. A. J. Ochsner, who resided just across the street, in consultation. We quickly decided that the only possible *chance of saving* the patient was by venesection, to which the parents consented. Since it appeared to us that the patient live even minutes we prepared him hastily and opened the median basilic vein at the elbow flexure. Between two and three pints of very dark blood, which coagulated almost immediately, was taken. Before the blood ceased flowing the cyanosis had given place to a bright red color, the pulse was improved and respiration much easier. Digitalis and atropin were given hypodermically. He continued to improve for forty five minutes, then again failed rapidly. Respiration 60, pulse 160 to 175 per minute—at times uncountable.

We gave up then, but I remained to see the end. At 8:30 a. m. he seemed about to take his last breath, but rallied slightly and at 9 o'clock I decided to renew the fight. I sent for oxygen gas and at 10 a. m. gave the first inhalation, having meanwhile continued stimulation and administered a nutrient enema. At first the oxygen was given every ten minutes. At 11 a. m. I left him, still unconscious, but much improved. At 1 p. m. I returned and he greeted me with "Hello, Doctor!" Respiration at this time 60, but not labored; pulse 160; axillary temperature at 3:30 p. m., 105.

June 12—Temperature 101.5 to 103; pulse 132 to 150; respiration 38 to 50. Recovery was slow but complete.

I have not the least doubt that the blood-letting was the primary means of saving this patient's life, though without the oxygen he would probably have died in spite of the bleeding. E. J. MELLISH, M.D.

Blood-letting.

ONEIDA, NEW YORK, Sept. 19, 1897,

To the Editor:—I wish to add my mite and endorse every word in regard to blood-letting by Dr. Todd of San Francisco. In a practice of forty years I have invariably resorted to vene section in all cases of puerperal convulsions and have been fortunate in never losing a patient, and I have had my ratio of cases. Out of nearly two thousand in number, my rule is to bleed at once and repeat if necessary, which has very seldom been the case.

I also bleed in cases of pneumonia and la grippe, especially where the attack is severe, in young and robust patients, and the result has been immediate relief and usually rapid recovery. Not long since I was called in consultation with a young physician: the patient was a robust full blooded man aged 43 years, who had been sick about a week with inflammation of the right lung. He was suffering terribly from difficulty of breathing, pulse full and hard, finger nails and lips cyanosed, and I advised bleeding and took twenty ounces; before bandaging the arm his pulse had decreased from 120 beats to 96. He made a good recovery with no repetition of his bad symptoms. I fully concur with the venerable doctor in all he says in the last section of his valuable article. H. W. CARPENTER, M.D.

Antiseptic Treatment of Typhoid Fever.

WAVERLY, N. Y., Sept. 17, 1897.

To the Editor:—I simply wish, in the interest of a number of your subscribers, to "say *good-bye*" to Dr. ———. It seems a misfortune that you should be obliged or called upon to publish such jargons, but we your readers become disgusted and hope the columns of the JOURNAL, which we all so much admire, may be kept as free as possible from such rubbish. I am not an advocate of "the Woodbridge treatment," or any man's method, but the principle of treatment advocated so bravely by Dr. Woodbridge I have followed with 100 per cent. of recoveries in eighty-three cases (consecutive).

Respectfully, R. S. HARNDEN, M.D.

ANSWER: The Editor is of opinion that the widest latitude should be given gentlemen wishing to comment upon any topic of interest to any considerable number of the profession. It is in fact the "public opinion" department of our JOURNAL, and we venture the assertion that few of those who read the JOURNAL at all fail to read the "correspondence columns." Neither the Trustees nor the Editor assume any responsibility for the individual opinions of the writers, which indeed must stand or fall upon their own merits or demerits, but we are sure that in the main the letters are full of interest, and have a snap and virility which can not be very prominent in the more formal scientific articles.—ED.

Pederasty vs. Prostitution.

NEW YORK, N. Y., Sept. 20, 1897.

To the Editor:—Referring to Dr. Howard's article, "Pederasty vs. Prostitution," in the JOURNAL of May 15, I would state the following facts: "In Japan, where prostitution is licensed, in some of the provinces tea girls and archery gallery girls have assumed the position of unlicensed prostitutes. In the two provinces which have produced the greatest statesmen of that country, notably the statesmen who overthrew the old Tycoon and restored the power of the Mikado, Choishin and Tatsuma, pederasty is wide-spread and licensed prostitution was never permitted. In these provinces and among those who hail from these provinces the homo-sexual vice is shamelessly rampant; it is even theoretically defended with would be scientific arguments. In the Saigo rebellion in 1877 a Minister of the Interior was assassinated because he loved the *bichonen* of another statesman. Bichonen is the name given to the *puer*. The Japanese pederasts contend that the practice is an evidence of mental vigor, as showing a power of resistance to the charms of women. It is but telling the simple truth to say that these men from the provinces addicted to the homo sexual vice represent the ablest minds and the best fighting blood of the empire. The whole modern progress of Japan is due to them.

The harlots of Japan do not represent by any means the "education, wit and wealth" of the country, although in very ancient times all the women of the Taira family, one of the five greatest of Japan, were driven into prostitution by a hostile and victorious clan. It was from this tragic event that the custom arose among the common people to marry prostitutes in order to obtain noble wives.

ALBERT S. ASHMEAD, M.D.

On the Excretion of Urea.

AMSTERDAM, N. Y., Sept. 20, 1897.

To the Editor:—The remarks of Dr. E. P. Stimson in the last number of the JOURNAL upon some statements of mine at the Niagara Falls meeting of the American Association of Obstetricians and Gynecologists, when the subject of eclampsia was under discussion, claim some recognition.

My point was that the elaboration of Haine's modification of Häser's method for the determination of the *total urinary solids* by Dr. Etheridge of Chicago was a very valuable means of detecting renal inadequacy. I placed this in contrast to the Doremus test for *total amount of urea.* The reporter failed to fix the difference, and the figures were therefore senseless.

To those who are unfamiliar with this method of estimating the total urinary solids, references may be found in the Transactions of the Medical Society of New York, for 1896; Gould's Year-Book, for 1897; *Chicago Medical Recorder*, July 1895.

CHARLES STOVER, M.D.

Some Reasons for "Hard Times" Among Physicians.

CHICAGO, Sept. 16, 1897.

To the Editor:--I am very sorry that I can not comply with your letter at the present moment, but will try my best to make it good at my very earliest convenience. From five medical journals, I limited myself to two, including your JOURNAL, so hard is the time on the general practitioner of Chicago. If all the hospitals and dispensaries of Chicago be closed up at once, and only those admitted who possess a certificate of being poor and entitled to free treatment; if no regular physician would accept a case for treatment until the first physician was paid; and if all the medical colleges would, besides their business views, try at the same time to elevate the medical standard, there would be no difficulty for any practicing physician to pay his subscription fees promptly for any number of medical journals. Thinking that these facts need your special consideration, I remain yours very truly, L. S. B.

PUBLIC HEALTH.

Yellow Fever.—Since our record closed, the new cases of yellow fever which seem to be authenticated are as follows: On the 13th, New Orleans, 6 more suspected cases; Ocean Springs, 4 new cases; Barkley, Miss., 1 new case, 4 deaths in the last ten days; population of this town is said to be 25. Two authentic cases were reported at Mobile. The Southern Pacific Railroad has ceased to sell tickets to Texas points. Spain, which is responsible for the yellow fever center in Cuba, and through whose neglect thousands of Americans have lost their lives, and millions of revenue lost, has decided to quarantine all vessels arriving from ports on the Gulf. Secretary Egan of the Illinois State Board of Health went to Cairo from Springfield, and has since remained there. The Chicago Board of Health made an official announcement that refugees could come to Chicago without bills of health, believing it to be perfectly safe.

On the 14th, 3 new cases were reported at Mobile, New Orleans 5, Scranton 1, and 7 at Edwards. A panic existed at Jackson, Miss., and many of the inhabitants started for other points.

On the 15th, New Orleans reported 3 new cases, and there was 1 death at Biloxi.

On the 16th, there was 1 death at New Orleans, and 1 new case at Edwards.

On the 17th, there were 15 new cases reported at Edwards, 7 at Biloxi, 8 at New Orleans, and 2 "suspicious" cases at Cairo, Ill.

On the 18th, there were 6 new cases, 1 death reported at New Orleans, and 11 new cases at Mobile.

On the 19th, the 2 "suspicious" cases at Cairo, Ill., were pronounced yellow fever by Prof. John Guiteras of Philadelphia, who has been temporarily employed as diagnostician by the Marine-Hospital Bureau.

On the 20th one new case was reported at Cairo and eighteen new cases at New Orleans. The Mississippi State Board of Health has quarantined all mails from infected districts of Mississippi. In Illinois the towns south of the Ohio & Mississippi Railroad, 244 miles south of Chicago, have mostly quarantined against Cairo.

On the 21st there were nine new cases reported at New Orleans and one suspected case at St. Louis; this case from St. Louis is from the same source as the cases at Cairo, namely, from the Government dredge-boat which has been engaged in river improvements at East Cairo, Ky.

On the 22d, New Orleans, death of Dr. Lovell reported; 9 new cases and 2 deaths; detention hospital at Oakland established by Board of Health. Ocean Springs, 7 new cases; Biloxi, 2 new cases and 2 deaths; Louisville, 1 case in a refugee from Mobile; Beaumont, Texas, 1 case; New York quarantine, 2 cases.

The Illinois Central Railroad has issued a circular to the ticket agents of the road, and also to agents of connecting lines, to discontinue the sale of tickets to all points in Mississippi and Louisiana, with the exception of New Orleans, and also through all junctions in these States, including New Orleans. The travel south has practically ceased since the outbreak of yellow fever and the passengers now being carried by southern lines are northbound. Railroad officials say that fewer people are leaving the infected districts than last week.

A camp was opened at Fontainebleau, Miss., September 19, under P.-A. Surgeon J. H. White, U. S. M.-H. S., taking 20 people from Biloxi, 10 from Ocean Springs, 12 from Scranton and 13 from different points. In a week he expects to accommodate 800 people, which he believes is the capacity of the camp. Another camp is to be established near Edwards, Miss., by Dr. Geddings, Passed Assistant Surgeon U. S. M.-H. S. These camps have now only local interest, they being established too late to prevent the appearance of the fever in various other points. At Fontainebleau the same system of sending a special train for refugees, which was originated at Camp Perry, Fla., in 1888, has been followed, but as the fever is now both east and west as well as in towns north, the scope of the camp service is limited.

A correction should be made in the report of last week in regard to Galveston. Dr. H. A. West, the Health Officer, states that there has been no case of yellow fever at Galveston.

In New Orleans, a city well within the lines of almost martial rigor, there have been the usual throngs at the Sunday concerts and in the parks; the theaters have been playing to "standing room only." It can not be said that the "wildest rumors prevail," although there are many hopes for the first appearance of frost and an abundant faith in the Board of Health. Dr. Sanarelli's method of investigation as advised by the National government, have been adopted, with some friction perhaps as regards the technique, but it may be said that bacteriologic research is well under way. Aside from the attacks of illness and some fatal issues suffered by the physicians most in contact with the fever stricken, the penal award of the self-sacrificing, there remains an assurance that the visitation will soon be over, without the charge of inhumanity or even of indifference. Edwin Hawley, assistant general traffic manager of the Southern Pacific Railway Company, announces the following: Although assured that public apprehension has materially exaggerated the seriousness of reports of yellow fever in the vicinity of New Orleans, we have determined to protect the interests of our patrons and avoid any delay incident to possible quarantine restrictions during the prevalence of existing conditions, by dispatching direct from New York to Galveston all Morgan Line steamers taking freight for destinations in Texas, New and Old Mexico, Colorado, Utah, Arizona, California, Oregon, China, Japan, Australia and the Sandwich Islands, so that shippers may continue to route their freight via Morgan Line without fear of detention.

A Health Officer's Proclamation Overruled.—An instance of the tendency of certain judicial officers to set aside a sanitary measure *ex post facto* is found in the case Eckhard vs. the City of Buffalo, recently decided by the appellate division of the supreme court of New York. The plaintiff sued to set aside an assessment for upward of $300 that the city had imposed upon her for certain expenses incurred in the abatement of a nuisance existing upon her premises, namely, an old style yard vault. Whatever nuisance there was, says the court, could have been abated by a cleansing of the foul vault, but the Health Commissioner of that city pursued a more radical course and caused the construction of a sewer connected with properly water-flushed closet or closets on the plaintiff's premises and caused the expenses for the same to be charged up against her. This action of the Commissioner has been condemned by the court, which holds that he was authorized to abate the nuisance in any "reasonable manner" but not to go on and make a costly sanitary improvement at the expense of the owner of the premises "for the benefit of her tenants," assuming, as it would appear, that the acts of the Commissioner were not in reality for the benefit of a community rather than for the individual occupants of the pre[illegible] On the part of the city and of the health [illegible]cers it [illegible] that the action taken [illegible]cau of Asiatic cholera at that time at certain seaports of Europe and elsewhere, having more or less close communication with the port of Buffalo, in consequence whereof the health officers of that city had issued a proclamation of great and imminent peril by reason of impending pestilence. Mr. Justice Green, in writing the opinion of the appellate division above mentioned, observes that the proclamation of imminent peril was made in error and that any extraordinary actions for cleansing the city of Buffalo based on that proclamation were also in error. And yet, we may ask, who is to be the judge of an impending danger to the health of a city from imported infections if not the Commissioner of Health? He certainly has to bear the brunt of complaint if he fails in his duty for the protection of the health of his city.

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Resolved, That in the death of our late friend and associate, Dr. John J. H. Love, this society has sustained a loss which we deeply mourn. A constant attendant upon its meetings, its welfare was ever his earnest care. His voice was invariably raised in behalf of progressive medicine and surgery and his well-weighed opinions were received with that attention and respect which they always merited.

Resolved, That we tender to his family our sincere sympathy in their bereavement, and that a copy of these resolutions be spread upon the minutes of the society and published in the medical press.

WILLIAM PIERSON,
H. B. WHITEHORNE, } Committee.
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Mississippi Valley Medical Association.—The program for the twenty-third annual meeting of this Association is now in press, one of the most complete ever presented at any meeting. It contains some one hundred or more titles of papers and on this account the papers will be read in two sections, a medical and surgical. The general sessions and the meetings of the medical section will be held in the Liederkranz Hall, the surgical section in the Scottish Rite Hall next door. Both halls are admirably adapted for the meetings. The medical section will be presided over by the President, Dr. Stuck, and the surgical section by one of the vice presidents. Already all the available space in the exhibit hall has been reserved by some twenty-five firms, and this will be a prominent feature of the meeting. The title of the address on medicine by Dr. Shoemaker, will be "Progress and Problems in Medicine"; the title of Dr. Murphy's address in surgery has not been received. The local committee has provided entertainment in the way of a "smoker" on one evening and a reception at the Louisville Hotel for another evening. The visiting ladies will be entertained by the wives of the members of the profession, and it is hoped that many will come. Trolly rides, luncheons, etc., will be given the ladies. The members of the Association will be welcomed on behalf of the city and State by Governor W. O. Bradley and on behalf of the profession by Dr. William Bailey. The Pendennis Club has very courteously extended the members the privileges of the Club, which is very near the place of meeting.

The Wayne County Medical Society held a meeting September 9 at Detroit, and Dr. A. N. Collins read a paper entitled "Report of a Case of Exophthalmic Goiter." The history of the case read presented many points of interest, some of which would go to support the theory that in the medulla oblongata is to be found the seat of the disease. The report was about as follows:

X. Y., male, age 45, occupation stationary engineer; family history negative, had never employed a physician for himself until present trouble began. The first symptoms which presented, without any apparent cause, were nervousness, tachycardia and enlargement of the thyroid gland with some rise of temperature. Thyroiditis was diagnosed, the patient put to bed, ice applied to the neck, and heart remedies given. In the course of a short time some improvement began and the patient was allowed to resume work, with the result, however, that in a few days the rapid heart action returned, the goiter increased in size and the third classic symptom, exophthalmos, made its appearance. From that time on treatment was without avail; strophanthus, digitalis, trional, cactus grandiflora, atropin, galvanism, were all faithfully tried with only an exaggeration of the symptoms. Glycosuria and signs of bulbar paralysis occurred, pointing to a lesion of the medulla. The patient finally succumbed about eight weeks after coming under the author's notice.

The Doctor theorized concerning the antithesis of exophthalmic goiter and myxedema, stating that in the latter there is deficiency of thyroid secretion producing the pathologic increase of certain of the soft tissues of the body, while the former, owing to a hypersecretion of the thyroid gland, produces a progressive wasting and emaciation. He thought the disease easily divisible into two types, benign and malignant. In the former the classic symptoms supervene after some simple shock to the nervous system which does not produce any organic change, and is therefore curable. The malignant type is most likely due to some organic lesion of one or more of the nerve centers, possibly the medulla.

BOOK NOTICES.

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The author says on page 85: "I do not teach potency. I advise students to go slow if they tend to believe in high potencies." Again: "I do not use the Organon as a text-book. I think one can better teach homeopathy without the Organon as a text-book than with it." Once more: "It is perfectly well known that a very large majority of us homeopathists do not repudiate practices which we think useful, although they are not instances of homeopathy." In other words, according to our author, whatever he is satisfied cures the patient is homeopathy, and with such broad claims as this, we may be sure that the homeopaths are better practitioners than they were in former days.

Text-Book on Diseases of Women. By CHARLES P. PENROSE, M.D., Ph.D. Illustrated. Philadelphia: W. B. Saunders, 1897. Price $3.50 net. Pages 529.

There is no lack of text-books on gynecology, but we suppose every gynecologist to be in fashion must write one. If all, however, were able to write from so extended an experience and use such charming English as Dr. Penrose, it would be the better for the profession, and there would be more excuse for writing. The march of science and the progress of pathologic discovery make it necessary from time to time that new text-books shall be prepared for the use of colleges, and the one under consideration is worthy of great praise. The illustrations are very fine and the typography all that could be desired. We venture to predict that this work will take rank among the most popular text-books on the subject, as it deserves to, and that a second edition will be speedily called for. We would suggest, in the second edition, that the author recognize the metric system of dosage to make it conform to the modern pharmacopeia.

American Academy of Railway Surgeons. Report of the Proceedings of the Third Annual Meeting, held in Chicago Sept. 23-25, 1896. Edited by R. HARVEY REED and published by the AMERICAN MEDICAL ASSOCIATION PRESS. 1897. Pp. 282.

In these days of specialism desperate efforts are made to establish a just claim of an alleged specialty to be considered such, and the publication of a volume such as this of the American Academy of Railway Surgeons is a case directly in point, and it must be admitted after an examination of the book that the railway surgeons have fairly made out their case. Albeit there is a tendency to look at everything through the spectacles of the corporation rather than those of the unfortunate patients. This volume is a very handsome one, well edited and is enriched by numerous photographs of members of the Academy, and the papers, which have been heretofore printed in the JOURNAL, are carefully illustrated. Dr. Reed's assertion that "the editor feels that his ambition is being gratified in so much that each succeeding volume of the transactions has excelled its predecessor," is well sustained. The editor says in his preface: "With each year's experience it has been demonstrated that the higher the order of railway surgery the greater the protection of the employe, the passenger and the patient." This is undoubtedly true. The editor might put it in another way, namely, the greater the knowledge of the railway surgeons' association and of the individual members the more efficient they become—a truism which we suppose no one would care to dispute.

The volume will be found very useful not only to railway surgeons but to general surgeons as well, who are not only compelled to treat many of the cases herein discussed, but are usually on the other side of the cases in the witness box when they come up for adjudication in the courts. The volume, which is worthy of all praise, is a very welcome addition to the library of every progressive surgeon.

Atlas and Essentials of Bacteriology. By PROF. K. B. LEHMANN and DR. RUDOLPH NEUMANN. With 63 chromo-lithographic plates, comprising 558 figures and numerous engravings. New York: Wm. Wood & Co. 1897.

This work consists of atlases with explanations of the same, and will be found very valuable for purposes of comparison to all students and laboratory workers. The latter part of the work is devoted to morphology, vital conditions and effects of bacteria and observations on nutrient media. There is a technical appendix which gives recommendations and brief descriptions. This contains the most necessary data, those which in the experience of the authors have proved most practical. The preparation of sections and methods of handling cultures are thoroughly explained. There is no work that we know of to take the place of this for use in the laboratory. The plates are chromo-lithographs, and have been executed by one of the most celebrated firms in Bavaria. As they were prepared under the directions of the authors, their accuracy is unquestioned.

MISCELLANY.

Personal.—Augustus P. Clarke, M.D., of Cambridge, Mass., was chosen an honorary president of the Section of Obstetrics and Gynecology of the Twelfth International Medical Congress, held in Moscow, Russia, August 19 to 26, 1897.

A Mycologic Club.—An interesting society, at New York City, has been formed for the purpose of arousing a wider appreciation of the value of a cheap and abundant supply of edible mushrooms. The members hold monthly meetings, which are devoted to the study of mycologic specimens; and it is expected to interest the public by holding open meetings. The present membership numbers thirty.

Legal Definition of "Maiden."—From an examination of the definitions of the foremost lexicographers, the supreme court of Vermont comes to the conclusion, in the case of State v. Shedrick, that the common ordinary meaning of the word "maiden" is a young unmarried woman or female, not necessarily a virgin, and this meaning of the word it adopts in construing an indictment of a man for adultery with a "maiden."

Large Medical Estates.—The London letter of the *American Practitioner and News*, says that among the wills of the medical profession proved during 1896, that of Dr. Patrick Fraser, £420,000, dwarfed all others into insignificance. Then came Sir John Erichsen with less than £90,000 and Sir George Humphrey with a trifle under £80,000. It is said that, like Sir William Gull's estate of £342,000, Dr. Patrick Fraser's fortune was chiefly built up by judicious investment.

A Source of Sulphuretted Hydrogen.—According to the *Microscopical Journal*, the explanation of the phenomenon why fish could not live in the Black Sea at a depth greater than 200 fathoms, was due to the countless number of microbes that make their home in the ooze at the bottom. Away back in 1850 scientists knew that the superabundance of sulphuretted hydrogen was the destroying agent, but not until recently did the microbiologists point out the true origin of the destroying agent. This microbe, named bacillus hydrosulfuricus ponticus, decomposes mineral sulphates and has the virtual powers of a noun of multitude.

The St. Petersburg School of Medicine for Women.—The Director of the St. Petersburg School of Medicine for Women (Professor Anrep) recently stated that 160 students have entered for the first course. By a recent ukase women who are not Christians will be admitted. The number of such students, however, must never exceed 5 per cent. of the total, which is the actual proportion at present. More than a hundred applicants have had to be refused admission on the score of want of room. The first course of study includes anatomy, histology, physiology and the preliminary subjects, besides dogmatic theology, which is compulsory for the first half year.—*British Medical Journal*, September 4.

Foreign University Intelligence.—Jena: Dr. Richard Neumeister, Extraordinary Professor of Physiologic Chemistry, has retired.—Königsberg: Dr. E. von Esmarch, Extraordinary Professor of Hygiene and Bacteriology, has been appointed to the chair of Hygiene. The chair of Gynecology is still vacant as it has been declined by Professor Bumm of Basel.—Marburg: Dr. A. Schirmer of Basel has been appointed to the newly established professorship of odontology. Dr. A. Dubler, Extraordinary Professor of Pathologic Anatomy and Bacteriology, has been obliged, owing to the weak state of his health, to retire.—Vienna: Dr. Hugo Wintersteiner has been recognized as privat docent in ophthalmology.—*Lancet*, September 4.

Respiration Due to Hematosis and Osmosis of Dissolved Gases.—Vergara Lope and Herrera of Mexico, who have attracted attention by their studies of the effect of altitudes on the circulation, etc., announce that moisture is the essential condition to respiration. The mucous membrane is always moist, and the oxygen in the air is dissolved by contact with this moist surface and is absorbed by gaseous endosmosis. This is the entire process in fishes, but in warm-blooded animals and man there is, besides this, a chemic endosmosis: the oxygen is attracted through the tissues by chemic affinity with the hemoglobin. The absorption of oxygen is independent of the exhalation of carbon dioxid, which is similarly dissolved and exhaled by the same effect of moisture and gaseous osmosis, but it requires movement of the dissolving fluid. The process is merely dissolving in the lower animals; dissolving plus combination in the higher animals. This process of respiration is identical in a decaying body, a river, a living body.—*Revista de Anat. Pat. y Clin.*, June.

Bacteria in Ink.—It sometimes happens that a trifling scratch or puncture made with a pen gives rise to dangerous septicemia. The chemical constituents of the ink which is introduced by the pen into the wound are not capable of producing septicemia, but microscopic examination proves that the ill effects are due to the liability of ink to contain pathogenic bacteria. Dr. Marpmann of Leipzig has recently published the results of the microscopic examination of sixty-seven samples of ink used in schools. Most of thém were made with gallnuts and contained saprophytes, bacteria and micrococci. Nigrosin ink, taken from a freshly opened bottle, was found to contain both saprophytes and bacteria. Red and blue inks also yielded numerous bacteria. In two instances Dr. Marpmann succeeded in cultivating from nigrosin ink a bacillus which proved fatal to mice within four days. This ink had stood in an open bottle for three months, and the inference to be drawn from the inquiry is that ink used in schools should always be kept covered when not in use.—*Lancet.*

Color Photography.—Photography in natural colors appears at last to have been achieved, and if this be so an advance equal in importance to that brought about by the X-rays has been made. The process is at present a secret one and will doubtless remain so until the necessary steps are taken to protect the inventor. From a purely scientific point of view it is regrettable that such a course has been decided upon, but in these utilitarian days there are few, we imagine, who would be justified in finding fault with the inventor on this account. The process, which has been demonstrated in the laboratory of King's College in the presence of such men as Prof. Millar Thomson, Mr. Herbert Jackson, Captain Abney and Sir Henry Trueman Wood, consists in taking a negative in the ordinary way on a gelatin plate which has been treated with a solution of certain salts, the nature of which is a secret. The negative is developed in the ordinary way and differs in appearance but little from an ordinary negative. The positive produced from this looks like an ordinary transparency with no sign of color. It is then immersed after the manner of intensifying an ordinary negative by mercury solution, in three colored solutions, blue, green and red, when the tones appear to possess a selecting action, selecting just that color and tint which characterize the parts of the original subject. The results, it is stated, are exceedingly beautiful and artistic and surpass the achievements of hand work.—*Lancet.*

Medical College for Native Women in India.—The North India School of Medicine for Christian Women was started in Ludhiana a little over two years ago. Dr. Edith Brown, the principal, is supported by a small but well qualified English staff. A very earnest appeal on behalf of its operations comes to us from Miss Harriet Crawfurd of Meerut. The skill of women doctors in India, she says, is now so fully recognized that the demand is far beyond the supply. Crowds daily visit the hospitals and dispensaries, where the energies of the staff are fully taxed to cope with the work. Then there are multitudes of women in secluded homes who would welcome a lady doctor and gladly pay for help and advice. In this school at Ludhiana the great desire is to train up native women for the work. No religious instruction is given in the government hospitals, and native Christian girls can better be trained in such places as the North India School, which is quite unsectarian.

Symptomatology of Alcoholism.—A careful study of 400 alcoholics has been made during the last fifteen years at Zurich under Forel's supervision, and again the fact of heredity is emphasized; 43 per cent. of the cases had one or both parents alcoholic, and 40 per cent. had nervous or mental antecedents. Fifteen per cent. of the patients were wholesale or retail dealers in liquors. One hundred and thirty-two out of 346 had become alcoholics without drinking liquors, consuming merely beer, wine or ciders. Alcoholism is most frequent between 20 and 60 (93.5 per cent.). Below that age a case is almost sure to be direct heredity. All the cases showed various physical, mental and moral alterations: degeneration of the heart, arterio-sclerosis, affections of the stomach, tremor, ataxia, pupillary troubles, general denutrition, etc. One-fifth were sexual perverts (hyperesthesia, precocious debauchery, inversion, exhibitionism). Fourteen per cent. were epileptics; in six cases the attacks followed alcoholic excess and disappeared entirely when the patients refrained from alcohol. The point is noted that the griefs to which patients frequently refer their alcoholic excesses are often found to have followed them.—*Ann. de la Soc. Méd. Chir. de Liége*, June.

A Little Physiology is a Dangerous Thing.—Vegetarians have hitherto been regarded as the most self-denying of mortals in the matter of food, but a new prophet has arisen and it behooves them to look to their laurels. The immortal Hiya, or She-who-must be-obeyed, enunciated the aphorism: "Fruit is the only true food for man," and now we have Miss Loie Fuller, the *danseuse*, declaring, through the medium of an illustrated paper, that the sole way to prolong life like the patriarchs of old to a hundred years or more is by becoming strictly frugivorous. Skirt dancing is scarcely an occupation calculated to develop or foster asceticism in any form, but the fact remains that one of the most talented exponents of the pastime has made her appearance as an uncompromising denouncer, not only of animal food in general, but even of edibles containing starch. "We are governed by custom, whereas we ought to be led by the promptings of nature," cries this fervent disciple of Plato in her exordium, and then with some inconsistency proceeds to the solemn warning: "We are slaves to the palate, let us strive to become its master." That Miss Fuller's physiology is as novel as it is ingenious the following example will show: "The sugar in the sweet fruits serves the same end as starch in other things. Starchy substances must change first into dextrin and then into glucose, ere they reach the stage dates and figs have already attained. The ripening process has brought them to the condition whereto starch is reduced in the human body. On this development nerve force is exhausted, and the tissues are gradually weakened, all which may be avoided by replacing starchy foods with naturally sweetened ones." In fact, the entire article is brimming over with learning, but alas! that we should have to say so, it is the kind of learning against which Pope warns us. London *Lancet.*

Louisville.

YELLOW FEVER.—This State, under the direction of the State Board of Health, has inaugurated a very thorough system of inspection of all in-coming trains from the infected district south. An invitation has been extended the refugees from the South, but the hundreds who come to Kentucky must show a clean bill of health before they are allowed to stop at any point. Inspectors of the State Board personally see every passenger on southern trains soon after the State line is crossed, and if any suspicious case is found the orders are to detain it and all the passengers in the car. The baggage on all these trains is opened and disinfected en route with formaldehyde gas, each trunk or piece of baggage being labeled "disinfected." If the coaches' final destination is at any point in Kentucky, it is fumigated with formaldehyde before it is used again; if it is a through coach it is allowed to proceed. Every passenger arriving in Louisville is sworn to report every morning for a week to the health officer, and if he does not an officer of the Board looks him up at the address given the various inspectors. Louisville has just experienced an unprecedented "spell" of hot weather and a long drouth, both being terminated by a heavy rain and a lower temperature, which of itself is ample to prevent any rooting of yellow fever in the city, should a case elude the vigilance of the inspectors.

Texas Fever.—For some weeks cattle affected with Texas fever have been shipped into Illinois from Kentucky points, and this called forth a protest from that State's officials. Investigation showed that cattle infested with "ticks" have for some time been sent from Tennessee and shipped through Kentucky to Illinois points. Governor Bradley at once called the attention of Tennessee's chief executive to this and a quarantine will be established at once against Tennessee cattle if the practice is not stopped.

Medico-Chirurgical Society.—The first meeting of this Society after the summer vacation was held at the Pendennis Club, the guest of Dr. L. S. McMurtry, with a full attendance. Some interesting clinical cases were reported. Dr. J. M. Williams exhibited the patient from whom the rectum had been resected, some five months ago, for epithelioma, the patient being in excellent condition. Dr. A. M. Cartledge exhibited a specimen of large polycystic tumor, and Dr. W. O. Roberts, a gallstone of peculiar formation, much like a piece of coral.

Washington.

Health of the District.—The report of Health Officer Woodward for the week ended September 11 shows the number of deaths in the District to have been 126. Of this number 67 were white and 59 colored. Among the principal causes of death were, nervous diseases 20; circulatory 9; intestinal 16; respiratory 16. There was one fatal case of diphtheria; 4 of typhoid fever; 3 of whooping cough.

Pay of Police Surgeons.—The police surgeons have joined in a petition to the commissioners, urging an increase in their gross estimate for the pay of the police surgeons of the District. Under the present rate the surgeons receive a monthly salary of $45. Last year the calls and office consultations amounted to over fifteen thousand, and under the present salary they were paid for each consultation less than nine cents. Probably no city in the world has a more efficient corps of police surgeons, and the commissioners should recognize their worth and give them a compensation commensurate with their professional labors.

Physician to the Poor.—Dr. E. F. Cummiskey has been appointed physician to the poor during the absence of Dr. Edward E. Richardson.

To Study in Europe.—Dr. John A. Koch, one of the house staff at the Garfield Hospital, has resigned to go to Vienna, where he will take up a special line of study.

Societies.

The following meetings are noted:

Alabama.—Madison County Society of Huntsville, September 6.

Iowa.—Missouri Valley Medical Society at Council Bluffs, September 16.

Kansas.—The Topeka Academy of Medicine, September 13.

Kentucky.—The physicians of Louisville recently organized the Weaver Club with 200 members.

Michigan.—Calhoun County Medical Society at Marshall, September 14.

Minnesota.—St. Louis County Medical Society at Duluth, September 9.

New Hampshire.—Somerset and Berwich Medical Association at Somersworth, September 9.

Ohio.—Muskingum County Medical Society at Zanesville, September 9; North Central Ohio Medical Society at Marion, September 24; Stark County Academy of Medicine at Canton, September 7.

Pennsylvania.—Erie County Medical Society at Sommerheim, September 7; McKeon County Medical Association at Bradford, September 10.

CHANGE OF ADDRESS.

Alabama Medical and Surgical Age, from Anniston to 2107 Third Avenue, Birmingham, Ala.; Anderton, W. B., from East Quoque to 34 W. 47th Street, New York, N. Y.

Beatty, J. T., from Highlands to 2336 Boulevard, Denver, Col.; Blankner, F., from St. Louis, Mo., to Calumet, Mich.; Braselton, B. F., from Gainesville to Pendergrass, Ga.

Campbell, R. A., from 267 Cedar Avenue, to Room 1, Syndicate Block, Minneapolis, Minn.; Cooke, Henry G., from Holmdel to 7 Livingston Avenue, New Brunswick, N. J.

Eaton, F. B., from Y. M. C. A. Building to Porter Building, San Jose, Cal.; Edwards, F. H., from 315 to 320 State Street, Chicago, Ill.

Hopkinson, B. Merrill, from 1825 N. Calvert Street to 1325 Park Avenue, Baltimore, Md.

Kirpatrick, M., from Boulder, Colo., to 116 Jackson Place, Baltimore, Md.; Knopf, S. A., from 319 W. 58 Street to 935 Madison Avenue (near 75th Street), New York, N. Y.

Luebbers, A. from 2407 N. Jefferson Avenue to 2001 N. Market Street, St. Louis, Mo.

Makuen, G. H., from Cresson Springs, to 1419 Walnut Street, Philadelphia, Pa.; Muir, Jos., from 128 W. 45th Street to 254 W. 34th Street, New York, N. Y.; McDaniel, E. B., from Cove to Baker City, Ore.; McGahan, C. F., from Bethlehem, N. H., to Aiken, S. C.

Orth, D. A., from Milwaukee, Wis., to 756 W. Chicago Avenue, Chicago.

Pipes, Jno. R., from Crestline to Mansfield, Ohio.

Sherman, W. P., from Chicago to cor. River Street and Downer Place, Aurora, Ill.; Stathers, W. E., from Wheeling to Weston, W. Va.

Tessler, Marcus, from Kendrick to Baltimore Block, St. Paul, Minn.

Waiss, G. C., from 342 W Harrison Street to 1022 W. 21st Street, Chicago; Welch, J. P., from Holbrook to Glendale, Ariz.

LETTERS RECEIVED.

Alma Sanitarium Co., Alma, Mich.; Andrews, B. J., Burlington, Vt.; Andrews, Edmund, Chicago, Ill.; Arnold, C. D., El Reno, Okla. Ter.; Ayer, N. W. & Son, Philadelphia, Pa.

Barr, Martin W., Elwyn, Pa; Baker, L. B., Erie, Pa.; Bell, F. A., Dallas, Texas; Blanke, C. F., Tea and Coffee Co., St. Louis, Mo; Boehringer, C. F. & Soehne, New York, N. Y.: Brockhausen, B. E., Lansing, Iowa.

Caldwell, W. S., Moscow, Russia; Camac, C. N. B., Baltimore, Md.; Campbell, T. F., Belle Fourche, S. D.; Calbreath, C. C., Confidence, Iowa; Cole, T. C., Thurman, Iowa; Colyer & Eads, Arthur, Ill.; Conner, J. J., Pana, Ill.: Corr, A. C., Carlinville, Ill.: Cox, E. A., Seaton, Texas.

Doolittle, George, T., Spokane, Wash.; Dorsett, W. B., St. Louis, Mo.

Eastman, Joseph Rilus, Indianapolis, Ind.; Elder, B. H., Peoria, Ill.

Fairchild Bros. & Foster, New York, N. Y.; Fortier, J. J., (2) West Superior, Wis.; Francis, R. P., Montclair, N. J.; Friedeman, Paul, Kiel, Okla. Ter.

Gardner, Jerome, Dayton, Nev.; Giflin, L. M., Boulder, Colo.

Hale, Albert B., Chicago, Ill.; Hektoen, L., Chicago, Ill.; Hoagland, George A., St. Louis, Mo.; Hobart, John P., Cincinnati, Ohio; Holmes, Hattie E. (Mrs.), North St Paul, Minn.; Horner, Frederick, Marshall, Va.; Hummel, A. L., Advertising Agency, New York, N. Y.; Hutchinson, Woods, Buffalo, N. Y.

Jones, Thomas S., Louisville, Ky.

Kerr, I. J., Cleveland, Ohio; Kinne, Edward, Gayton, Va.; Kneedler, Wm. L., San Diego, Cal.; Koechl, Victor & Co., New York, N. Y.

Langford, M. L., Baileyville, Texas; Learned, J. B., Northampton, Mass.; Lentz, Charles & Sons, Philadelphia, Pa.; Lord & Thomas, Chicago, Ill.; Love, I. N., St. Louis, Mo.; Luebbers, A., St. Louis, Mo.

Mahon, J. B., Pittston, Pa.; Matthews, H. E., Penn Yan, N. Y.; Miller, J. W., Kansas City, Mo.; Montgomery, Liston H., Chicago, Ill.; Musser, J. H., Philadelphia, Pa; McCormick, E. G., Prairie Grove, Ark.; McDill, John R., Milwaukee, Wis.; McEnroe, J. F., Schenectady, N. Y.; McGannon, M. C., Nashville, Tenn.

Oakland Chemical Co., (2) New York, N. Y.

Parke, Davis & Co., Detroit, Mich.

Rohe, George H., Sykesville, Md.

Scheiffelin & Co., New York, N. Y.; Schowengerdt, W. E., Champaign, Ill.; Shoemaker, F., Fort Sill, Okla. Ter.; Smith, J. W., Bloomington, Ill.: Smith, Frank Trester, Chattanooga, Tenn.; Spaulding, Harriet, Leavenworth, Kan.

Tiemann, George & Co., New York, N. Y.

Upshur, J. N., Richmond, Va.

von Quast, E., Kansas City, Mo.

Watts, R. F., Millersburg, Iowa; Wainwright, J. W., New York, N. Y.; Willis, J. B., Weston, Mo.

THE PUBLIC SERVICES.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from September 11 to 17, 1897.

Capt. Junius L. Powell, Asst. Surgeon (Ft. Riley, Kan.), ordered to report to the president of the examining board, Denver, Colo., for examination as to his fitness for promotion.

First Lieut. James M. Kennedy, Asst. Surgeon, will be relieved from duty at Ft. Missoula, Mont., and is ordered to Ft. Washington, Md., for duty at that post.

Capt. Ashton B. Heyl, Asst Surgeon (Ft. Riley, Kan.), is granted leave of absence for one month.

Capt. Henry A. Shaw, Asst. Surgeon, leave of absence granted is extended one month.

Lieut.-Col. J. V. D. Middleton, Deputy Surgeon General (chief surgeon, Dept. of California), is granted leave of absence for one month, to take effect on or about the 20th inst., with permission to apply for an extension of one month.

Capt. Ogden Rafferty, Asst. Surgeon, leave of absence granted is extended one month.

A board of officers to consist of Major [illegible] Joseph K. Corson Surgeon: Major [illegible] appointed to meet at Denver, Colo., [illegible] 10 o'clock A.M., for the examination of such officers of the [illegible] Department as may be ordered before it, to determine their fitness for promotion.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending September 18, 1897.

Asst. Surgeon H. La Motte, placed on the retired list September 15 for physical disability.

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ADDRESS.

THE SURGEON OF OLD IN WAR.

Address in Surgery, delivered at the Sixty-fifth Annual Meeting of the British Medical Association, Montreal, Aug. 31 to Sept. 4, 1897.

BY W. MITCHELL BANKS, M.D. Edin.

Fellow and Member of Council of the Royal College of Surgeons of England; Surgeon to the Liverpool Royal Infirmary; Emeritus Professor of Anatomy, University College, Liverpool.

[Abstract from advance sheets of the British Medical Journal.]

Military surgeons in the Roman army.—The most careful investigations have failed to make out from their writings whether the Romans regularly appointed physicians and surgeons to their armies or not, although nearly every other question relating to their military organization has been treated of, sometimes very fully. What little information we possess on the subject comes mainly from mortuary or from votive tablets. Borcovicus, in Northumberland, now called Housesteads—was one of the principal stations on the line of Hadrian's wall. Here about seventy years ago, was found a monumental tablet, now in the Newcastle Museum. On it is the following inscription:

D M	D(IIS) M(ANIBUS)
ANICIO	ANICIO
INGENUO	INGENUO
MEDICO	MEDICO
ORD COH	ORD(INARIO) COH(ORTIS)
I TUNGR	PRIMAE TUNGR(ORUM)
VIX AN XXV	VIX(IT) AN(NOS) XXV

The First Tungrian Cohort is known to have been present at the battle of the Mons Grampius, and to have served at Castlecary, at Cramond near Edinburgh, in Cumberland and at Housesteads. The tablet is highly ornamented, and antiquarians hold that a rabbit and round bucklers carved in the upper part, which are emblems of Spain, show that the young military doctor was probably a native of that country. From various works treating of Roman inscriptions Simpson was enabled to find that four more tablets, in which surgeons of cohorts are mentioned, existed. They were found at Rome. One of them is a votive tablet, the inscription upon which intimates that it was dedicated by Sextus Titius Alexander to Æsculapius and to the safety of his fellow soldiers. It was cut in the year of the consulship of F. Flavius Sabinus, which is known to have been A.D. 83. As the Roman legion consisted of ten cohorts, it is interesting to know that there were not only medical officers attached to each cohort, but also one attached to the legion—a sort of surgeon-colonel, as we should call him nowadays. Three tablets have been discovered in which the *medicus legionis* is mentioned. One found at Verona was a tablet raised by Scribonia Faustina to her dearest husband J. Caelius Arrianus, medical officer to the Second Italian Legion, who died at the age of 49 years and 7 months. Furthermore, Simpson routed out of Mommsen's Latin inscriptions of Naples a tablet, now in the Dresden collection, which was found in the Elysian Fields near Baiæ, close to the Portus Julius, which was the station of a division of the imperial fleet. The inscription tells that M. Satrius Longinus, *medicus duplicatorius* to the Trireme Cupid, and the heirs of those freed by Julia Veneria erected the monument to the manes of that deserving lady. The term *duplicatorius* means that by reason of long or meritorious service he was entitled to double pay and reward.

Ambroise Paré.—Hundreds of years went past before there came upon the scene any military surgeon of note, but when he did appear he was a man of transcendent merit—the illustrious Ambroise Paré (1517 to 1590), the contemporary of Vesalius, the immediate predecessor of Harvey. For over thirty years he followed the wars under four kings of France, Henry II., Francis II., Charles IX. and Henry III. Even that miserable monster, Charles IX., loved the Huguenot surgeon, and when the awful day of St. Bartholomew came Paré was spared to tend his wretched master through the brief term of agonized and remorseful life that was given him. The description in Dumas's novel, the "Two Dianas," of the wound of the famous warrior, Duke of Guise, where the lance entered above the right eye and came out between the nucha and the left ear, breaking short off, and how Paré lugged it out, with the chance that when it did come, one terrible gush of blood would finish his illustrious patient's life and his own career at the same moment, is real history.

Amid all the splendid work which Paré did, the application of the principle of the ligature to bleeding arteries is that with which his name will be forever associated. In his time there was a fixed belief that the danger from gunshot wounds arose from the poison of the gunpowder conveyed on the bullet. To destroy this poison the treatment was to pour into the wound boiling oil in which elderwood bark had been stewed. On one occasion, not having this infernal concoction at hand, Paré used a cold mixture of yolk of egg, oil of roses and turpentine to his wounded soldiers. He passed a sleepless night from dread that this would injure those to whom it had been applied, and his delight next day was proportionately great when he found that they had had but little pain, while their wounds were free from inflammation and swelling. This was his panacea for wounds ever afterward. The world will ever believe in a glorious trio, Paré, the Frenchman, who invented the ligature; Morton, the American, who discovered anesthetics, and Lister, who introduced antiseptics.

Robert Clowes, born about 1540, served in France in the army commanded by the Earl of Surrey, and was afterward for several years in the navy. After about fourteen years in civil practice, he was despatched by Queen Elizabeth's orders into the Low Countries to attend upon the Earl of Leicester, Commander of Her Majesty's forces. He was at Zutphen when Sir Philip Sydney was killed. His last piece of service was a glorious one, he being with our fleet that defeated the Spanish Armada. It is told of him that he always kept beside him his military surgical chest, with the bear and ragged staff of his old chief Leicester on the lid. He wrote several works in English, of which the most important is entitled "A profitable and necessarie Booke of Observations for all those that are burned with the flame of gunpowder, etc., and also for curing of wounds made with musket and caliver shot, and other weapons of war commonly used at this day both by sea and land."

Peter Lowe was contemporary with Clowes and a most interesting character, born in Scotland about 1550. He obtained in 1599 from King James VI. a charter for the Faculty of Physicians and Surgeons of Glasgow, which he thus founded. His most important work is a "A Discourse of the Whole Art of Chirurgery." The first edition dated from 1597 and is one of the earliest, if not the very earliest, work embracing the whole art of surgery published in English.

Woodall's "Viaticum."—In 1628 oppeared the first work in England specially devoted to military and naval surgery. Some eleven years later the second edition appeared. A perusal of the "Viaticum" shows that Woodall was a very practical surgeon and an eminently religious man, and the way in which he mixes up pills and piety is sometimes very diverting. He enumerates the instruments for the surgeon's chest, including among others, catlings, rasors, trapans, trafine, lavatories, cauterizing irons, storks' bills, ravens' bills, crows' bills, terebellum, probes or flamules, glister sirings and "one bundle of small German instruments." Then comes a list of medicines under the heading unguentum, aqua, sol, oleum, chemicall oyles, syrups, conserva, electuariæ, etc. A long and careful description of the uses of the instruments and drugs follows. Woodall advances the cure of wounds a distinct step, once more putting us under an obligation to the soldier-surgeon. This he does by sharply attacking all through his works the inordinate and meddlesome use of strong caustics.

Richard Wiseman has been termed the Father of English surgery, and that not without reason. Born in 1620, dying in 1676, he lived in the time of Charles I., of the Commonwealth and of Charles II. He served in the early part of his life in the Dutch navy. Being, however, a devoted royalist, he served with the armies of Charles I., and after his death went into exile with his son in France. He was present at the battle of Worcester, where he was taken prisoner, and afterward confined in Lambeth House for a while. During the Commonwealth he was naturally under a cloud, and even went off to serve in the Spanish navy. At the restoration the king did not forget his old surgeon, who had done and suffered so much in his service, but appointed him his surgeon-in-ordinary and afterward sergeant-surgeon. The first edition of his work, printed in 1672, is quite a small book, entitled "A Treatise of Wounds," but it afterward expanded into a very large volume. Wiseman believed in the need for giving stimulants to a man who was in the habit of taking them, if that man was in a dire strait. When speaking of gunshot wounds, he insists upon the bullet being searched for and extracted at once.

Baron Larrey.—Up till the time of the French Revolution it is clear that military surgeons were not men of much importance, and probably had very little influence, if any, in the conduct of campaigns. But in the latter part of last century war was made on a scale which was never known before, and was made also with a rapidity and a precision quite unprecedented. Moreover the science and art of surgery had been rescued from quackery, and surgeons in actual practice were able to be of great and real service to the wounded. As a result of the vast masses of men that were hurled against each other the number of wounded after a big battle amounted to thousands, and civilization had so far advanced that it was imperative that immediate help should be given to them. So that about this time the military surgeon really became an important officer in warfare and began to have rank and pay well defined and his merits (up to a certain point) recognized.

In 1776, near the Pyrenees, was born Jean Dominique Larrey, the Chirurgien-en-Chef de la Grande Armée, the friend and body surgeon of Napoleon, the greatest military surgeon that ever lived. He studied at the medical school of Toulouse and in 1792 joined the headquarters of the Republican Army of the Rhine under Custine. Now, the ambulances of these days were obliged to remain about a league from the army and the wounded were only picked up after the fighting was done. General Custine was a man who moved his troops very rapidly, which made matters worse for the wounded. This greatly affected Larrey, who set to work and devised a new ambulance hung on springs and combining great strength with lightness. Such carriages were termed *ambulances volantes.* They could keep up with the advance guard of the army with the speed of flying artillery and they carried off the wounded almost as they fell. Larrey had early perceived the enormous advantage a wounded man got by having his fracture set or his bleeding stopped as rapidly as possible and by then getting a roof over his head before night set in. General Beauharnais, in a dispatch to the Convention, made special mention of a "Surgeon-Major Larrey and his comrades with flying ambulances, whose indefatigable care in the healing of the wounded has diminished those afflicting results to humanity which have generally been inseparable from days of victory and has essentially served the cause of humanity itself in preserving the brave defenders of our country." The staff of a flying ambulance was about three hundred and forty in number. For each division there were four heavy carriages and twelve light ones. Some had two and others four wheels and they were furnished with mattresses. In Napoleon's Italian campaigns they came greatly to the fore and the great man displayed a lively interest in them, reviewing them and causing them to maneuver before him just as if they were on a battle-field. After one of these inspections he said to Larrey: "Your work is one of the most happy conceptions of our age. It will suffice for your reputation."

When Napoleon undertook his Egyptian campaign Larrey proceeded to Toulon to organize the medical staff. So readily did professional men respond to the call made by him that he was soon able to reckon on 800 well qualified surgeons, of whom many had served in the army of Italy, and these were in addition to the medical officers actually attached to regiments. This, I think, shows the value the king of commanders set upon the health of his troops, and the trouble and expense which he was prepared to face in order to maintain it—a great contrast to the miserable way of dealing with this subject which has too long been the fashion with our military rulers. Not long after the landing at Alexandria a certain General Figuières was severely wounded. By able treatment he recovered and in gratitude for the preservation of his life he asked Napoleon to accept a valuable Damascus sword. "Yes," said the latter, "I accept it in order to make a present of it to the surgeon-in-chief by whose exertions your life has been spared." Upon the sword was engraved the words Aboukir and Larrey and the surgeon had it till the fatal day of Waterloo, when the Prussians robbed him of it.

At one period there was a total dearth of meat, and Larrey had nothing wherewith to make even a drop of bouillon for his patients. He ordered camels' meat to be used for this purpose, and when that fell short he used up the horses. Years afterward, in the the second campaign against Austria, the Imperial Guard and several other corps were crowded together in the Island of Lobau in the midst of the Danube, which Napoleon was attempting to cross. The days were roasting and the nights icy cold, and provisions became so scarce that Larrey's patients were in danger of starvation. Without more ado he impounded certain officers' horses and had them slaughtered and employed as food. As there was a lack of kettles, he employed the cuirasses of those who had been killed and made his horse-flesh soups and stews in them. Certain generals made bitter complaint to the Emperor of Larrey's proceedings, who summoned the Surgeon-in-Chief and in the presence of his staff demanded an explanation with a severe expression of countenance. "What," he said, "have you on your own responsibility disposed of the horses of the officers in order to give soup to your wounded?" "Yes," answered Larrey. He added no more, but soon heard of his promotion to the rank of Baron of the Empire.

One of the most appalling retreats, next to that from Moscow. was Napoleon's retreat from the invincible walls of St. Jean d'Acre through Jaffa. There is no doubt that at that place a considerable number of patients sick of the plague were quietly put out of their misery by opium. Alison says sixty; Sir Robert Wilson says 580. The retreat had to go on, the Turks were only an hour's march behind and nothing but a cruel death awaited these unfortunates, so that whether this were a justifiable deed or not may well give ground for argument. But, as Alison says: "History must record with admiration the answer of the French chief of the medical staff when the proposal was made by Napoleon to him: 'My vocation is to prolong life, and not to extinguish it.'"

During the battle produced by the landing of the English in Aboukir Bay, General Silly had his knee crushed by a bullet. Larrey saw that unless the leg were promptly amputated the case would prove fatal, and, the General giving his consent, the operation was performed in the space of three minutes under the enemy's fire. Just then the English cavalry came upon them. "I had scarcely time," said Larrey, "to place the wounded officer on my shoulders and to carry him rapidly away toward our army, which was in full retreat. I spied a series of ditches, some of them hedged with caper bushes, across which I passed, while the enemy, owing to the ground being so cut up, had to go by a more circuitous route."

At the battle of the Borodino, under Larrey's own direction 200 amputations were performed where there were neither couches nor blankets nor covering of any kind, and where the food consisted of horse flesh, cabbage stalks and a few potatoes.

Larrey's honorable and glorious life terminated in 1842. Napoleon when he made his will at St. Helena wrote in it: "I bequeath to the Surgeon-in-Chief of the French Army, Larrey, 100,000 francs. He is the most virtuous man I have ever known." From Napoleon's lips the words of free, spontaneous, ungrudging praise such as this rarely fell.

Military courage.—Baron Larrey's whole life shows that while absolutely devoted to the work of his profession he displayed a cool courage on the field of battle not less heroic than the more dazzling deeds of his fellow combatant officers. Not less does it mark the military surgeon of the present day. Surgeon Thomson, during the Crimean war when the army marched on after the battle of the Alma, volunteered, with his servant, John McGrath, to remain behind on the open field with 500 terribly wounded Russians, and passed three awful days and nights—these two Englishmen alone—among foreign foes, some dead, some dying, and none able to raise a hand to help themselves. Assistant-Surgeon Wolseley of the 20th Regiment at the battle of Inkerman quietly established his field-hospital in that awful place, the Sandbag Battery, and when the 150 men, who were all that remained of its defenders, were forced to desert it found at thirty paces from them a Russian battalion blocking their path, not a combatant officer left, the assistant-surgeon took command. He had not even a sword with him, but laying hold of a firelock with a fixed bayonet on it he gave them the word of command: "Fix bayonets, charge, and keep up the hill." The soldiers answered him with a burst of hurrahs, sprang forward to the charge and the next instant were tearing through the thickest of the Russians. One-half of these reached the other side alive. Surgeon Landon was shot through the spine while attending to the wounded on Majuba Hill. His legs were paralyzed, but he caused himself to be propped up and continued his merciful work till his strength ebbed away. Surgeon-Captain Whitechurch gained the Victoria Cross at the beleaguering of Chitral for the most determined courage in endeavoring to save the life of Major Baird. Of the 118 wearers of the Victoria Cross fourteen are surgeons, nearly 12 per cent. of the whole number. They stand in the proportion of 9.5 per cent. of all the officers of the army, so at all events they have contributed not less than their fair share of the deeds of valor which alone can win that glorious distinction.

The Army Medical Service today.—Today Her Majesty's Government can not induce candidates to come forward for the medical service of the Queen's army, because it has persistently treated the Army Medical Department meanly and shabbily. Today the Government of India can secure the services of the pick of our newly-fledged doctors for its army, because it has always treated the Indian Medical Service liberally and generously. Money is not at the bottom of this difficulty. The soldier-surgeons of today are the same men now that they were in the days of William Clowes, who winds up his book as I shall my address, with these verses:

When valiant Mars, with brave and warlike band,
In foughten field with sword and shield doth stand,
May there be mist a surgeon that is good,
To salve your wounds and eke to stay your blood

To cure you sure he will have watchful eie,
And with such wights he means to live and die.
So that againe you must augment his store,
And having this he will request no more

moved; detrimental, since it leaves open a pathway for the very probable introduction of bacterial ferments, even when the greatest care is exercised in the use of antiseptic dressings. When these dressings are to be relied upon their use is attended with such constant vigilance on the part of physician and nurse that frequently the largest share of the service devoted to the patient is given alone to the supervision of the wound.

Even recent statistics of the general hospitals show that a large percentage of deep wounds made in aseptic structures, closed by interrupted sutures taken through the skin surfaces, no matter what the suture material or dressing, become infected either from defective surgical operative technic, or because of exposure after the operation. One of the most important questions of general interest to all surgeons at the present time is, in what way can this percentage be reduced, and is it possible altogether to avoid the infection of wounds which have been made in aseptic structures? Since the surgical operative technic is generally well understood, based on the demonstration of scientific principles and by most surgeons carried into practical effect, it must be accepted that the faulty conditions which permit the introduction of bacterial ferments into the wound pertain less to the surgeon and the exposure involved during the operation, than that which takes place subsequently.

The time has already past which requires argumentative demonstration to prove that, when primary union fails after operation on aseptic structures where the wounded tissues can be coaptated and remain at rest, the defect lies in the lack of vitalization in the injured structures, or because of something introduced into the wound which interferes with the processes of repair. The more careful study of wound reparative processes of the recent period demonstrates the remarkable inherent vital power which pertains even to injured tissues when maintained at rest in aseptic conditions. This is the Aladdin tale of modern surgery when we recall the seeming ease with which nature disposes of large serous and bloody effusions consequent upon subcutaneous injuries, the absorption of blood clots and the disposition of devitalized structures when the wounded parts are maintained aseptically at rest. Indeed it often seems as if nature was enabled to turn these damaging factors to her credit account by utilizing all these materials in her processes of repair.

It was the knowledge of these facts that first led me, in 1870, to the belief then put in practice that aseptic animal sutures could be safely buried in aseptic wounds for the purpose of coaptation and be permitted to remain undisturbed, trusting to the inherent vital power of the structures to dispose of them subsequently as unirritating material.

My histologic studies of the repair processes incident to wounds thus treated in animals demonstrated that catgut thus buried was encapsuled by leucocytes which, little by little, invaded the foreign material, causing its subsequent disappearance, and that it left behind a more or less permanent vitalized connective-tissue band along the tract of the buried material. But for defects inherent in the histogenic structure of catgut and the extreme difficulty in making the same aseptic, catgut would furnish ideal suture material. In my wounds thus treated at this period, while primary union ensued in the deeper structures, more generally there were minute superficial abscesses at the point of the insertion of the catgut through the skin, although the skin itself had been very rigidly disinfected. Since these wounds were closed without the introduction of drainage of any type, it was clear to infer that the defect did not lie in the deeper structures, these undergoing an easy process of primary repair. As the suture material used in the coaptation of the deeper parts was of the same character as that used for the closure of the skin wound, it seemed a just criticism that the imperfect result was not due to the suture material. This was known to be aseptic from laboratory examinations demonstrating its sterility. Therefore the inference that the defective results were due to superficial infection seemed justified and this could occur only from defective protection, from extraneous infection, viz., surgical protective dressings, or a hitherto unknown something pertaining to the superficial layers of the skin itself. Since a wound treated as above described no longer required antiseptic dressings of absorbent character, the drainage tube having been dispensed with, the next step in the process seemed to me to be the protection of the coaptated wound by an adherent germ-proof dressing. After a considerable amount of experimental study I found this best attained by the use of contractile collodion in which a certain amount of iodoform was in solution (about 15 grains to the ounce). However, minute stitch abscesses were not seldom wanting, and these invariably occurred on the line of the penetration of the suture through the otherwise uninjured skin, and when very minute were more commonly found upon the site of the wound where the suture was introduced rather than upon that of its exit from below upward. This led me to a belief that a manifest profit would result by making the coaptated skin suture also beneath its surface (the subcuticular animal suture).

After a little practice it was found easy, by the introduction of the needle through the deeper layer of the skin, but exactly opposite the emergence of the previous stitch, to secure perfect coaptation of the skin surfaces without pucker or wavy lines. The wound was then sealed, almost invariably subsequent primary union followed regardless of further dressings or attention. (In 600 wounds kept under observation in my private hospital 98 per cent. were followed by primary union.)

The demonstration at the Johns Hopkins Hospital a few years ago of the constant presence of the micrococcus pyogenes albus in the dying epithelium of the skin is in my judgment one of the most important contributions to surgical science which has been made in modern times.

If the foregoing demonstrations are correct and the proof of the same ample, we may well ask, why in this long period has not this treatment of wounds been more generally accepted? I apprehend that we have not long to search for the answer, mainly because the surgeon, although accepting in an abstract way the theoretic demonstration as correct, yet, governed by the conservatism of the past, and the fear that he may enclose infectious material without any avenue for its escape, lacks the confidence in its adoption. Therefore, he takes his sutures deeply from side to side, knotting the same independently, with the knowledge that if anything goes wrong in the wound he can open the same and permit the escape of injurious substances. Still further, to assure himself that the deeper recesses of the wound, closed by his defective suturings, may not be pockets containing infective material, he places at the very bottom of the wound a drainage-tube. He attempts to aid this process still further by the application of compresses and more or less tight bandaging with the necessary result of impairing the circulation and retarding the repair processes consequent on the deficient nutrition. When he has resorted to buried sutures, from an imperfect knowledge of the proper method of application, his results have been disappointing, because he constricts rather than simply coaptates the sundered structures, and in this way devitalizes the enclosed parts. Also by trusting to the use of catgut as a suture material he often finds that he has implanted infection, because catgut is extremely difficult of sterilization.

In wounds of considerable size, subject to strain, the catgut also sometimes fails to fulfil its office as a retaining suture, since its inherent defective construction causes the early separation of its component fibers. This pertains in less degree, or not at all, to properly prepared tendon suture, the chief objection to which is the multiplicity of processes to which it is subjected in preparation. Its advantages consist primarily in not having been subjected to processes of infection, when properly taken from freshly killed animals; and secondly, when not unduly subjected to the processes of heat or chemical manipulation, it remains an unirritating material in the tissues, for two or three months, and is then replaced, more or less perfectly, by a band of living connective tissue.

The tendon from the tail of the kangaroo furnishes the best suture material. The psoas muscle is divided into many fasciculi, and each fasciculus has its independent tendon, which has its fixation in a common union at the end of the tail. A small kangaroo furnishes twenty or more uniform round tendons of suitable size for ordinary use. They are of remarkable strength, smooth and even. Their preservation consists in sun drying from the freshly killed animal and keeping dry until prepared for use. This consists of softening in 1 to 1,000 bichlorid solution, separation and selection. Then they are soaked in a 2 per cent. solution of formal, carefully chromicised and permanently preserved in carbolic sterilized linseed oil. This latter is the best preserving fluid, although not strictly an antiseptic. The tendon improves in the oil, with age. I prefer not to use it until it is a year old. When required for use, the oil must be removed, and this is easily effected by soaking in warm mercuric solution for half an hour. The tendon is then supple, and when properly handled assuredly aseptic. However, no man should use buried sutures who is not a master of modern aseptic surgical technic.

During the last year the subject of sterilization of catgut has been revived. There can be no question but that complete disinfection of catgut may be made and from this standpoint the suture be entirely trustworthy; but, as I have elsewhere pointed out, the inherent defect in catgut is in the disposition of the connective fibers of which it is composed. These necessarily cross each other at various angles and are never parallel. When twisted and dry, they are firmly held together and the suture is strong, but when wet, and they must always be in this condition in the tissues, they soften into a more or less flat, elastic band. This is the reason why the knot in catgut is untrustworthy, and the elasticity of the material permits the structures to become relaxed loosened.

In tendon the ultimate fibers are held firmly together in parallel lines, and this suture does not have even the disadvantage of twisting, which necessaril must pertain also to silk in order to make a stron thread. The sewing with catgut is not unlike fishin with a diagonally cut piece of thin silk cloth, whic has been twisted and called a line. Soon it become a flat, slippery, elastic ribbon, utterly unsuited for th required purpose.

It is very generally conceded that silk, no matte how fine, is objectionable as a buried suture, becaus of its non-absorbability, and that oftentimes on this account, nature expels it with more or less difficulty as a foreign body. Of this every surgeon of any considerable experience can bear personal testimony.

Silkworm gut is quite commonly used, especially as a retaining, superficial interrupted suture, since its component structure does not admit of its being penetrated by bacteria, and as a consequent, it is as non-irritating as wire and should therefore be classed in the same category.

Somewhat recently the practice of burying silver wire in the tissues for the purpose of coaptation, has been revived at the Johns Hopkins Hospital, and it is claimed that the result is satisfactory. But the wire thus buried, no matter how fine, must ever remain a foreign body and may become a source of irritation years after its implantation. The wire is even used as a subcutaneous suture in the coaptation of the skin, and is removed when the repair processes are complete. It is objectionable because its insertion must necessarily be in a curved line, which gives a puckered cicatrix, and its adjudged necessary removal is the best possible commentary on the belief that its retention must be a source of irritation and subsequent suffering. If the aseptic subcuticular tendon suture serves the purpose of a more even coaptation and requires no subsequent removal, its advantages are manifestly apparent.

The method of application of the buried animal suture is most important. Coaptation, retention and rest are the objects to be attained. This must be effected with the least possible damage to the tissues involved. It necessarily follows that the fewer the stitches and the least possible amount of suture material used in order to accomplish this purpose satisfactorily, the better. The fewer stitches, [illegible] every insertion of the needle necessarily injures many cells; the minimization of suture material beyond that necessary for proper coaptation lessens the amount of work incident to the repair of the structures. As far as possible knots are to be avoided, and as a consequent, the continuous suture has great advantage over the interrupted, and the amount of suture material required for each continuous stitch is greatly lessened. The constriction of the tissues enclosed by a continuous suture is more evenly equalized throughout the parts and the devitalization of the stuctures much less likely to be [illegible]

In many wounds as, for instance, [illegible] coaptation and retention of the parts is [illegible] difficult, I have found it advantageous [illegible] line of continuous tendon suture, [illegible] retention is secured without the [illegible] structures thus coaptated and, [illegible] without constriction of the [illegible] structures when thus united [illegible] which pass at right angles to their surfaces without any foreign material being interposed. A wound thus sutured is closed without any increased number of stitches or stitch-holes and holds the coaptated parts gently at rest.

The method of application of the suture in more common use for the closure of wounds, is the use of the interrupted suture, which necessarily implies a knot for each stitch and can be applied as a deeply buried suture only under very considerable mechanical disadvantage, not alone involving a difficulty of application, but necessitating a very considerable injury to the structures. Even when used it folds in juxtaposition only the tissues included in the loop of the stitch, and an undue constriction of the included structures is deemed necessary in order to prevent the gaping of the wound between the points of ligation. As a skin suture it has the well recognized disadvantage, already referred to, of penetrating the cuticular layer with its ever-present micrococcus pyogenes albus infection. Here also, to prevent the separation of the wound between the stitches, the suture is made to unduly constrict the enclosed tissues.

The continuous suture in common use (the glover's stitch) has the advantage of rapidity of application and minimization of the suture material, but it is at fault in that the action of the force is not at right angles to the divided surfaces but acts in an oblique direction, which produces a tendency to intrafold and join the opposing surfaces irregularly. By the use of the curved needle the stitches may be introduced from side to side deeply through the uninjured structures of the wound, crossing its cut edges at right angles. When this is gently drawn upon it brings the sides of the wound accurately into apposition without the interposition of suture material. For want of a better term I have called this the *parallel suture*, since it traverses the structures nearly parallel to the tissues to be coaptated. It is only a slight modification of the so-called blind running stitch in common use by the seamstress, but it fulfils a most admirable purpose in surgery.

Although it is remarkable to note how large an amount of aseptic suture may be used with apparent impunity in an aseptic wound, when necessary, it is also surprising to observe how small a quantity of suture material is really needful to hold in apposition the surfaces of a large deep wound, as in the amputation of the breast. This stitch is of equal service when applied for the closure of the abdominal wall in laparotomy, or in hernia, but for reasons already apparent it must be applied to restore and retain at rest like structures with a minimum of injury to the parts involved. Aseptically applied in aseptic structures and sealed with iodoform collodion the wound will unite, and aseptic primary union without swelling or suffering will supervene.

Agglutination as a Hemostatic Agent.—Lawson Tait is reported to be using at the present writing a new device, which has the credit of much ingenuity. A platinum wire so arranged as to carry a current of electricity is inclosed in the blades of a pair of steel forceps or any other required instrument, the wire for this purpose being insulated by a bed of burnt pipe-clay. This arrangement being perfected, a current of suitable voltage is turned on, the artery seized and compressed, and in a few seconds the tissues and arterial walls are so agglutinated that the passage of blood is rendered impossible. The temperature employed is about 150 degrees F., the fact being thus apparent that the principle involved in this device is different from that of electric cauterizing instruments.

TWO HUNDRED AND FIFTY BASSINI OPERATIONS FOR THE CURE OF INGUINAL HERNIA; WITHOUT MORTALITY.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

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The 250 operations here reported have been done upon 216 patients; 34 of the cases having been operated on on both sides. Fifty-two of the patients were females, 164 were males. I am quite sure that no one can accuse me of having selected my cases, when their ages and conditions are considered. Fifty-five of the patients were under 14 years of age, 43 were between 14 and 25, while 118 had passed their 25th year. Of the latter number, 8 were between 60 and 70, 6 between 70 and 80 and 2 were over 80 years of age. The youngest child operated on was 5 months old, and this is the first instance in my experience where I have been obliged to operate on a child less than 1 year of age. The operation was for strangulated scrotal hernia on the right side. The left was operated on at the same time for a large scrotal hernia, and the child made a perfect recovery in ten days.

The age limit for operation on these cases does not seem to have been reached in either direction, as the oldest patients operated on seemed to stand the operation as well, and recover as promptly as those operated on in early life.

Ninety-three of the cases had scrotal hernia; 55 were irreducible, 17 were strangulated and 178 were reducible at the time of the operation. In fifty-five of the cases it was necessary to excise more or less omentum, and this was done by tying off with multiple silk ligatures, in the manner described by me in the *Annals of Surgery*, June 2, 1895. I am not disposed to change this method now that I have a total of seventy cases without a death, which seems to prove its efficiency and safety.

The largest hernia operated on was two feet in circumference, reaching two-thirds of the distance to the knee of the patient, who was a man 53 years old. The tumor contained large and small intestine, a quantity of omentum and a distended bladder. This man had told me that he had difficulty in urinating unless he pressed the tumor forcibly against his thigh with his hands, but the exact condition of the bladder did not occur to me until after the operation. Twenty-four hours later it was found that he was passing very little urine and as the catheter could not be introduced, the bladder was becoming enormously distended. Forty-eight hours after the operation the bladder was therefore opened through the perineum and free drainage established. Notwithstanding the extent of the secondary work done upon him, the man recovered from his hernia operation by primary union and has now remained cured for two years.

The success of the Bassini operation is believed to be largely due to two facts: That all abnormal structures are cleared out of the canal; that two muscular layers are brought down to form a new posterior wall.

Aside from the hernial sac and its contents, I have found in the canal in three instances the ovary; in nine cases the testicles, and enlarged veins in a number of males. A young woman 30 years of age, accustomed to all athletic sports and in perfect health, had in both canals masses of varicose veins having every appearance of extreme varicocele as found in the male. These were ligated and cut away, but their cause and actual source of supply remained unknown.

Bunches of extra-peritoneal fat have been frequently met with in the canal in masses larger than one's thumb, and in one case as large as a good sized hen's egg. This man had scrotal hernia on one side and was supposed to have complete inguinal hernia on the other, but no hernial sac was found, merely this mass of fat coming down in front of the peritoneum. It was loose in the canal, hanging by a pedicle. and he could therefore push it up above a truss pad that he had been accustomed to wear.

It is not a very uncommon thing to have men tell me that formerly they were fat, and upon getting thin they have developed hernia. Doubtless, these are cases of the character just described, where previously the canal had been dilated by extra-peritoneal fat, and when this was absorbed a true hernia had come through the canal. I am quite sure that cases of this character are a far more common source of hernia than is generally supposed.

Cysts have been found in the canal in four cases and this does not apply to those frequently found in the scrotum just above the testicle. In one case it took the form of multiple small cysts, the whole resembling a small bunch of white grapes; this in addition to a well developed scrotal hernia. The length of time that these cases have been under treatment is of interest and importance. The time required for the complete healing of the case and the day upon which the patient first leaves his room or the hospital is considered the day of discharge.

Of the 250 cases 207 healed by primary union, and these patients were allowed to leave their beds by the tenth day, and in most instances left the hospital by the fourteenth day. Fifty-three healed by secondary union. The shortest stay in the hospital was eleven days. This was following an operation on a physician who, on his own responsibility during my absence from town, left the hospital and took a train for Detroit on the evening of the eleventh day. I have been assured by him that he suffered no inconvenience, nor did it seem to compromise the result in the least. I have only had six patients out of the total number who have required more than twenty-eight days for complete recovery.

In the suppurative cases the infection has seemed in almost every instance to start immediately beneath the skin and has not extended to the deeper tissues. In one instance the wound became infected by a gonorrheal discharge, the existence of which was not known at the time of the operation.

Fat patients, whose skins have been abraded by truss wearing, are peculiarly liable to suppuration, even when great care has been taken in the preparation for operation.

Contrary to my own expectation, in but a single instance has recurrence taken place among those cases in which there was suppuration, and in this one it is known that the failure was in no way due to a lack of primary union.

Suppuration in children under 14 years of age has been seen in only one instance in fifty-five cases; children, apparently, not being at all liable to this accident. In the case noted it was a second operation where there was considerable matting together of the tissues.

The double operations were in every instance done at the same time, as also some cases of inguinal and umbilical hernia. One patient, a man of 52 years, was operated on for double inguinal and right femoral hernia on the same day and has remained cured of the three hernias nearly two years.

Suture material.—In my early operations by this method I did not have faith in the lasting properties of kangaroo tendon or chromicized catgut, and from my experience with silk I was somewhat suspicious of that and was therefore led to use silkworm gut for closing the aponeurosis of the external oblique. This was used in twelve cases and in four of these considerable trouble was afterward experienced by the sutures coming out. In eight of the cases they were perfectly retained and have caused no irritation of the tissues. In one instance sutures came out nearly one year after the operation. This material was, therefore, entirely abandoned and since then I have used kangaroo tendon exclusively. In none of these cases, however, has there been a recurrence of hernia, even when the sutures came out. One man was operated on two years since where ordinary catgut was the suture material. No recurrence has taken place.

I am not prepared to disprove the statement of some of my friends that catgut, chromicized or plain, is just as good as kangaroo tendon, but prefer that they should first show an equal number of cures before I change.

One thing in connection with the presentation of this series of cases, I feel that I have reason to congratulate myself upon, and that is that there have been no deaths. I have not gone to the trouble to look over the literature on the subject, but I believe this to be the largest number of operations ever reported for the cure of hernia without a single death.

In one respect I may be liable to criticism on this point, for while I report seventeen cases operated on when the hernia was strangulated and when recovery and cures were effected I do not report two fatal cases operated on during the same period of time. This report relates to the Bassini operation for the cure of inguinal hernia, and has nothing to do with the fatality of strangulated hernia. If the canal has been closed by the Bassini method and the patient survives. then certainly it belongs to this report; otherwise, not.

Next in importance to its safety is the consideration of the permanence of the cure. In a paper on this subject, before this body, at Baltimore, in 1895,[1] I ventured to predict that the permanent cures would be 90 per cent. I am convinced that this estimate is too low, and do not hesitate to advance it to 95 per cent., with five years duration of cures after the operation, but this statement is premature and I am not here to argue this point, but to state the facts as they exist and allow each one of my hearers to draw his own conclusions. None of the present series of cases have been operated on more than three years. One hundred and fifty of them, however, have gone over one year since the operation and in no case, except of actual reccurrence, has a truss been applied. Out of the 250 operations I have had six recurrences. Three others are under supicion, but not sufficiently so to warrant the application of a truss. Of the six recurrences three have been reoperated on, and apparently with success. This leaves only three actual recurrences. By notes made at the time of the first operations it is believed that the real cause of failure has been known in every case. For a clear comprehension of the subject these cases must be briefly considered.

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[1] "A Note on the Advance in the Surgical Cure of Hernia," Journal of the American Medical Association, July 13, 1895.

Case 1.—My first recurrence was in a perfectly healthy young man 20 years of age, operated upon on June 3, 1895, for scrotal hernia of recent origin. The sac was tied off at the peritoneal surface and removed and the operation completed in the usual manner. He left the hospital on the fourteenth day, perfectly healed and four months later fell into an open trap doorway, falling violently upon his abdomen across the edge of the floor. One week later a bulging across the line of incision, and he was reoperated on Feb. 6, 1897, so far with apparent success.

Case 2.—The second recurrence was in a boy 6 years old, operated on for congenital hernia June 4, 1895. Primary union followed and he left the hospital on the fourteenth day. Five months later he developed a small protrusion at the line of the incision while struggling violently with the family physician and the father, who were trying to remove a piece of wood from the urethra. Reoperated upon Feb. 15, 1897, with apparent success.

Case 3.—The third recurrence was in a man 39 years of age, who had a large and troublesome hernia for many years. Operation Nov. 8, 1895; he left the hospital on the fourteenth day, completely healed. This patient was not seen until after his entrance for the operation, and it was not discovered that he suffered from an enormous varicocele on the same side. It was noticed at the time of the operation that the cord was large, but nothing was done for it. As soon as the man was on his feet it was seen that the varicocele was very liable to reproduce the hernia, which it did within six months of his leaving the hospital. Reoperated on May 11, 1897. The varicocele and all abnormal veins in the canal were removed. The cord was found to be fully as large as one's finger and was reduced to about the size of a lead pencil. This man has just left the hospital entirely healed. There is no apparent change in the circulation in the testicle after this change in the size of the cord.

Case 4.—Man, 37 years of age, weighing 225 pounds, had left irreducible scrotal hernia the size of a small cocoanut. Upon first examination believed to be a mass of omentum; the operation revealed the fact that it was largely bowel. Proved to be the sigmoid flexure turned out through the canal without peritoneal covering. Had not the opening been made to the internal ring it would have been mistaken for the hernial sac and opened. This man had fatty degeneration of the abdominal muscles to such an extent that the sutures would tear through the tissues readily under moderate tension. Hernia gave evidence of recurring in about six months and a light truss was applied and will be continued. Second operation not advised.

Case 5.—Man, 40 years old, six feet five inches tall, weighing 225 pounds, but not healthy looking, had had left scrotal hernia since early childhood, and irreducible for many years. A large mass of hypertrophied omentum was removed. Case was very difficult for operation and in closing the structures, by mistake, the aponeurosis of the external was carried under the cord for a part of the distance on the first row of sutures. On account of the tedious previous work and the condition of the patient time was not taken to correct this. Recurrence in three months.

Case 6.—Man, 55 years of age, of frail build but apparently good health, had had right inguinal hernia for several years, which proved rather rebellious under truss treatment. He took ether nicely, but after the canal was opened seemed to collapse, pulse dropping to 40 and respiration very feeble. Omentum firmly adherent to upper part of the canal. The necessity for a prompt termination of the operation seemed evident, and the upper part of the sac with adherent omentum was inverted; a suture of kangaroo tendon was placed so as to bring the peritoneum, transversalis and internal oblique as closely around the cord as possible, and the suturing of Poupart's ligament to the deep muscular structures was done in the usual way, except that it was hurriedly done. The patient was only on the table twenty-five minutes and came promptly out of the ether in good condition; a small quantity of ether had been judiciously administered. Patient made a rapid recovery, but showed evidence of recurrence within three months. Light truss applied and now being worn.

Thus, of my six recurrences, two were caused by unusual violence, two on account of undue haste in closing the canal because of the condition of the patient. One was a sigmoid hernia where there was a fatty degeneration of all muscular structures. One was undoubtedly reproduced by a very large varicocele overlooked at the time of the operation.

Three of these cases have already been operated on and, it is believed, cured. Of the remaining three, it is believed that only one is absolutely incurable, and that is the one with fatty degeneration. They are all vastly improved over their condition previous to the operation.

In closing, I feel that I can safely say, that by the Bassini operation and the present advanced methods of surgery, inguinal hernia has been taken from the list of incurable and placed on the list of curable affections.

Operations, 250; patients, 216; both sides, 34; females, 52; males, 164.

Under 14 years of age, 55; 14 to 25 years of age, 43; 25 to 40 years of age, 55; 40 to 50 years of age, 29; 50 to 60 years of age, 18; 60 to 70 years of age, 8; 70 to 80 years of age, 6; over 80, 2.

Position.—Right, 154; left, 96; Double, 34.

Kinds.—Scrotal, 93; reducible, 178; irreducible, 55; strangulated, 17; retained testicle, 9; displaced ovary, 3.

Method of healing.—Primary union, 207; secondary union, 43.

Omentum was excised in 55.

Cures, 244 (recurrences, 6); reoperated, 3. Total, 247.

Discharged.—Shortest time 11 days, longest time 84 days. By the fourteenth day, 114; twenty-first day, 84; twenty-eighth day, 12; thirty-fifth day, 4; fifty-sixth day, 1; eighty-fourth day, 1.

56 West Thirty sixth St., New York.

DISCUSSION.

Dr. H. O. Marcy of Boston—I wish to point out the essentials as to the cause of cure from an anatomic standpoint. The reason that we are not all the subjects of hernia is because the inguinal canal is at a right angle to the intra-abdominal pressure. I have operated more than four hundred times, sometimes as early as three months, and as late as 80 years. During all this experience, even where the intestine itself has been involved, I have never seen a case approach the danger line. I am sure that over 90 per cent. of my cases have remained permanently cured, and I consider all other operations are hardly worthy of discussion. You should all become familiar with the technique of this operation and with the details referable to it in practice. There are three or four million trusses worn in this country alone, and these people should be restored to usefulness. It can be done and should be done. As to the age, I have operated on over thirty patients beyond 60 years of age, and they have improved and been cured as easily as anyone else. Those in middle life and young people should always be operated on.

Dr. A. J. Ochsner of Chicago—I wish to mention the age limit. It is apparent to everyone who sees many hernias that patients will do very well with a truss until they become afflicted with urinary disturbance, and then they will begin to suffer and their truss will no longer be satisfactory. When Dr. White's paper on the "Treatment of Castration" was published it occurred to me that it would be a wise thing in these cases, instead of doing the Bassini operation, to make a section of the cord or to castrate on the side of the hernia. In these cases I think that castration or a ligature of the cord on the side of the hernia would have the same result as Dr. White has noticed in his cases. He has found that urination has been made easy while the difficulties from which the patient had suffered previously all disappeared. In addition, the increased pressure on the hernial ring was also decreased. It is too early yet to consider these cases as permanent cures. For many years I have treated many hundred little boys with inguinal herniæ and have found that many of the cases also suffer from phimosis. In every case less than twelve years of age it can be cured without herniotomy, but by simple circumcision and placing the patient in bed for several weeks afterward with the foot of the bed elevated at an angle of 45 degrees. I do not think we should operate on children under 12 years of age unless this condition has been considered, and I think the time limit important.

Dr. B. Merrill Ricketts of Cincinnati—I would like to ask if the members have ever come in contact with hydrocele and undescended testicle.

Dr. W. Frank Mayo *of Rochester, Minn.*—There are some things about the Bassini operation which are somewhat different from that of Dr. Marcy. It has always seemed to me that the important point in the Bassini operation was the method of placing the sutures. His method of suturing the canal in a single layer from the inside to the outside is liable to failure without some such suture as the metallic suture. Bassini's operation divides the cord. I would like to call attention to the catgut which has been introduced in these cases. The cases which have relapsed have always been cases which have suppurated. Dr. DeGarmo states that he has had only one case suppurate in children. This has been my own experience and I suppose it is because the parts are more resistant, although there are a certain number in which suppuration will certainly take place.

Dr. E. D. **Ferguson** of Troy—If the suppuration is superficial and does not involve the fibrous layers of the skin, your results will be good; if it is deep and does involve the fibrous layers it will probably fail. If you use the metallic suture it is permanent. We want sutures to last a certain length of time, and they should hold the parts together thoroughly for several weeks, but at the same time they should not be a permanent suture. Whatever the nature of the suture may be, it is a question of restoring the obliquity of the canal for a sufficient length of time to establish firmness, and a question as to whether a certain suture may be used is a matter of minor importance. The question of establishing the union of the fibrous layer on the posterior wall of the canal, especially when pressure comes from the abdominal side, is an important one. This is what Dr. Marcy claimed before Bassini operated at all.

Dr. **DeGarmo** of New York City—We are indebted to Dr. Marcy for his demonstration as to the causes of hernia. There is a question about his having preceded Bassini in the operation of restoring the obliquity of the inguinal canal, but so far as I know Dr. Marcy was the first one to do this. Bassini uses silk in his operation. I have twice excised the testicle on the side of the hernia. As to phimosis, twenty years ago there was something written on this point. If a child has phimosis circumcision should be done. If we go to a Hebrew institution where the children have been circumcised in early life we will find as many cases of hernia as anywhere else, but I do not wish today to advocate operating on infants in all cases, although it will be well to do it in many. Many children 7 or 8 years of age can not be cured by a truss and they should be operated on. I have seen hydrocele associated with undescended testicle and it was as large as a hen's egg. In this case the testicle was brought down, but I have seen instances of undescended testicle where the cord was too short. I merely clear the space outside of the perineum and cover muscular tissue over it. In one man there was very marked relief by this method, but if the cord is long enough the testicle should always be brought down. We are perfectly safe in leaving the testicle outside of the peritoneal cavity and in the muscular structure. Tendinous structures need about six weeks for union, and I would like to use something which is not absorbed, but this is difficult to do. Kangaroo tendon suits me very well.

ON THE TECHNIQUE OF PNEUMOTOMY.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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While the surgical principle, "*Ubi pus, ibi evacua,*" is nowadays held up more than ever before even in those parts of the human body that are accessible only under great difficulties, there seems to be some exception in regard to pus accumulations in the lungs, although they are by no means of rare occurrence. This lack of enthusiasm in attacking lung abscesses by the surgical knife is apparently caused by the widespread prejudice that they are all of a tubercular character and could consequently not be cured by simple evacuation. But while there is no doubt that the presence of one tubercular abscess necessarily presupposes the affection of a more or less extensive area of lung tissue, the nature of which would certainly be but little influenced by the opening of the single abscess, still there are many abscesses which are caused by preceding inflammatory processes, by suppurative bronchitis, bronchiectasy, etc. These are of a non-tubercular character and are curable, if treated after true surgical principles. If this fact were fully realized, the medicamentous armamentarium of euthanasia would be given up in many cases of alleged phthisis. And here is the salient point in the difficulty of the diagnosis. Still, the diagnosis of the presence of lung abscess is much easier than its localization.

The presence of copious purulent expectoration, its admixture of elastic fibers and blood pigment, the history of a preceding inflammatory process, particularly of pneumonia, which ran no typical course, the physical signs of the presence of a cavity, the absence of tubercular manifestations, etc., should point to the existence of a lung abscess. As to localization, it has to be borne in mind that while cavities of the apex contain more or less air, those situated further below contain purulent secretion only. If in the latter variety expectoration is copious, so that the cavity becomes evacuated, the respiratory sounds become tympanitic on percussion and are well perceptible on auscultation. If, on the contrary, the cavity is filled up, there is complete dulness and the respiratory sounds are hardly, if at all, audible, pectoral fremitus also being entirely absent.

Cavities of recent origin are easier localized than old cases, not only because the course of the precursory disease furnishes some elucidation, but also because the physical symptoms are much more clearly pronounced. Old cavities are, with few exceptions, deeply situated and can, according to clinical experience, generally be reached below the lower angle of the scapula.

Exploratory puncture, while absolutely reliable in pyothorax, often fails to disclose lung abscess and has, therefore, to be replaced by exploratory pleuro- or pneumotomy. (Compare the writer's article on exploratory pleurotomy and resection of costal pleura, *N. Y. Medical Journal,* June 15, 1895.)

The principles of treatment are governed by the same as those which are determining in any case of abscess, that is, thorough evacuation and drainage. This can only be done well by making a wide opening in the chest wall. To accomplish this the resection of at least two, preferably of three or four ribs is required.

The technique is as follows: Thorough asepsis is just as necessary as in any other operation. Particular attention must be given to the skin of the patient and to the hands of the surgeon, scrubbing with green soap first for three or four minutes, then washing with alcohol or ether, and subsequently with bichlorid, 1 to 500. To sterilize the skin of the patient thoroughly, it is advisable to cover the field of the operation with a poultice of green soap. If there is enough time, the poultice may remain for twenty-four hours. I regard this an essential factor for the disinfection of the skin, because I do not believe that under ordinary circumstances the epidermis, which shelters a multitude of pathogenic bacteria, can be rendered sterile by the usual methods of disinfection, which are generally not carried out longer than from ten to fifteen minutes. A period of twenty-four hours gives the soap a chance to permeate the epidermis thoroughly, so that scrubbing on the following day is much more effective. Sometimes indeed the poultice macerates the epidermis so that it can be wiped off easily. All the appliances needed at the operation must be sterilized; the instruments, ligatures, etc., in boiling soda solution, and the towels, sponges, etc., in steam.

As a rule the eighth rib is selected. The incision, about five inches in length, should be made in the center of the selected area, and should be carried directly down to the periosteum of the rib. An incision is then made along both borders of the rib, and the periosteum, both in front and behind, is raised by means of a periosteal elevator. Having freed the periosteum, the elevator is pushed beneath the rib, between it and its posterior periosteum, and allowed to rest on both edges of the wound. With a blunt hook the tissues are retracted along the rib toward the axilla, and by means of a bone shears the rib is cut between hook and elevatorium. Next, the elevatorium is pushed toward the sternum, forcing the rib from the last fragment of adhering periosteum; the retractor is inserted into the end of the wound, and with the scissors the rib is cut through on the other side. Now the costal pleura underneath is incised and a large aneuryism needle is introduced through one of the pleural incisions and conducted underneath the costal pleura to the other. With strong silk sutures the tissues, containing fascia, muscles, periosteum, costal pleura, and intercostal arteries are ligated close to the surface of the rib; then a vertical incision is made through the tissues between the two ligatures, thus creating a wide opening. By retracting the skin forcibly the skin incision can be utilized for the resection of the rib above. If, as rarely occurs in these cases, adhesions should be absent, the lung may collapse, so that it is found impossible to draw it forward. Then the final incision has to be deferred for a day or more. If the lung moves freely beneath, it is essential to shut off the pleura by packing gauze tampons around the margins in order to prevent infection from the escaping pus. This procedure renders suturing of the pleura to the lung, as well as artificial formation of adhesions by the use of caustics, unnecessary. Especially if the abscess is located superficially, infection of the pleural cavity might be caused by the stitch-canals. The further steps must be undertaken with a great amount of care and patience. If palpation of the pulmonal area has failed to give information, an exploratory needle of moderate size may slowly be pushed into the lung. If necessary this must be repeated on different points. If the focus is not reached by the needle, the pulmonal pleura is carefully divided and the thin, slightly red-heated point of a Paquelin cautery thrust into the suspected portion. I found it advisable to construct a thin director, made of platinum, which fits round the heated platinum tip of the Paquelin cautery, just as a stylet fits to a trocar. After tip and encircling director have perforated the lung tissue, the tip is withdrawn and the director left *in situ* to ascertain whether any pus appears at the groove of the director. If so, a small Péan forceps is introduced and the opening is gently dilated. The great advantage of the Paquelin cautery is that it prevents infection. The exploratory needle, while entirely harmless in pyothorax, is apt to cause infection in the lung tissue.

After the cavity is exposed, no irrigation nor exploration with the finger is advisable, as these procedures might provoke hemorrhage. A narrow strip of iodoform gauze is carefully introduced into the cavity. The pleural cavity is then once more thoroughly cleaned and revised, and packed with iodoform gauze. The whole is protected by a large piece of moss-board. The dressing need not be changed more frequently than every second or third day, except there should be signs of retention of pus. It is advisable to tell the patient to blow at intervals with his mouth and nostrils closed, which helps evacuation of the purulent discharge.

The patient, if at all able, should get up after a few days. During the first few days of the after treatment small doses of morphin are administered for the purpose of immobilization, especially when cough is present. If the pulse be weak, strophanthus and caffein may be added. Nourishment must be given frequently and in small quantities.

Anesthesia should be administered only if the pulse be strong enough, which is an exceptional circumstance in such cases. Ether being contraindicated in respiratory disturbance, only chloroform can be employed; and I need not call attention to the danger to which the use of this paralyzing drug subjects the heart. Since the operation does not take very long for a well trained surgeon, it would be better to use an ether spray or ethyl-chlorid, and to give a morphin injection before the operation. Even cocain has its dangers. If chloroform is employed, only a few drops should be poured into the mask at a time, and the pulse, the respiration and the color of the face should be very carefully watched.

My own experience comprises four cases of lung abscess, all of which recovered. In two of the cases the diagnosis of pyothorax, and in one of subphrenic abscess had been made before resection. Only in one case the diagnosis of lung abscess was made before operation, wherefore I may be permitted to give its history:

M. B., 31 years of age, merchant, Austrian by birth, had pneumonia when ten years of age; in November, 1895, pleuropneumonia, after which cough and copious expectoration of an offensive odor remained; once in a while hemoptysis, chills and dyspnea. The treatment had consisted in the administration of expectorant mixtures and inhalations of turpentine. On Feb. 21, 1896, the following was present:

The anemic patient shows a flat thorax, which expands symmetrically. The left lung is normal. On the right side anteriorly below, tympanitic sounds, râles during inspiration. Posteriorly below, extensive dulness. Correspondingly bronchial breathing and râles. Above the apex of the heart systolic murmur. Pulse soft, 110. Urine contains large quantities of indican. Sputa muco-purulent, about 180 c.c. in twenty-four hours. Pus corpuscles in abundance, also elastic fibers. On the *following day, since the patient expectorated* but little, the dulness is much more pronounced and the respiratory sounds are less audible. After the patient had coughed considerably, the bronchial respiratory sounds become more audible again above the region of the ninth rib, where sometimes amphoric breathing can also be perceived.

On Feb. 24, 1896, the weak patient slightly anesthetized with chloroform and an incision made over the ninth rib, extending from the posterior axillary line to the transverse process of the ninth dorsal vertebra. After the ninth, eighth and tenth ribs, together with their soft tissues, were resected, the lung collapsed slightly, but soon expanded again. The pleura was packed with aseptic gauze and then an exploratory needle was pushed forward into the center of the exposed area. About one inch behind the pulmonal pleura gray pus, which contained air and which had a very offensive odor, was aspirated. After the opening was dilated, the needle having served as a guide, a little over an ounce of pus was discharged. While the cavity was packed with a small strip of iodoform gauze, the patient coughed excessively. There was no hemorrhage and no signs of shock. Twenty-four hours after the operation the patient had a temperature of 101 degrees F., a soft pulse of 120 and a respiration of 30. There was considerable cough and copious expectoration with foul odor. Thereafter the temperature went down gradually and the patient improved rapidly. From March 6 the patient was out of bed.

The wound was obliterated by the end of April, two months after the operation. Gain in weight twenty-three pounds. No cough, pain nor fever; once in a while a slight cough only, with expectoration of clear mucus. According to the latest news received from the patient he is perfectly well.

While this article is in print, I had an opportunity to observe another case of this type. Being of unusual interest, it may be reported in addition:

Annie S., four years of age, showing a fair family history, always had a rhachitic appearance, according to Dr. S. Ellsberg, to whom I am indebted for his report. The patient also suffered more or less from catarrh of the upper air passages. About March 1, 1897, she took sick from pneumonia (temperature of 106 F. in the beginning). First the left upper lobe was affected. On the seventh day normal temperature. March 9, renewed attack of fever, 105 F., which with slight fluctuations lasted until March 24, the left lower lobe now being affected, and five days later the right upper lobe participating. After March 24 the temperature oscillated between 100 and 101, sometimes exacerbations up to 104 taking place. Great emaciation. April 5 the diagnosis pyothorax was made, and a large amount of pus discharged by simple incision. Full recovery five weeks later.

About June 15 the patient was attacked by violent cough and slight elevation of temperature. First the diagnosis whooping cough was made, but Dr. J. Winters, who was called in consultation, discovered that there was still a small accumulation of pus in the pleural cavity, which had finally perforated into a bronchus. He advised immediate resection of a rib, but shortly after the patient expectorated a considerable amount of pus during a violent coughing spell. On the following day the temperature became normal and the patient improved so rapidly that recovery was again thought to be perfect. After one month's euphoria the child became feverish again and had violent attacks of coughing, during which she became cyanotic. The diagnosis pyopneumothorax was made, and Drs. Winters and Ellsberg insisted most strongly upon a resection now, to which, finally, consent was given.

On August 27, when I saw the patient for the first time, I found the following state present: Anemic, thinly built girl; thorax expands symmetrically; nothing abnormal is found on the right side; on the left side, above the fifth intercostal space in the posterior axillary line a large scar, which bulges forward during coughing; posteriorly below slight dullness; bronchial and amphoric breathing above the dull area; the sputa are muco-purulent, and contain blood sometimes, especially after a violent cough; elastic fibers and pus corpuscles in large quantities; pulse 144, temperature 101 F.

August 30, after the patient was slightly anesthetized with chloroform, a piece of the sixth rib two inches long, which was situated below the old scar, was resected, the scar tissue being removed at the same time. When the pleura was incised brown pus and air escaped under considerable noise. Slight shock. The anesthetic was dropped at once. The lung did not collapse, this probably being due to the adhesions formed during the healing process of the pyothorax. By introducing the pleural speculum a canal leading into the lung tissue could be seen. Its gentle dilatation with a Péan forceps revealed the presence of a cavity of the size of a small apple, which was wiped out carefully with gauze mops and finally packed with iodoform gauze. The child made a rapid recovery, three weeks after the last operation the opening being closed.

DISCUSSION.

Dr. Thomas H. Manley of New York—Dr. Gaston of Atlanta, has done much work in this line. These cases are always difficult to deal with, and it would seem to me to be a question, when we have an empyema or a pus formation in the pleural cavity, to determine as far as possible first whether that formation is due to the formation of the cells of the pleura or whether it be an interstitial abscess of the lung itself. That being possible to decide, whether or not in some cases it might be advisable, especially as the patient is exhausted and the question of an anesthetic is important, to resort to an exploratory incision, and then inject and flush the cavity, closing the opening with drainage. I would like to ask whether or not we can not succeed quite completely in benumbing the parts with cocain and using ether spray on the surface; also, whether in certain cases it is not important to spare the resection of the rib.

Dr. Beck—With regard to the exploratory puncture there is only one thing to do, and that is a resection of the rib. As soon as this is done you can easily find your way into the abscess. As to the anesthesia I know of many cases where death has occurred before the knife had been put into the abscess. Suits for damages have not been infrequent. With regard to the regeneration of the bone after resection of a rib, I am very glad to say that ribs have been known to have regenerated nine months after operation as has been shown by the X-Rays. I believe the X-Rays should be employed after every operation of this kind.

THE SURGICAL ENGINE AND ITS USE IN BONE SURGERY.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

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The requirements of a satisfactory surgical engine are, first, that it be so geared that the velocity of the cutting tool is from four to six thousand revolutions per minute, which speed is to be maintained under varying pressures. The hand-piece (the chuck which holds the instrument) should be light, capable of easy adjustment, and so arranged that the instrument fixed in it may be carried with readiness into the recesses of deep cavities. There should be no undue vibration of the instrument while held to its work, as this will lessen tactile recognition of the nature of the tissue being cut. The motive power should be so arranged that it is under perfect control and produces steadiness and uniformity of speed. The hand-piece and its several parts, with the instruments used, must be of such character that perfect sterilization can be readily accomplished.

Surgical engines of several designs have been in use for many years, but, strangely enough, few general surgeons appear to have availed themselves of the advantages to be derived through their use. There is scarcely an operation upon osseous tissues that could not be more quickly and accurately performed by means of the engine than with any of the hand instruments used. Many of these latter are crushing instead of cutting instruments.

Objections to some of the older forms of engines were not without good foundation. As they were chiefly notable for their faults of design and of construction, the deficiencies in mechanical performance might be accepted as a necessary evil, but the impossibility of complete sterilization was an objection not so easily disposed of. These serious drawbacks have one by one been corrected, until in its present form the engine combines all of the features described as requisites of a correct machine. It is simple in design and accurately built, so that there is little liability of the mechanism getting out of order.

The present engine is new in nearly all of its features; it is simpler in design, lighter in construction, and its parts are readily detachable to permit of packing in a small case, a box not larger than those made for croquet sets. The hand-piece is designed with a twofold object, first, with a reference to the mechanical, second, to the pathologic elements involved. It is sufficiently rigid to carry its tools steadily while operating on dense bone, and may readily be rendered perfectly aseptic. The latter point is repeatedly emphasized because of the serious objection to previous hand-pieces, involving the existence of spaces which commonly retained septic matter. That portion of the engine which transmits the power from the large wheel to the pulleys of the hand-piece requires no description other than that of the illustration. The engine is driven by an electric motor of one-sixth horse-power.

For office practice, and when driving by electric motors, the upright shaft from above the crank and the "arm" may be attached to a bracket. This plan is excellent when the engine is used in bone surgery of the nasal fossa or other light surgery about the face or ears; but for hospital and heavy work it is better to use the stand, as it can be moved about to suit the convenience of the operator.

The hand-piece has undergone complete change, in order that the several appliances used can be made absolutely aseptic and kept so throughout the operation. All that portion of the instrument which includes the hand-piece and its wrist-joint attachment, except the cord, can be thoroughly boiled under pressure. The hand-piece proper is detached from the pulley after the parts have been sterilized: the pulley is adjusted and the cord placed in position: the hand-piece or pieces, after sterilization, are kept in a tray containing a carbolic acid or lysol solution until used. When the surgeon is ready to use the instrument, his assistant holds the pulley attachment in such a manner that the hand-piece can be adjusted without the hand coming near the cord or that portion upon which it works. For ordinary surgery, one hand-piece is quite sufficient, as any number of instruments can be easily adjusted by opening the key-latch and inserting the sterilized instruments, which are also placed in a tray containing the antiseptic solution. For opening the brain-case it is preferable to have two hand-pieces, one with the small trephine and one with the spiral osteotome and guard adjusted. It saves time, an element of some importance in these operations.

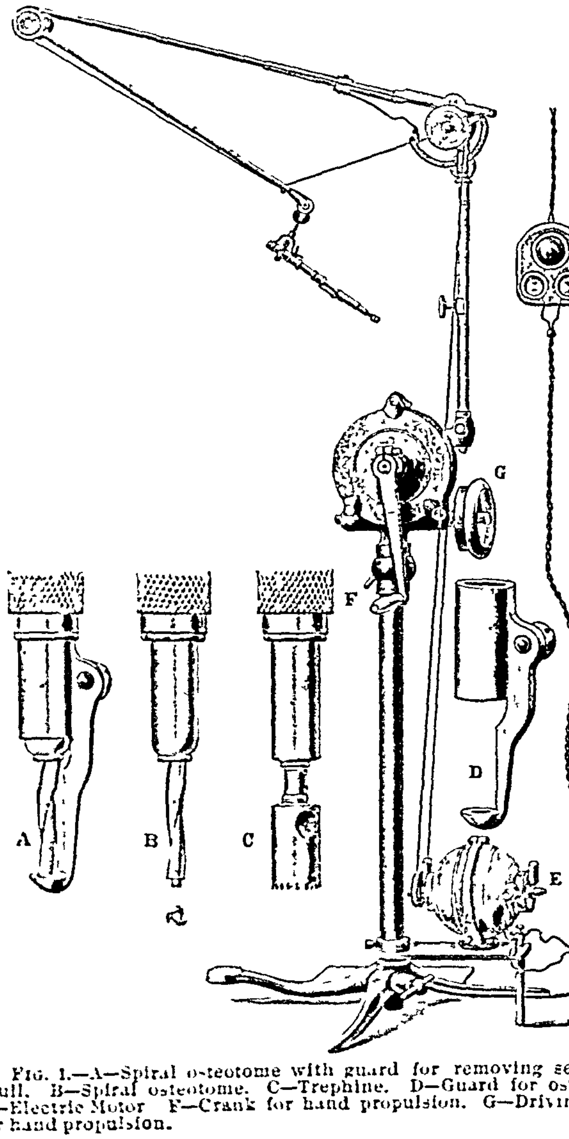

Fig. 1.—A—Spiral osteotome with guard for removing section of skull. B—Spiral osteotome. C—Trephine. D—Guard for osteotome. E—Electric Motor F—Crank for hand propulsion. G—Driving wheel for hand propulsion.

Among the various uses for which the surgical engine is well adapted, is the removal of carious bone from almost any of the bones of the body. This may be done without danger of injuring the surrounding tissue, for, when properly manipulated, operations may be performed without injury to the periosteum of the bone operated on.

The engine has also been most successfully used in mastoid and other operations on the temporal bone and upon the nasal fossa; also for removing caries and necrosis of the maxillary bones. The removal of even the greater portion of these bones may be accomplished without external incisions, which gives greater advantage over the older methods of operating with the cutting forceps and saws, as the parts are left smooth and rounded, not jagged and roughened.

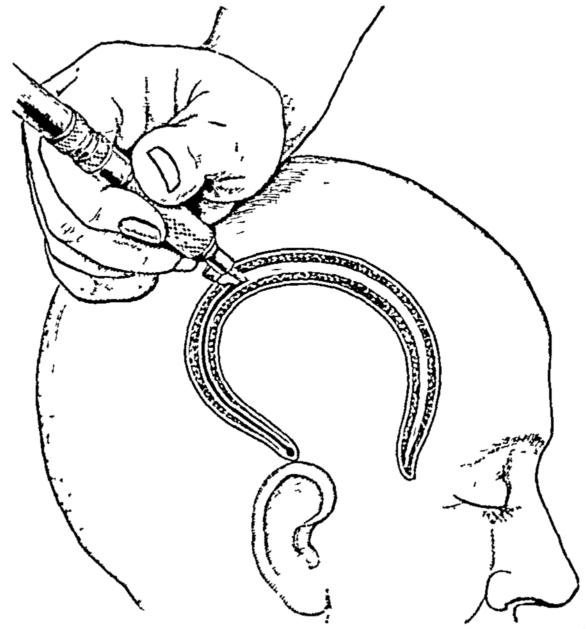

Fig. 2.—Method of removing section of skull with cutting tool, the guard being in close contact with the internal surface, thus preventing injury to meninges.

The engine has also been used extensively in opening into the inferior dental canal or cutting through the ramus of the inferior maxillary bone to reach the inferior dental nerve; also in opening through the superior maxillary bone for resection of the second division of the fifth nerve. Another office which the engine has been called upon to fill is the opening of the brain-case with the absolute certainty of not injuring the brain or its covering membranes.

The cutting portion of the instrument, called a spiral osteotome, is one-half an inch in length, and one-eighth of an inch in diameter, and tapers slightly from base to point. It is divided by three spiral grooves, each having a turn of 120 degrees through the half-inch from the base to the point of the cutting end, the arrangement of its three blades giving it the appearance of a twist-drill. The point of the bur, when in use, is guarded by a button-like attachment connected with the nose of the hand-piece by means of shank and collar. The free end of the bur is doweled into a seat in the guard, in which it revolves, which steadies the whole arrangement when in use, gives an added rigidity to the bur-shank, and holds the bur and guard in permanent relationship to each other.

The principle involved in the instrument described is simply that of a saw arranged to cut in a line with the axis of the shaft of the bur, and not at a right angle to it, as in the circular saw. Such an arrangement allows of cutting in any direction and upon curved lines. This feature is especially valuable in opening the brain-case, inasmuch as fenestra of any desired shape or size may be speedily made.

The mode of opening the brain-case by means of the spiral osteotome is as follows: After division of the soft tissues by the scalpel, a small opening is first made with a trephine mounted in the engine hand-piece; this trephine has a diameter of five-sixteenths of an inch, and is passed completely through both tables of the skull, and the button of bone removed. There is no danger of injuring the dura with the trephine if it be carefully used by one who has had a little training with the instrument upon the cadaver. The opening thus made affords a means of entrance for the osteotome, with its protecting guard, which is next inserted in the opening and the section made along the lines previously determined by running the engine at high speed and forcing the bit laterally in the direction desired. The button-like guard at the point of the osteotome absolutely prevents injury to the dura, which is pressed or dissected away by it from its attachment in the lines of the cut as the instrument progresses.

The instrument as a whole has been designed not only with reference to the mechanical requirements imposed by the dense tissues which are to be operated upon, but with a full recognition of the demands which the later developments of bacterio-pathologic research have made a requirement in all surgical procedures, viz., rigid asepsis of the instruments used.

The hand-piece should be held like a pen, with the third and fourth fingers resting upon and near the parts to be cut, which should also be firmly held. In using the spiral osteotome the third and fourth fingers do not rest on the head. Mechanical guards can be used to prevent the danger of the trephine plunging into the brain; but by holding the instrument properly, one who is accustomed to operations upon the cranium, can, by a little practice, operate with safety without the guard, and even tell by feeling alone what kind of bone-tissue he is cutting, or when nearly through the walls of the skull.

The instrument has been successfully used in making artificial sutures for children. The instrument has been passed between the longitudinal sinus and the bone without injury to the former. The guard will push an artery or vein out of its groove in the bone, but should the artery be enclosed in the canal, as is sometimes the case with the meningeal arteries, the osteotome will cut the vessel.

If, in operating, there are any sharp edges or points of bone left, as is sometimes the case in the removal of the superior maxilla, the finger can detect them and the instrument can be carried in along with the index finger and the roughness cut away. The instrument will not cut the finger unless it becomes caught between it and the bone. Crevices were left by the old-fashioned method of removing the superior maxillary bone and germs of disease had ingress to the parts; but by the use of the engine these rough and deep depressions are avoided, leaving the parts even and smooth[1].

IMPROVEMENT OF BRAIN FUNCTION BY SURGICAL INTERFERENCE.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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Only a few years ago the surgeon scarcely dared to invade the sacred domain of the brain. Emboldened by the triumph of aseptic methods in dealing with the surgery of the peritoneal cavity, it followed that the same principles might possibly triumph in the surgery of the meninges and brain. Today accurate results are reached in both, so that sepsis is practically eliminated, and dealings with the brain surgically will depend on intrinsic factors rather than extrinsic for the achievement of practical results. This was the *sine qua non*, without which all reports of results of operations, would be indefinite and unfit to give an adequate idea of the value of a surgical procedure applied to the brain, to achieve or fail in achieving a stated result.

Taking it for granted, therefore, that asepsis has been maintained and considering the subject purely from an intrinsic standpoint, the object of this communication is to develop in a measure the principle of improvement of brain function by a surgical operation.

I insist on this manner of expressing the problem because, in the vast majority of instances, pressure is the cause of this interference, and the relief or restoration of function will depend on our ability to diminish or entirely remove the permanent or transitory compression. Physiology teaches us the delicate arrangement of nerve-cells, their necessity for special function and the intricate blood vessel arrangement on which they depend for proper nourishment. It is foreign to my purpose to discuss or even state the much debated points in the minute anatomy of the texture of the brain. I wish rather to apply to the brain the same hypothesis as to its pathologic reactions, as we have been led by experience to believe respecting other organs of the body.

The title of this paper would, therefore, embody the whole subject of brain therapeutics finding application through surgery. Inasmuch as the handling of this subject in a thorough manner would be far beyond my purpose on this occasion, I must limit myself to: 1. General pathologic conditions as diagnosed. 2. The application to the brain of the same principles of surgical therapeutics, as would have been resorted to to fulfil similar indications in other portions of the body. Two prominent symptoms point to trouble about the brain: 1. Pain. 2. Interference with function. These two symptoms, though generally concomitant, need not necessarily accompany each other, but either one or the other, or both, are always present.

The true explanation is not always possible, but I believe it can be traced to one of the four irritants that form the foundation of pathology, viz: chemic, physical, biologic or mechanical, while interference with function is likewise referable to the same causes.

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[1] At the conclusion of Dr. Cryer's paper he gave a demonstration of the manipulation of the engine and its tools. Various bones were operated upon and the method of opening the brain case (Fig. 2) for central operations was demonstrated upon a cadaver, showing how an extensive plate of bone may be removed without injury to the dura mater.

Interference with function may be due to a permanent or to a transitory cause. Each of these may or may not be removable. When not removable the cause, though partly attainable, is so disseminated that it involves too extended or parenchymatous a portion of the brain, or else it exists at such vital portions of the brain structure as to forbid the approach of the knife without fatally affecting the true source of vitality—the origin of the pneumogastric and sympathetic nerves. Too much importance has always been placed on what has been called the purely functional disturbances of the brain, such as would correspond to the former idiopathic diseases elsewhere, now being reduced to a strange scarcity under the light of modern pathology. We should push to its utmost the application of the same principles to the delicate neuroglia and complex network of fibers which when unimpaired present brain function as a harmonious whole, and when disturbed even in so little as the faulty crossing or touching of two fibers by any cause, inherited or acquired, produce the same discord in the harmonious whole, as does the crossing of two telephone wires to the intelligent ear at the central office.

Our generation may not see such a delicate lesion as this demonstrated under the microscope, but we already see how gross lesions of the brain centers distinctly affect certain portions of the body. Less is known of the purely ideomotor centers and their disturbances by the same lesions, whether limited or disseminated. Still, proceeding on the hypothesis that the brain tissues, whether in the anterior, middle or posterior areas, are governed by the same pathologic relations as the rest of the body, why not, when sanctioned by a diagnosis based on pathology, proceed in treatment on the same general lines. For the practical application of this principle our technique must necessarily be perfect. We must at first eliminate all failure which is due to faulty technique, and by that is meant death after operation, from *shock*, from hemorrhage or sepsis. This is pardonable in emergency cases, such as traumatisms and tardy cases of mastoid disease when infection exists before the operation. The first requisite, therefore, is that no operator should undertake a brain operation who has not mastered the art of opening the skull, arresting hemorrhage in the scalp, in the dura and substance of the brain without exposing the patient to sepsis. This prerequisite may be styled as begging the question, but I venture to state that this whole question can only begin to be discussed with justice when this point has been reached. While an account of the technique would lead me away from the subject, the one point which I will here lay special stress on is *shock*.

This strange condition following traumatisms, so marked when the brain is concerned, can only be measured by the trained touch of a skilled assistant, the operator himself being forbidden, for reasons of asepsis, feeling the patient's pulse. Better cease an operation without having achieved what we started to do, than expose the patient to death from shock. I consider *that* a part of a faulty technique as I would a subsequent infection of the wound. The rapid and wavering pulse is the index. Hypodermic injections of strychnia (1-60 gr.) should be given from time to time to maintain the pulse at about 100 a minute. Hot water bottles should be constantly kept about the patient, during and after the operation. On being returned to bed the head should be put in a very dependant position, while high enemas of warm water are freely administered. These procedures reduce the possibility of fatal shock to a minimum. If, however, after the administration of $\frac{1}{4}$ to $\frac{1}{2}$ gr. of strychnia, the pulse shows a tendency to rise the operator should be warned and the operation discontinued.

Perhaps the most frequent indications for interference in regard to the brain is after severe traumatisms resulting in concussion or possibly contusion of the brain. We know that aside from the shock attending these cases the congestion of the brain which follows is the prime cause of the interference with function which results in unconsciousness. When these cases recover the ultimate sequelæ are dreaded, that is, epilepsy and insanity. The former when the lateral and posterior lobes of the brain had been injured; the lattea when the anterior lobe of the brain had sustained the injury. Now it would suffice that considerable congestion follow the injury and be maintained for a certain length of time that diapedesis also take place, which resulting in subsequent fibrous tissue, would contract and produce epilepsy or insanity. And this would especially be the case if the patient had inherited or acquired a diathesis. The indication, therefore, is, should unconsciousness maintain itself beyond a few hours, to relieve the congestion as soon as possible by draining the cranial cavity. Should such a contusion have occurred to the soft tissues for instance, we would immediately relieve the condition by local blood-letting, thus removing the tension of the parts. The brain is enclosed in an unyielding fibroserous sac; when the brain enlarges from a traumatism the very swelling is a compressive factor and leads to the special symptoms in the case. Hence, it is my practice to proceed to removing the general compression of the brain by making a transverse craniectomy, removing a strip of skull about one-fourth of an inch wide. The dura mater is then incised the full length of the wound except over the superior longitudinal sinus. The groove is then packed with two narrow strips of sterilized gauze, each one extending from the temporal region to the vertex; the scalp is sutured, leaving the ends of the strips of gauze protruding on each side. This insures perfect drainage without risk of hemorrhage or sepsis. The gauze drain is left eight days *in situ*, during which time the symptoms gradually disappear. At the end of this period the stitches are removed and the gauze withdrawn. This I believe to be the safest and surest way of restoring brain function with the least risk of after-effects, when contusion of the brain resulting in indefinite compression has been diagnosed. The same procedure modified to suit the case is to be resorted to when extra- or intradural hemorrhage exists and the clot being removed and the hemorrhage stopped, the case is then transformed into one similar to the above. During the last four years I have treated twenty-wo cases in this manner, with a uniformly good result. A young one-arm man riding a bicycle fell upon his head and being totally unconscious, having remained so during two days, was treated as above described and rapidly recovered consciousness after the operation. During the first days of the treatment the dressings were constantly saturated with serum and cerebrospinal fluid. The same uniformly good results were obtained in a number of other cases of concussion treated according to this method.

Inasmuch as acute meningitis is accompanied by intense congestion of the brain, resulting in compression as manifested by delirium and spasmodic twitchings, I resorted to drainage of the cranial cavity in one case and obtained a favorable result.

Finally, I would recommend actual local brain drainage whenever the evidences of brain compression by congestion can not be speedily relieved by the ordinary measures of drastic purgatives, blood-letting, etc. In forms of chronic inflammation of the brain due to specific disease where the symptoms point to a gumma resulting in compression, the exact location of which can be ascertained, an operation is indicated for removal of the gumma. There are, on the other hand, many cases of brain disease directly associated with syphilis, and which persistently refuse to improve under the specific treatment. They manifest themselves in mental hebetude and paresis. I have had the opportunity of treating five such cases. In each, being assured of the presence of syphilis, and having ascertained that the patient had had the full benefit of mercurial treatment, I did the anterior craniectomy, separated the adhesions which had formed between the dura and skull, opened the dura, packed and closed the wound. Two days after the operation the patient was placed on the specific treatment and the symptoms disappeared. I wish, therefore, to draw special attention to the principle in brain therapeutics, by which drugs produce an alterative effect after an operation, having proved without action before the operation. I have no scientific reason by which to explain this phenomenon except the analogy which we find in the use of massage for breaking up inflammatory exudates, and resulting in a better action of iodids and other alteratives than they would exert without the massage. I believe we all have had this experience in treating joints, etc., and I find that the same principle is applicable, to a certain extent at least, in the brain.

Another principle, so extensively applied elsewhere in the body and so little understood, is that of counter-irritation. There is no doubt that the phenomenon exists empirically, and that an inflammatory condition will be diminished and sometimes arrested by another strong irritation being excited in the neighborhood. The same principle may be applied to the brain, and especially in such cases of alteration in brain function as exists without definite causes, and are still called idiopathic. Under this heading can be classed many cases of epilepsy and insanity. It is my conviction that none are absolutely idiopathic, and that when progressive the cause is not latent but one which rests on already known pathologic conditions.

The mere traumatism incident to incising the scalp, trephining, and irritating the dura over the region of impaired function, may at times suffice to alter or arrest by counter-irritation, the original pathologic process and be followed by improvement. We have thus treated fifteen cases of epilepsy, without marked focal lesion. In six cases the improvement manifested itself by a marked diminution in the number of epileptic attacks. In the other cases no apparent improvement in the number of attacks followed. In all cases, however, the patient gave evidence of improved mental condition, that is, clearer understanding and a better memory. In no case was the patient worse after the operation.

In four cases of insanity with a history of an injury to the anterior portion of the head, the anterior craniectomy was performed, a large number of adhesions of the dura to the skull were separated and soon afterward the cases recovered and are still in good condition.

This treatment has also been applied to numerous cases of microcephalus and arrested development of the brain. In cases of idiocy due to microcephalus, I have done three craniotomies for the reproduction of the sutures of the skull. At the first operation the coronal suture, at the second the sagittal, and at the third the lambdoidal suture was made. These operations were performed at three months' interval. The object is to reproduce as much as possible the same sutures which the soft bones of the child possessed at birth. The improvement following in these cases has not been uniform by any means. Some cases have shown marked improvement both in mental and physical results. The mortality was 2 per cent. No case was made worse by the operation. The direct lesson to be gathered is that these imperfectly formed brains surely took a greater amount of nourishment, and improved in function after the surgical interference.

There is another class of cases that might be called tardy or arrested development of the brain. The children reach the age of 10 years and are unable to talk, and do not possess the intelligence which would belong to a normal child of 4 or 5 years of age. The head seems to be of normal size. This class benefits most from extensive craniotomies and opening the dura mater. An improvement seems to begin very soon, the agitation of the limbs and the shrieks quiet down considerably. The function of the intellectual centers seems to especially improve. Within a month these children have learned to count and to speak sentences before unknown to them. If heretofore we have not had as flattering results as we anticipated, it may be from the fact that the operations performed were not sufficiently extensive, or else were not performed on the intellectual area. Our operation consists in trephining over the temporal fossa and removing a strip of skull over the coronal fissure about one quarter of an inch wide and directly across the vault to the opposite temporal fossa, then opening the dura throughout except over the longitudinal sinus. This certainly creates an impression on the brain during which it is nourished into better function. Whatever may be the criticism of this mode of procedure the results speak for themselves. We do not claim anything except altering the nourishment of the brain in these patients, and rendering them able to appreciate and retain impressions more easily than without the operation. In other words, this procedure is in no way opposed to or intended to do away with the training which these children get in schools for the feebleminded. On the contrary, the purpose is to put to the greatest usefulness, such brain capacity as is there, so that the children may improve and benefit by the training at school, to a greater extent than if no surgical interference had awakened their limited intelligence to its fullest capacity.

DISCUSSION ON PAPERS OF DRS. CRYER AND LAPLACE.

Dr. Hal. C. Wyman of Detroit, Mich.—I believe the ideas advanced by Dr. Laplace are with us to stay. It is very important that this department of surgery should receive the endorsement of the surgical profession. No more rational means are necessary in connection with these surgical principles than those which apply to inflammatory diseases in other parts of the body, especially drainage, and without drainage many cases die. The results of operations at the hands of those who are advanced in this respect are that some of these cases get well. All cases are improved by surgical treatment. With regard to the apparatus just demonstrated, I would like to ask the operator how that device works on the living subject. I realize that there is need of some more rapid method of removing portions of the skull. I have tried some machines and invented some. All of my own have been failures when used upon the living tissues. The blood flowed and the life-like properties of the parts seemed to choke up the parts of the saw so that it would have no cutting power. I do not wish to condemn this apparatus. It is a simple mechanical method and works well in the cutting of dead bone, but this is very different from the living. If this saw works well on the living subject it is certainly a great advantage, especially if the blood and bone dust do not block it up.

Dr. I. N. Quimby—I would like to refer to one case of a sea captain who was injured by a fall in which he was struck upon the ear. During the operation he was taken suddenly into a comatose condition and the wound closed up. I gave him an active cathartic and drained the wound with some relief, and later I reopened the wound and established good drainage. He was much improved for several weeks and the comatose condition passed away. I allowed the wound to heal and there has been no trouble since, which was three years ago. I found upon opening the skull that there had been little superficial tissue formed. This case was a capital illustration of the benefit of drainage.

Dr. J. D. Thomas of Pennsylvania—I refer briefly to three cases of trephining. The first was that of a young man who had been struck on the right side of the head with a club. One week afterward, after suffering considerably, I found him unconscious and completely paralyzed. There was a scalp wound on the right side and I trephined, but found no fracture of either plane. Owing to what seemed to be a very acute condition on the parietal eminence, I penetrated the membranes with considerable hemorrhage. I let the blood run for awhile and then stopped it with hot water and dressed it with antiseptic precautions. Three hours afterward the young man spoke and finally recovered. He is living today and has had no return of his symptoms. The second case was that of a boy 14 years of age who had fallen thirty-five feet, his head striking some timber. The skull was broken all over, so the attending physician told me, but I could find no depression. I was called ten days afterward, when the boy had convulsions continuously on the left side. I thought I discovered something on the right side and trephined. After the operation he had only one mild convulsion and fully recovered. The third case was that of a man who was driving a horse which ran away, throwing him out of the wagon, fracturing his skull extensively just above the ear. I trephined and removed a two-inch fragment and the man made a complete recovery. The important point is that there was no fracture in my first two cases. The hem- [illegible] was quite extensive, however. There was recovery in [illegible] the cases.

Dr. Miles F. Porter of Indiana—The most important and [illegible]-reaching point in Dr. Laplace's paper is the idea that underlies the whole subject. To relieve the compression, both inflammatory and non-inflammatory, is a most important point and it is an entirely new theory in so far as it applies to the matter of nutrition. It is also new to me as applied to such cases as the Doctor speaks of, wherein there is no hemorrhage, either extradural or intradural. The fundamental principle seems to be the relief of the compression. As to the instrument, I whould like to know how hot the machine gets.

Dr. Allen DeVilbiss of Toledo, Ohio—I agree with the remarks of the other speakers and believe that Dr. Cryer's instrument works well. I read a paper once in which I argued in favor of a speed of not over 2,000 being sufficient. I was then using a saw. I had quite an experience with it. It was so made that the drill would stop so soon as it got through, for the reason that force and resistance ceased. There are two reasons why I discarded my saw. The first was that the frictional heat produced death to live bone. The heat seems to penetrate the same as ice will penetrate, and in order to use the instrument we must keep it cool. Ten thousand revolutions is very high, although it may be necessary. The second reason was that the under jaw is so constructed that it shelves the dura out of the operative field. If Dr. Cryer had been operating on a living subject he would probably have avoided the artery. I now use the chisel because it lets me know when I am through. Dr. Beck has made an instrument three inches in length for brain operations, by which he can open the skull in seven minutes. I improved the operation some three years ago and took out three inches over the fissure of Rolando, the piece being two inches wide. My instrument could be taken apart and packed in a very small space. I spent $10,000 for the development of that saw and was very loathe to give it up. This instrument in the hands of a better surgeon than I would be a failure simply because he was not familiar with it. I have now discarded it altogether. Three years ago one of the members of the staff of the hospital with which I am connected, used the identical engine that is used today on the living subject. The trouble we then experienced was that when the button of bone was removed and the bur introduced at the angle it would work but a little distance before it was clogged, causing great delay. All of these complicated machines do not pan out well under any circumstances. They have been such a failure in our hospital that we have given them up entirely.

Dr. J. William White of Philadelphia—I have not been as fortunate as Dr. Laplace in my results nor in the smallness of the mortality. I am very distinctly of the opinion that the mortality of all operations involving the opening of the skull is above 2 per cent. Taking all cases together we can not promise that the risk is so slight that only two out of a hundred die. We should make a clear distinction between the forms of infective brain disease and those discussed by Dr. Laplace. Drainage has saved many lives, but the indications for it are by no means so clear in non-infective cases. It seems to me to be an open question whether drainage is employed in all cases in which Dr. Laplace has referred to. When opening the brain you are apt to have multiple minute hemorrhages which can not possibly be drained through any given series of openings. I think we must recognize a considerable mortality in the beginning. We must not confuse drainage in infective cases with those cases which Dr. Laplace has been describing. We must make every possible allowance for the ease with which the family of the patient and the surgeon himself may be deceived. We are all naturally anxious to see good results follow and the parents are even more anxious. It requires many cases and many observations before it would be safe to say that improvement should be expected under such circumstances. The effect of any operation on some of the cases described by Dr. Laplace should be remembered. Some years ago, about the time that antisepsis was introduced, Dr. Agnew and I had many cases of epilepsy, some of them supposed to be traumatic. We did exploratory trephining and in a large percentage of the cases nothing was found to account for the epilepsy. There were histories of falls, injuries, etc., but on exploring the suspected region we found nothing abnormal. In every case there was some improvement in the epileptic condition and the convulsions either disappeared or lessened. I was led to make a number of series of investigations, and I gathered all the cases together that I heard of and included them. I was surprised to find what a large number of cases have been recorded in which the sugeon has been disappointed or has found something which he believes to be curable. The mere opening of the cranium and the handling of the parts has been followed by a disappearance of the symptoms, but these cures are only apparent. We, no doubt, do some good that we can not ourselves understand, and there is just as little doubt that what we do can not be regarded as scientific. I think this must be considered in estimating the alleged improvement after operations, and I believe that the improvement will be found less great than Dr. Laplace would lead us to expect. The mortality will be greater, the improvements will be confined to a much smaller class of cases and will be temporary and unsatisfactory. I think this most important question should be thoroughly considered before we recommend to patients in these conditions general operative procedure that is supposed to apply to a large majority of these cases. The cases in which there are localizing symptoms I do not criticise. In any method of surgical infection of the brain we can readily resort to drainage and so in insanity. In all cases of operation, if the surgeon believes there is a particular spot of infection he should open and drain. In McKean's case he had mind-blindness and could not understand what he saw. This led to the diagnosis of some trouble about the angular gyrus, and a depression was found at that point. That is rational surgery. I want to enter my protest against the general belief that the cases referred to by Dr. Laplace can be operated on with the small mortality that he would have us believe.

Dr. Lewis A. Sayre of New York—Gault's mechanical trephine is the most practical and it can be used without the possibility of danger to the tissue or to the dura. His trephine is the best I have ever seen. It had a spiral movement to it, and when the instrument got beyond the bone it would stop. I remember the case of a man 35 years of age who had worked himself under a bookcase and we could not get him out. Finally he was extricated and brought to the Bellevue Hospital, where I examined him and found a tender spot over the lateral sinus. Upon touching this he would begin to shake. I brought him before the class and sent for Gault to trephine him. I expected to find exostoses afterward, but there was none nor any pressure symptoms, and the man has never had a fit since.

Dr. Laplace—I am glad that one speaker found serious objection to my paper and especially as to the mortality. I hope no one misunderstood me. Two per cent. mortality is based upon giving surgery a show. My only object has been to put the matter in a clear light before the profession. Later it will be shown whether children are able to withstand a certain amount of shock. As I explained in my paper, I tried to stay on this side of the line of reason. When I find an operation too grave I stop there and, acting on this fact, I wish to say that there is no earthly reason why the mortality should be more than 2 per cent. If there is, it is the fault of the surgeon. As to drainage, let me say that, granted there is a certain amount of contusion, there is autocompression of that brain and opening the dura will necessarily relieve it. I think you will all agree with me in this, that when the dura is opened the cerebral fluid spurts out. In these cases the patient will become conscious in a few hours. I do believe that such an extensive craniectomy, accompanied by an incision into the dura, will relieve to a certain extent the whole of the brain, but more especially the anterior portion, as it is generally in these cases that unconsciousness exists. As to cases of arrested development, I thought I made my position clear. I admitted that the operation was impractical, and I do it because I hope to have some consultation on the theory of counter irritation. Dr. White knows that there are cases in which improvement follows and we know not why. Why may this not be one of those classes? We all know how in cases of abdominal surgery today there is no hesitation in exploring the cavity, and if things are all right it is closed up, but if not all the conditions present are attended to. I am glad that one man spoke in the way he did. We must be very careful in doing this work, but we should not be backward. We know all about hemostats and antisepsis, and we can adopt both if we need them. Finally, in trephining over temporal fossa I go through the thickness of the skull, but not through the inner table if I can help it, as I prefer to break this off with the chisel. The middle meningeal artery runs through the skull in many places and, therefore, it is unwise to trephine directly through the whole thickness of the skull. I have an instrument with which I separate the adhesions and it is particularly useful for this purpose over the longitudinal sinus. I run this instrument all over the surface of the dura and pass it all around the opening, completely separating the adhesions. The instrument is no larger than an ordinary wire, and it has the advantage of not tearing the tissue at any time. Beginning at the superior longitudinal sinus I plunge my knife directly down the surface of the brain, and you would be surprised to find how the cerebral fluid comes out. There is no danger of hernia, as the opening is not large enough for the brain to protrude. I use T-forceps for this special purpose, and not more than one ounce of blood is lost. I proceed to pack, after having opened the dura, with fresh sterilized gauze. Ordinarily I do not use iodoform gauze in the brain, but under some circumstances it does very well. Some brains have a strange idiosyncrasy against iodoform and it will start up an irritation there which will be very prone to become septic. I therefore simply use dried gauze sterilized, and I apply two pieces to drain, packing them well into the groove I have made. I gradually remove the forceps and apply my sutures. There is no shock, and practically no loss of blood, although some of you might be disposed to doubt that. When I first began to operate I did not do it in the way I do now and I did not succeed in my early operations as I do now. We must not consider these operations lightly by any means, and we must not operate on the brain promiscuously. All cases that are operable should be operated on by those who know how to operate, and there is practically no difficulty in removing the cause.

Dr. Cryer—Dr. Wyman questions how the instruments operated by the engine will work upon living bone. It works quite as well upon living as upon dead bone; the tools do not become clogged or choked, nor do they become heated, provided the cutting tools used are made especially for the type of bone to be operated upon. Heretofore the cutting tools were made without sufficient regard to this particular; as a rule they had too many blades which were of equal size. You will observe these tools have three blades differing slightly in size; this prevents chattering or vibration of the tool, and they are self-cleansing. The subject which I have used for demonstration has been dead but three days, and the texture of the bones is almost the same as in the living subject; to be sure there is no blood flow, but the cutting under blood interferes with operations only in so far as it obscures the view of the territory.

ACUTE PARTIAL ENTEROCELE.

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Herniæ involving only a portion of the circumference of the bowel, and usually spoken of as Littre's herniæ, are of two forms: One is a diverticular hernia, a hernia where a diverticulum of the bowel forms the contents of the hernial sac; the other is the partial intestinal wall hernia, partial, lateral enterocele (*enterocele partialis seu lateralis seu hemiperipherica*), where only a segment of the free margin of the bowel forms the contents of the hernial sac. Partial intestinal wall herniæ occur in two forms: The acute partial enterocele, where the hernia is of sudden origin and without adhesions; the chronic partial enterocele, where the hernia is of slow origin and usually with adhesions; that the acute form occurs is denied. Clinical experience alone can refute this denial, and the material is not lacking that will constitute the necessary burden of proof to establish the fact that acute partial enterocele occurs; it is in this spirit that the writer has been led to present the following clinical manifestations.

In 1891 I reported a case of acute partial intestinal wall hernia occurring in the sac of a previously existing incomplete inguinal hernia.

The peculiar symptoms in this case were: 1. Absence of any tumor, slight redness of skin over point of rupture. 2. Pain commencing at and returning to a point marking the place of exit of previous hernia. 3. Patient had two loose stools, which caused increase of pain at the seat of stricture. 4. Continued retching, but no vomiting. 5. Just before surgical anesthesia was reached in attempting to reduce by taxis I was able to appreciate a sensation like that of drawing upon something immediately above the seat of previous hernia, having a fixed extremity and which, as the anesthesia became more profound and traction was continued, gave way little by little. Traction being further continued a slipping like that of this something being suddenly released was experienced.

Case 1.[1]—A record of the case is as follows: Male, 28 years of age, weight 145 pounds, height five feet seven inches, nervous temperament, wood-turner by trade, required to stand most of the time; no record of abdominal traumatism previous to primary occurrence of a year ago, when I was sent for and found a strangulated incomplete inguinal hernia of the right side, which was soon reduced after using hot fomentations and taxis. Truss applied; continued his work the next day. Patient went to work in the morning feeling as well as usual, the truss retaining the gut. During the morning he did some lifting. Soon after the lifting he noticed, while standing at his bench, a slight pain at the place of rupture. The pain continuing, he examined the part, but could find no tumor, so thought nothing more of it, and continued his work. As morning wore on, noticed that the longer he worked the more intense became the pains, bowels moved once during the morning. During dinner-hour, getting an opportunity to lie down he did so, the pains relaxing somewhat, not wholly. Soon after commencing work the pains reappeared with increased severity, but now taking on a different nature. His bowels rolling, commencing at the point of rupture, continuing to the pit of the stomach, returning again to the starting point. Bowels moved (loose stool) again during the afternoon with slight momentary exacerbation of pain at the point of seizure. Notwithstanding the intense nature of the pain he continued working, finished with the others and made his way home, walking part of the way. Arriving there he complained of dizziness from the pain and exertion, still he did not lose consciousness. Thinking that if he would lie down awhile the cramps would cease he went to bed. His condition not improving, rather continuing to grow worse, word was sent me.

Examination found the patient lying on his side with limbs fully flexed, hands holding abdomen; face presented that anxious, pinched expression peculiar to peritoneal trouble; skin hot covered with perspiration; respiration and pulse slightly increased; continued retching but no vomiting present; no tumor at point of rupture; skin covering it slightly reddened. Pains were of sharp lancinating character, commencing at the point of rupture and extending to the pit of the stomach. Patient showed tenderness at only these two points. Percussion showed marked meteorismus. Recalling my experience with previous hernia I immediately thought of a strangulated hernia of a small part of the circumference of the bowel; still the probability of a peritonitis also presented itself. Applied hot fomentations, and administered morphin per stomach, one grain in divided doses within half an hour. Instead of affording relief, the pains continued to grow, so ruled out the peritonitis and adhered to my first impression of strangulated partial hernia. The wife, as on a previous occasion, requested me not to operate unless absolutely necessary, so I administered chloroform, preparatory to trying taxis. With one hand below the point of rupture, the other above, I, alternately pushed with the one hand, made downward and upward pressure with the other upon the abdominal walls with contents beneath. The latter movement produces traction. Continuing the traction, I was able to appreciate the sensation as of drawing upon something beneath my fingers and within the cavity whose other end was fixed. The narcosis becoming more profound I continued to make traction, and was soon to my delight rewarded with a sudden slipping upward of the hand making traction, consequent upon the extremity of this something being suddenly released.

As mentioned above I had already administered a grain of morphin before giving the chloroform. Before the reduction, if the chloroform was not pushed, the patient soon rallied. After the reduction, though the chloroform was immediately removed, patient did not rally but continued sleeping, his face now presenting a less pinched appearance, his respiration becoming slower, also his pulse. Remaining yet a little while, noticing his improved condition continuing, I left, leaving instructions to let him continue sleeping.

Directed to take a bottle of citrate of magnesium and teaspoonful of mixture containing ¼ grain of morphin every four hours and soft diet. . Next morning patient was up and about. When having a movement of the bowels the next morning, after taking citrate of magnesium, and also an enema, pain was caused in the region of the cecum only, the patient expressing himself as follows: ' My bowels pain me in one spot only while I am having a passage, otherwise I have no pain." Truss was applied and the third day after occurrence patient was able to return to work.

In the discussion several expressions of doubt found utterance as to the correctness of the diagnosis, one thinking the case had been one of omental hernia; another thought the case one of simple invagination of the bowel. The history of an acute epiploitis arising from an acute hernia differs very materially from the above. Professor N. Senn, in the course of his remarks said: "A Littre hernia is a hernia that is exceedingly dangerous. It is a hernia that contains only a part of the circumference of the bowel. The hernial ring being very small and the contents of the hernial sac being limited, gangrene takes place in a very short time. I hardly think that by ordinary care it would be possible to confuse invagination with Littre's hernia, because in Littre's hernia at least a slight external swelling can be detected, the swelling occupying a position where we expect to find the different herniæ. The writer has informed us that in the last case he suspected that the Littre hernia followed as a secondary condition of a former well marked hernia, and therefore I have no doubt that it may have been a Littre hernia which was reduced before signs of strangulation occurred."

At the time I reported my case I had not met with Lorenz, "Ueber die Darmwandbrüche,"[2] else I might have presented another case very similar to mine in many respects (though more severe in degree), both in the history of the anamnesis, symptoms and signs, and in the anatomic relation of the parts involved.

The case presented itself for operation in Professor Albert's clinic. From the previous history of the case, it seemed like mine, one where secondarily an acute incarceration of a segment of the bowel with strangulation was manifesting itself, in a previously existing hernial sac.

That such a phenomenon could occur had been up to this time (1883) a mooted question. Therefore, in performing the operation it was done with this special problem in mind: Do acute intestinal hernia occur into a previously existing hernial sac or, in other words, can an intestinal wall segment suddenly enter a congenital, or a more or less longer existing hernial sac and immediately become incarcerated.

The findings of the case under operation were such that Lorenz presented a history of it, showing and to prove, that a bowel segment can and does become so incarcerated.

Case 2.[2]—A well developed boy, 16 years of age, slight in figure and healthy appearance, when seven years of age (1874) was directed to wear a truss for a right inguinal hernia. He continued to wear the truss for several years. In the course of time, the truss becoming too small, he laid it aside until the present occurrence, September 1883, without complaining of any discomfort. Sept. 11, 1883, while he was carrying wood, he was suddenly taken with abdominal pains and vomited twice in succession. Immediately palpating the addominal walls the boy discovered a small tumor in the right inguinal region. Vomiting continued during the night. September 12, boy feels comparatively well. After unsuccessful attempts being made, by a physician, to reduce the hernia, the patient entered the clinic that evening. With the exception of an active thirst the patient presents no other symptoms. After drinking immoderate quantities of water he vomited once toward evening and once during the following night. An attempt at stool was almost without result.

September 13. With the exception of drawing pains in the abdomen patient feels well. Flatulency, none since the critical evening, the facial expression is normal; the pulse full and strong; continuous thirst. Abdomen flat, very slightly sensitive to palpation. In the right hypogastrium upon deep and brusque palpation sensation slightly greater, but there is not the least resemblance to the intense pain usual at the neck in hernial strangulation.

Operation: Cutting down, opened sac from which there flowed, proportionately speaking, a large quantity of a hemorrhagic colored fluid. The whole tumor seemed to melt away entirely; found a blue, red appearing, swollen part of the intestine; no trace of omentum; no adhesions between bowel wall and hernial sac. Because of the small size of the bowel segment the possibility of a partial enterocele presented itself, and to determine the question the greatest care possible was exercised in the further dissection of the parts. At the internal inguinal ring a conical portion of the intestinal wall was found incarcerated; the structure was divided and a considerable portion of the intestine drawn out to demonstrate that the mesenteric border of the gut presented absolutely no changes upon its superficies, and was of normal red color, while upon its convex border there appeared the well marked strangulation furrow, that loosely encircled a protruding intestinal wall segment. The gut was replaced; wound dressed to favor union by granulation: toward evening much flatulency. The night was passed without pain and sleeping most of the time.

September 14. Wound dressed; looking well; abdomen soft and painless; flatulency continues. General condition good.

September 15 and 16. In the night two bowel movements, profuse and soft. Condition continues good. Recovery followed without anything of note occurring.

Again there are exceptional cases where the symptoms and signs point to incarceration with strangulation, yet herniotomy determines only an empty hernial sac with subsequent cessation of symptoms. Here it would seem that a small segment of the bowel had been incarcerated, strangulation with its manifestations following; primary attempts at reduction with taxis are made; they fail; the anesthetic is hurried;

the narcosis may induce relaxation of the spasmodically contracted hernial orifice; reduction may succeed as in my first case (1891), or this happy result may not be induced until herniotomy with opening of the sac occurs, and then only to find no intestine. In this latter case undoubtedly at some time during the narcosis or herniotomy there was relaxation of the spasmodically contracted hernial orifice sufficient to release its grip upon the segment of the bowel wall; the bowel would then retract within the abdominal cavity.

In dwelling upon this feature of this form of hernia Lorenz mentioned such a case where operation was necessary, that developed only a hernial sac but no intestine.

Case 3.[2]—Moderately well developed but strong woman. Four months ago she noticed a small prominence in the left groin, upon the advice of a friend, wore an improperly fitting truss, which she soon laid aside. September 11, in an argument with a friend, she received a kick in the region of the lower abdomen. From this moment she complained of strong abdominal pains and repaired to the *Polizeiartz*. He rendered a negative opinion and quieted the woman, who, notwithstanding, took to bed. During the night she experienced heartburn, belching, retching and profuse vomiting three times. The patient discovered a nut sized elastic tumor in the left groin. Calling upon the *Bezirksartz*, he diagnosed a hernia and advised immediate removal to the hospital. During the night of September 12 and 13 patient applied cold compresses, and during this time was disturbed by continuous belching and retching. Passed restless night, appetite lost. As her condition did not improve she permitted herself to be taken to the hospital where for four hours she was closely observed. During this time there was continuous retching, yet no vomiting. No flatulency for three days, and though, to ease her condition, patient repeatedly attempted to stool, her efforts remained unsuccessful. At the time of her admission patient presented the appearance of one seriously sick, complaining of great weakness and abdominal pains, true collapse not present. In the left groin, a pigeon-egg sized, firm, hollow, percussionable tumor, covered with normal integument, which accurately indicates a left femoral hernia. Abdomen moderately tympanitic and excessively sensitive. Palpating the hernia and sac, patient contracts because of intense pain. Attempts at taxis in warm bath without result. Patient narcotized, taxis repeated unsuccessfully; herniotomy.

After careful division and drawing apart of the hernial sac there was nothing to be seen of an intestinum. It is impossible to advance the tip of little finger in the direction of the femoral ring. After repeated attempts, a strong sound was introduced several inches in the direction of the abdominal cavity. The sound completely obstructed the unusually small hernial sac; therefore, the presence of an incarceration was ruled out. Sac extirpated, tied, wound closed, continuous with the narcosis, patient fell into a sleep and awoke late in the evening without abdominal pain and retching. The next day flatulency. Not until the third day did the bowels move and then profusely following two clysmata. Wound healed with first intention. On the second day appetite reappeared and patient considered as convalescent.

In regard to this case, taking into account that when the hernial sac was opened there appeared but a transparent clear serous fluid and that there existed a three-days impermeability of the bowels, the probability must be thought of that through the narrow hernial orifice a bowel segment had been invaginated, which, however, had withdrawn itself even before the operation. Lorenz does not even attempt to question that the invaginated intestinal segment can withdraw itself again.

Unless relieved, what happens in such a case of neglected incarceration of an acute partial enterocele?

1. Symptoms of strangulation follow, with inflammatory changes. If the inflammatory processes be too active for the powers of the general system, then follow gangrene, sloughing, perforation, artificial anus, exhaustion and death, in rapid succession. While preparing this paper Dr. Robinson informed me of such a case having occurred just recently in the hands of a country practitioner. "The tissues were incised down to the gut, which was left to slough. A segment of the bowel wall, directly opposite to its mesenteric attachment, was caught in the hernial ring. At first gas passed from it for several days. On the fifth day after the first incision a laparotomy and a bowel resection with a Murphy button, was performed. Death resulted from sepsis."

2. The system countenancing the reactionary processes induced by the incarceration, strangulation does not occur, adhesions set in and the acute condition gradually merges into one of chronic partial enterocele. Like changes may and do occur in old herniæ; a spot inflames and becomes adherent, and though at times the greater mass of bowel spontaneously returns within the abdominal cavity, a small segment of the wall still remains hernial, bound down by its adhesions. Since the bowel lumen is only slightly disturbed, the feces pass with little or no trouble, the general system soon adapts itself to the new condition of things and exists an indefinite length of time in this state until an acute exacerbation compels relief or ushers in death.

Such was the history of my second case, which is quite typical of these cases of chronic partial enterocele.

In August 1896, I was called to see a woman, aged 60 years, who had already been confined to bed some ten days before I saw her. She was of medium development, fairly strong, but tissues quite flabby. There was no history of previous hernia. Four years ago she suddenly noticed a small swelling in the right groin. She did not know how long it had been there as its appearance was not the result of any known cause; neither was it marked by any of the symptoms usual in acute hernia. The swelling would disappear and reappear, seldom producing any protracted serious discomfort, more than that of a day or several days at the most. At these times she would complain of pain at the site of the swelling, and anorexia and constipation. This was attributed to exertion, catching cold, with colicky pains and acute constipation, for which her physician advised rest, and administered, among other therapeutics, much of a cathartic nature. Hernia was thought of, but because of small size and transitory appearance of the swelling his opinion inclined to a glandular swelling with occasional inflammatory reaction.

Some ten days ago, while beating carpets, in lifting a piece over the line, patient was suddenly seized with a sharp pain at the site of the swelling; palpating the parts noticed, the swelling had increased in size and was now tender to the touch, and she went to bed. Reflex symptoms, as belching, retching and colicky pains, soon manifested themselves. Her attending physician administered a medical acute intestinal obstruction treatment, with opiates for pain, lime water, etc., for vomiting, and various cathartics with repeated clysmata for the non-bowel movement. For some days no attention had been shown the swelling. When attention was called to the swelling from the inflammatory picture it presented, a probable suppuration of an inguinal gland was thought of, complicating the acute obstruction. Poultices were ordered applied. Her family physician calling in a friend, the consultation determined in the order of their importance, a suppuration of a gland, a possible perinephritic abscess and a possible gangrenous hernia, with indications for immediate operation. The next day, being invited to see the case, examination revealed a reddened, inflamed, firm oblong mass along and over the right Poupart's ligament, and continuing down into the right labium.

Palpation.—Tenderness which spreads out toward and over cecal region, superficial and deep fluctuation with crepitation, as though there was gas in the tissues.

Percussion.—Over swelling gave suppressed, deep sounding hollow note. Abdomen sensitive only as the region close to the suppurating mass was approached; tympanitis not marked. General symptoms, expression, etc., were indicative of a local peritonitis with gangrene from hernia. For a week no bowel movements, anorexia, retching, vomiting and slight increase of pulse and temperature.

My diagnosis was strangulation of an acute exacerbation of a chronic partial enterocele at the right femoral ring with gangrene, perforation and septic perforating cellulitis.

Cutting down upon the mass a profuse ichorous discharge was liberated, in which was noticed pus, necrosed tissue, gases and feces. Many pocket-like sacs were opened up in the surrounding areolar tissue, containing a like ichorous material. With continued irrigation the field was finally cleared of ichor, feces and débris. Deep down and above in the femoral canal I found a gangrenous bowel with perforation, through which at first passed much gas and some feces. Simultaneously the slight abdominal tympanites disappeared. Upon one side the bowel was bound down by adhesions, upon the other side it was free, and careful examination seemed to show that there was only a part of the circumference of the bowel at that point in the hernial ring.

I confined my examination to inspection only, as I thought it better to wait forty-eight hours before resecting the bowel, in order that in that time the bowels might have opportunity to thoroughly empty themselves and the inflammatory reaction abate. The wound was dressed with absorbent cotton.

Patient reacted beautifully, citrate of magnesium [illegible] was administered. During the night, late, the [illegible] bowel moved repeatedly and profusely through the artificial anus; there were also two movements through the natural anus. I attributed these two movements to the inflammatory reaction caused by the operation, and due to which there must have been a strong intestinal secretion throughout, causing two loose movements. These must have been from the more lower bowel, as two days afterward the rectum was again found full of dry scybalæ.

Frequent dressings were given during the forty-eight hours. The wound looked clean and healthy, and the symptoms abated very materially. The lower bowels were emptied, so far as possible, by means of clysmata. Secondary operation was performed for resection of the bowel and closure of artificial anus. The adhesions were broken down with the tip of the finger, the bowel drawn out and resection performed. I did not use a Murphy button, fearing its non-passage through the lower partially collapsed bowel; bowels returned, wound dressed; no shock, no collapse. Next day she conversed, with smiling face. Two days after operation the patient died. There were little symptoms of peritonitis present, her pains were very slight considering the operation and that no opiates were used, and death seemed due to gradual exhaustion.

Through the kindness of Dr. Geo. H. Weaver of the Pathologic Institute of Rush Medical College, a report of the findings in the specimen is as follows:

The specimen consists of a portion of small intestine, about 5 cm. long on either side of a defect in the wall. The upper portion is 3 cm. in diameter, the lower 1.5 cm. The wall of the upper portion is thicker than that of the lower. On the free border of the intestine near the middle of the section is a conical projection 2.5 cm. in height and 2 cm. in diameter at its base.

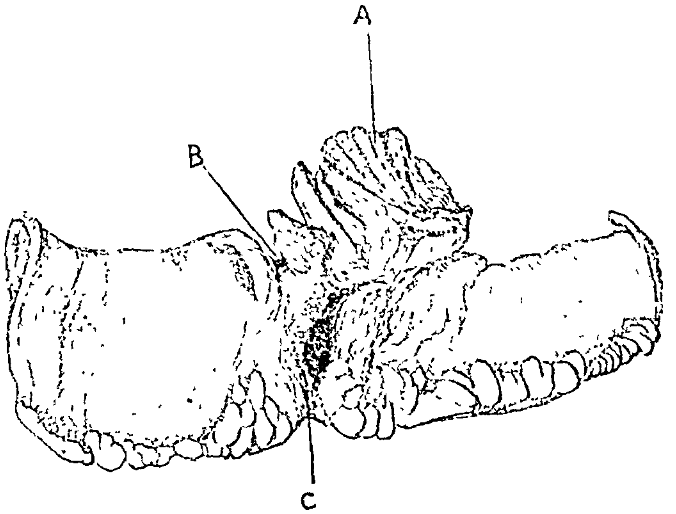

Fig. 1.—Resection from a case of chronic partial enterocele—chronic Littre's hernia—with acute exacerbation, showing: a, acquired diverticulum: b, acute exacerbation of hernia; c, gangrene with perforation.

The outer surface of the projection is uneven from the presence of dense fibrous bands and masses. About its base on its outer aspect is a circular groove fairly well defined. The serosa of the intestine is continuous with the outer surface of the projection. This projection is located to the lower side of the point of gangrene in the intestinal wall, to be described below.

On section through the cone, from apex to base, its walls are seen to be continuous with those of the intestine and to be made up of a fibrous layer externally continuous with the intestinal serosa (Fig. 2, C), a muscular layer (Fig. 2, B) continuous with the intestinal musculosa, and an internal coat continuous with the mucosa of the intestine (Fig. 2, A). The projection internally is occupied by a cavity opening into the lumen of the intestine.

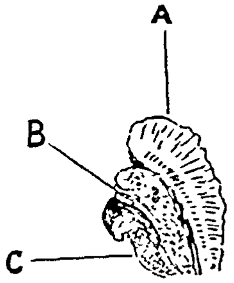

Fig. 2.—Section of the diverticulum from apex to base, showing the intestinal layers: a, mucosa; b, musculosa; c, serosa.

Microscopic examination of a section of the wall of the projection shows that all the coats of the intestine are continued across its whole height, muscular and mucous coats being present.

The wall of the intestine is defective from a gangrenous process on one side just above the projection above described (Fig. 1, C). At both ends of the gangrenous defect are well-marked grooves in the outer aspect of the intestine, both at the free border and at the mesenteric attachment, running at about right angles to the lumen (Fig. 1, B). This evidently indicates the line of application of the body causing the obstruction and gangrene.

In referring to the parts of the intestine they have been spoken of as upper and lower portions. The larger portion had evidently been dilated and hypertrophied because of its location above the point of obstruction, and the smaller portion contracted because below this point.

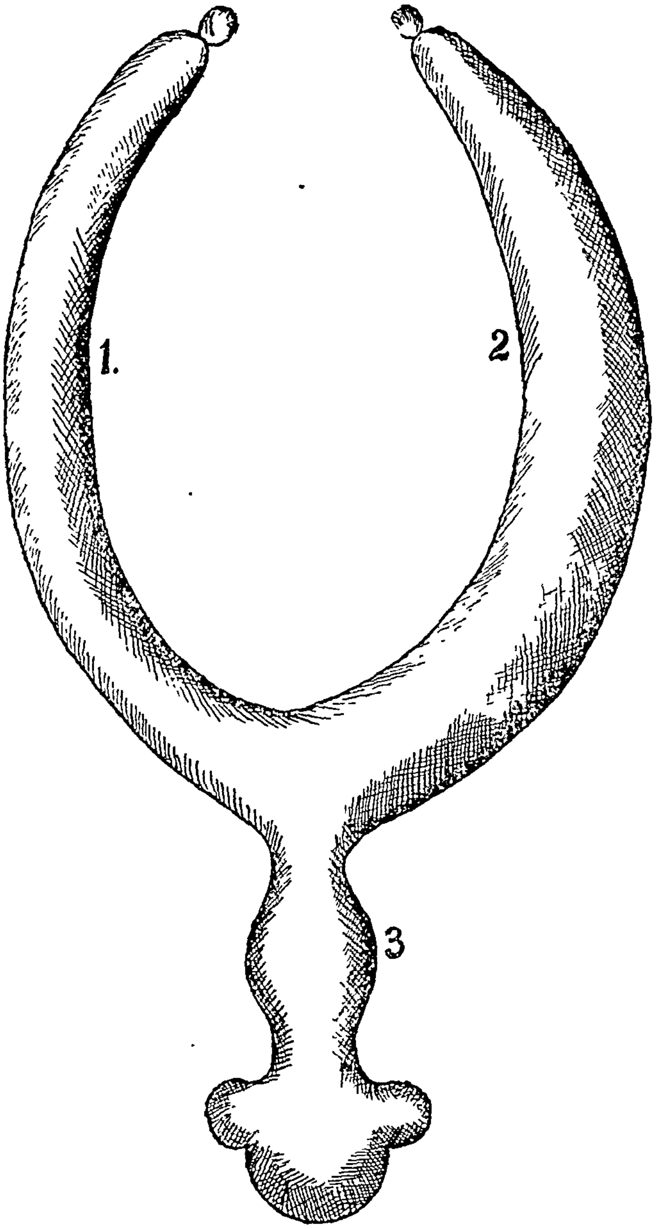

Fig. 3.—Illustration from Littre's first case, 1699. A Meckel's diverticulum found hernial in the left inguinal ring and canal. 1, Partie de l'iléon du côté de l'anus. 2, Partie de l'iléon du côté de l'estomac. 3, Appendice de l'intestin iléon.

The congenital diverticulum, Meckel's diverticulum verum, is a dilatation of the small intestine, representing a hollow appendix, which consists of all the intestinal membranes, and is placed at from eighteen to twenty-four inches from the cecal valve; although we do not quite assent to Meckel's view, that it is a remnant of the umbilical canal, it evidently has its origin in the development of the intestine in the umbilical vesicle. It accordingly is found solitary and attached at the above mentioned spot; it varies in length from five to six inches; it sometimes is wider, sometimes narrower than the intestine itself; it is frequently contracted at intervals of a conical or cylindrical shape and terminating in a round, clubbed or lobulated expansion. It either projects at right angles from the convex surface of the intestine, hanging unattached in the abdomen, or it passes off at an acute angle from the concave surface of the intestine near the mesenteric insertion, being attached to the latter by a falciform process of the peritoneum. In this case it is often placed parallel to the intestine. Occasionally a ligamentous cord, the remains of the omphalo-meseraic vessels, is found at its free extremity, and as this may, by its adhesions to various points of the peritoneal cavity, give rise to internal hernia (strangulation of the intestine), it receives importance in a pathognomonic view.—ROKITANSKY.

The specimen shows then the following conditions: A Littre's hernia of long standing, as evidenced by the old, firm adhesions about its base and outer surface of the button, and a gangrene of the wall of the intestine from an obstruction by pressure of recent occurrence.

Through the courtesy of the superintendent of the National Library of Paris, I have received a copy of the illustration, by Littre, of the part of the bowel and the diverticulum involved in his first case of hernia (Fig. 3).

I introduce the illustration here, the better to bring out the difference between a chronic *congenital diverticular hernia* and a *chronic intestinal wall hernia*, both being regarded as Littre's hernia; Littre's first case having been one of chronic diverticular hernia and his second one of chronic partial enterocele.

In reviewing my second case, I think four years ago there was an acute partial enterocele. At various times local peritonitis developed, resulting in the profuse adhesions with fixation of the bowel segment forming the primary acute partial enterocele, thus the acute partial enterocele gradually developed into chronic partial enterocele.

RETROSPECTION.

That the chronic form of partial intestinal wall hernia occurs is admitted by all, but not so that of the acute form. That the acute form of partial intestinal wall hernia occurs is still denied by authorities of note of today, among them Koenig.

This seems in a great measure to be due to the negative results obtained by Roser,[3] who in 1859 published the results of his experiments upon the cadaver with regard to this special form of hernia. Because he was unable, *first*, to apply a ligature laterally to the circumference of the bowel; and *second*, when he drew a segment of the bowel through a hernial orifice, the segment would not remain fixed, his conclusions led him to deny the occurrence of a free marginal segmental hernia. From 1859 to 1883, Roser's denial seems to have quite thoroughly saturated surgical atmospheres.

In 1883 two cases presented themselves for operation in Professor Albert's clinic. Both proved to be cases of incarcerated acute partial enterocele *without adhesions*. The first was a partial intestinal wall hernia of the small intestine incarcerated in the left femoral ring. The second was a partial hernia of the large intestine incarcerated at the right femoral ring.

Case 4.[2]—Woman aged 50, quite marasmic. On the right side there has existed a femoral hernia for some years, successfully retained by truss. On the left side patient until three days ago never noticed a swelling. On the first day, without any known cause, she was taken with strong pains in the abdomen; retching, shortly after vomiting. Physician recognized a left femoral hernia. Upon the third day of incarceration patient was sent to the clinic for radical operation. Here was recognized a walnut sized, firm, immovable irreducible swelling under Poupart's ligament of the left side. Continued vomiting until slight collapse and rapid pulse; no bowel movement for three days. Immediate operation. Cutting down, scraping through the hernial sac, there was found a dark blue, very congested intestinal pouch *closely lining* the inner surface of the sac, though nowhere adherent with it. The pouch presented the appearance of a large cherry of a bullet form. No adhesions. Drawing out the bowel, it proved to be small intestine. The compression ring occupied the convex side of the loop and surrounded as a circle a dark blue projecting intestinal pouch. *The pouch did not undergo any organic changes*, as *in rolling* out the intestines the pouch disappeared quite completely, so that the convex margin of the loop showed two slight compression rings, marking only a flattened protuberance. No changes in the mesenteric margin whatever; bowel replaced; wound packed; union by second intention granulation. Flatus passed the same day; second day after operation profuse bowel movement. No more vomiting was noticed. Left the hospital on the eighteenth day.

Case 5.—Well developed male, potator, aged 41. Messenger carrier. Patient says he never had a hernia or even a swelling in inguinal region. Wounded in chest at Koeniggratz in 1866; discharged cured. Always enjoyed the best of health since. Regular and easy stools without assistance; never complained of indigestion.

February 19, 1882. With an assistant he lifted two 2 centner iron cases into a railroad car. During this exertion he felt in the right lower abdominal region a sharp pain, followed by strong colicky pains. On this account two hours later he took to bed, and noticed for the first time an egg sized tumor in the right groin, which he painted with tincture of iodin. The abdominal pains continued and caused a sleepless night.

February 20. In the morning he vomited once. Physician advised patient to go to the hospital, but advice not heeded. Pains continued, anorexia complete. This condition continued several days, during which his general condition was improved, though the local tumor increased considerably; non-bowel movement for two days, then patient relieved with a senna decoction. Meanwhile patient consulted a second physician, who advised immediate removal to the hospital. The vomiting had not been repeated, though there had been a transitory tendency thereto.

February 22. Entered clinic. Swelling size of a man's fist in the right groin, covered with integument so stretched that it can not be folded, and of a dark red color. Its relation to the inguinal or femoral canal can not be given with certainty because of the dense peripheral infiltration. Consistency elastic. Deep indistinct fluctuation; percussion note hollow toward the hypogastrium; upon stronger percussion, tympanites with similar sound from the abdomen. Abdomen soft, not painful upon pressure; pains ceased. The general condition of patient seems not to have been seriously disturbed. Pulse 76, full and strong; tongue moist; face unchanged, with expression of a serious affection; slight rise in temperature. During the first day of the clinical observation the bowels moved profusely three times. The colicky pains had ceased, vomiting had not occurred again; patient complained only of want of appetite.

Notwithstanding the local picture, which was typical of a gangrenous hernia, the possibility could not be overlooked that the statements of the patient, especially as to the rapid occurrence and growth of the questionable tumor, might be based upon an error, and that possibly but an adenitis suppurativa presented.

February 23. Four days after its commencement, operation undertaken by Professor Albert. While waiting in anteroom tient had another bowel movement of watery consistency; ked to the operating table. *Operation.* Cutting down efully until the non-adhering bowel could be drawn out, which was found to be large intestine (cecum). Examination revealed that from the anterior margin (convex) in the vicinity of the ceco-ileac articulation a segment of the intestinal wall was incarcerated in the right femoral ring. The segment projected somewhat; the deeper organic changes, as suggillation, and in spots commencing gangrene (though no perforation), ceased at the base of the pouch. Death during the night of the fourth day in the hospital.

Just here I might add a case of Littre's hernia reported by Dr. J. C. Oliver.[4] Judging from his history of the case it would appear to have been one of acute incarceration of a segment of the bowel wall. His report of the case is as follows:

Case 6.—German woman, aged 33. Close inside the left spine of the pubes a small lump about the size and shape of a shellbark hickory nut, free from pain and tenderness. The impression given to the fingers was that of an enlarged inguinal gland. Operation revealed a small sac about the size of a hickory nut, which was laid open. It was found that a small knuckle of the intestine was caught in the external abdominal ring. The stricture was tight, and was notched with the herniotomy knife. The entire lumen of the bowel had not passed through the ring, only a portion of the circumference being engaged where the sac was opened. After fifteen minutes application of warm towels to re establish circulation, the knuckle of the intestine was returned into the abdominal cavity, wound sewed up and dressed. Bowels moved once during the night. Perfect union by first intention followed.

Dr. O. said when the case was first seen, I was inclined to think we were dealing with an enlarged gland, the diagnosis of the hernia being made at the operation. It was then found to be of the direct inguinal variety and that but part of the circumference was caught in the ring. A majority of the cases of Littre's hernia have been of the femoral variety, this being a direct inguinal hernia adds decidedly to its interest. (*Cincinnati Lancet-Clinic*, Vol. 35, p. 63, July, 1895.)

The two former cases seem to have prompted Adolf Lorenz, an assistant to Professor Albert, to a further and critical study of this unsettled question. His "Ueber die Darmwandbrüche," 1883, is the fruit of his investigations and observations in this direction.

In his introductory, he writes that "on some sides this latter form of hernia, *enterocele lateralis seu partialis acuta*, is today still opposed by an unwarrantable doubt, but which is rooted especially in theoretic speculation."

Thus, B. Schmidt[5] had expressed himself but a few years before: "It is claimed that at times only a segment of the free circumference of the bowel, opposite the mesenteric attachment, protrudes into a hernia. Until the bowel wall is found not adhering in the hernial sac or in its orifice, I must join with those who deny this form of hernia. (Roser, and others). A free intestinal wall hernia I have never seen, and know of none in the literature."

Lorenz's reply to these theoretic objections was the following record of a judicial postmortem made by an officer of the Vienna Health Department. "A four months, male infant, well developed, 67 cm. in length . . . The free margin of an intestinal loop situated about a meter from the ileo-cecal valve, protrudes quite loosely into a small sized umbilical sac lined by thickened, in places, gray pigmented peritoneum. In the intestine much gas and bile, colored soft contents. . . . It is not difficult to understand how, though the capacity of the sac be too small, to lodge an entire loop, yet it may not be too small to temporarily lodge a part of the intestinal wall." Notwithstanding the clinical and postmortem evidence furnished by these cases, facts meeting even the extreme theoretic objections insisted upon by Roser and Schmidt, today there yet exists doubt that acute partial intestinal wall hernia occurs, which is all the more unfortunate in that it has a tendency, as reference to the reports of these cases will show, to throw the inexperienced off his guard when encountering this dangerous and usually well masked form of hernia.

Albert,[6] in his "Chirurgie," which appeared a year later (1884) than Lorenz's monograph, writes that "even though seldom a small segment only of the bowel may present." Nevertheless, Koenig,[7] also a standard of today, in his latest edition of 1894, seems still to adhere to the opinion he expressed in his earlier editions (1883), namely, 'We deny, and least of all upon the evidence of the sections offered till now, that one is justified in accepting the existence of an acute arising incarceration of a small not previously pouch-like formed segment of a bowel."

In view of the evidence as furnished by the clinical manifestations seen in the cases reported above, and not forgetting that the operations in cases 4 and 5 were performed by no less distinguished a surgeon than Professor Albert, with observations made under his personal supervision, with faithful histories of the cases and with faithful descriptions of the anatomic and pathologic conditions encountered, he who would not believe such evidence must surely be a doubting Thomas; to say the least, if there be any question, it seems to me it is one of veracity rather than of fact.

Argument of theory is never so powerful as presentation of fact, and I am willing here to venture to weigh the "brute force" of clinical experience against the ephemeral force of pleasant speculation, and entertain no doubt as to the direction of the inclination of the pendulum.

Again, through the courtesy of Dr. Robinson, I am enabled to present another clinical manifestation of the bowel, which will materially assist in comprehending this question. In explanation of a new theory for the causes of hernia, he presents the following:[8]

"Irregular action of the gut-wall is the one cause which I wish to add, and one which I have not noticed in the books nor heard discussed. I gained the knowledge from the abdominal drain-tube. In laparotomy I use an aluminum drain-tube perforated by quite small holes. The holes are only about half as large as those in Keith's glass drain-tube. The holes are so small that one can not push a piece of bowel into one. Now, in a series of 100 laparotomies, Dr. Waite and myself have had three cases where the gut-wall had penetrated these small holes in the side of the drain-tube. We were obliged to steadily pull the tube upward and then tie the bowel wall with a ligature."

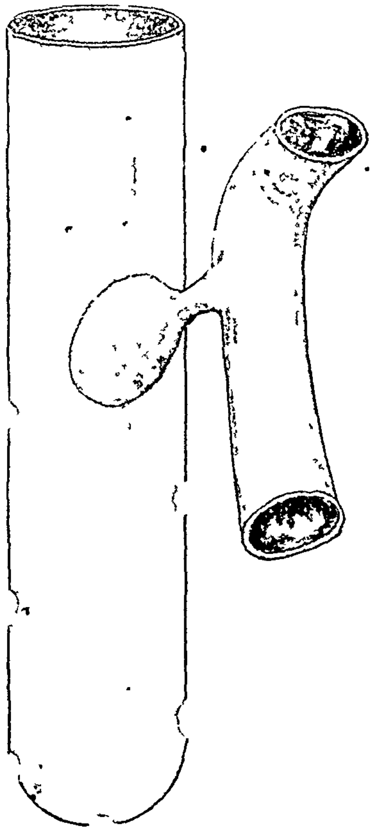

Fig. 4.—Showing irregular action of the bowel causing invagination of a segment of the bowel wall into opening in Keith's drain tube, strangulation followed, necessitating ligature and excision of diverticulum. (*Drawn by Dr Robinson from one of his cases operated upon for appendicitis.*)

[In this case Dr. Robinson, having such a bowel possibility in mind, had left word with the nurse to rotate the tube to prevent invagination. It seems during one of the intervals between the rotations, a segment of the bowel wall had invaginated itself so extensively that strangulation with suggillation changes had manifested itself; hence the ligation and excision. The primary operation was for removal of an appendix; the patient recovered after some fever and tenderness over the abdomen suggestive of local peritonitis.]

"In one case of Dr. Waite's, the drain-tube happened to be a glass tube of Dr. Keith's. and we were obliged to break the tube to safely liberate the gut-wall. Now, it appears to me that the hernia of the gut-wall in these tubal holes, is due to irregular action of the muscles in the gut wall. It is disordered peristalsis. The presence of the tube may irritate the muscles of the gut to act irregularly or in a disordered manner. It seems to me the same views can be applied in many cases of hernia. As the gut-wall approaches the small inguinal, femoral or the obturator canal it may become stimulated to irregular action just as it does around the hole in the drain-tube. In my opinion this explanation will account for the fact that the gut is found protruding through a very small aperture.

I have wondered almost as much how a loop of bowel could insinuate itself into such a small hole in the abdominal wall, as it could insinuate itself into a small round hole in my aluminum drain-tube. Keith's glass drain-tube has unnecessarily large holes, and in many cases it is common to find omentum, appendix epiploicus, or bowel wall engaged and even strangulated through one or more of these holes. In my aluminum drain-tube I have specially made the side perforations small in order to avoid the liability to hernia. Hernia through a small hole in the abdominal wall is probably produced from irregular action of the gut-wall, just as invagination is due to irregular muscular action of the bowel-wall.

" . . . The theory of irregular muscular action of the gut-wall as a cause of hernia I have never seen in literature or heard it discussed; but it seems to me to offer an explanation of some very small tight herniæ.

"There is some cause at work producing hernia on the right side more than the left. There is almost double the amount of hernia on the right so far as inguinal is concerned. Also the right side preponderates in regard to both femoral and obturator."

NOMENCLATURE.

Intestinal wall herniæ are usually included under the term Littre's herniæ. Still it must be borne in mind that a Littre hernia may be either a true diverticular hernia or a partial intestinal wall hernia. Both of his cases were of the chronic form.

His second case[9] was one of chronic partial enterocele, where a segment of the colon had become adherent and incarcerated at a ventral ring to the left and above the umbilicus.

Littre's first case[10] was his famous case of a chronic congenital diverticular hernia, where a Meckel's diverticulum, in this case given off from the ileum, formed the contents of the hernial sac, which was engaged in the left inguinal ring and canal.

The other two forms of diverticula, viz, the normal appendix vermiformis and the anomalous appendix described by Rokitansky[12] may also form the hernial contents, though the latter, seldom. These anomalous or false diverticula Rokitansky describes as follows:

"Such false diverticula consist only of mucous membrane and peritoneum, being herniæ of the intestinal mucous membrane resulting from the separation of the fibers of the muscular coat; they develop along the jejunum, the ileum and the large intestine, most often in large numbers (several hundred being met with in one case). They are pea to walnut sized, round, pouched; especially along the large intestine air from the nozzle of the instrument, which is directed against the spot which is to be treated. The degree of heat produced can be regulated by the length of time the bulb is held over the flame and also by the distance between the mouth of the nozzle and the surface toward which the heat is directed. The original instrument I have modified by making the nozzle straight instead of curved and by attaching a handle so that the air from a compressed air reservoir can be used. In applying the heated air to the ear, a hard-rubber speculum may be used through which the current of air is directed.

I have used heated dry air applied in this manner in quite a large number of cases representing various forms of ear disease, and can recommend this instrument in suitable cases.

In otalgia of all forms, by its aid I have usually succeeded very promptly in relieving the suffering of the patient.

In the so-called dry treatment of otorrhea, I have found it a valuable adjunct. My method of applying the dry treatment is to thoroughly remove the secretion with sterilized cotton, then dry the moist surfaces with heated air and follow this by insufflating a powdered medicament. The heated air used in this manner was found to be very grateful to the patient; it not only dries the middle ear but I have frequently noticed that it seemed to drive out some retained gas.

In the sharp recurring pains that frequently follow the rupture of the drumhead during an acute otitis media, the application of the hot air has given almost instant relief. I have not used the method in many cases of acute otitis media, but when I have done so the patients were considerably relieved from pain.

The effect of a hot air current upon the course of an acute otitis media is a matter to be determined by further experience. In chronic purulent otitis media I have noticed a decided stimulation of the mucous membrane and an increase of reparative action.

In treating catarrhal conditions of the Eustachian tube and middle ear, the heated air may be directed through a hard-rubber Eustachian catheter. I have also used the treatment in a number of throat and nasal diseases, and I am able by means of a long curved hard-rubber nozzle, to force heated air into the trachea and perhaps even lower into the air passages. It is my intention, however, to make this the subject of a later communication.

1929 Chestnut Street.

DISCUSSION.

Dr. Max Thorner—I have seen the device of Dr. Vansant and think it good, though I have not used it. Dry heat externally is always very grateful in middle ear troubles, and I do not see why dry heat internally should not be still better.

Dr. Randall—*The novel element in this is the dryness of* the air. I have known that heated vapors were better than cold vapors. The apparatus of Hubbard is really a repetition of Hartman's instrument of some five years ago, which has met with very little success. I shall try this method with great interest.

Dr. Marshall—I think hot air would be a distinct help if it could be made sterile.

Dr. Vansant—In my very brief paper I purposely refrained from citing cases. I hope that members will give the method a trial, and by experience find out its value. In using the instrument, especially with the compressed air reservoir, if you get too close the heat is *too intense. It should be given* in little puffs instead of a steady application. The instrument requires delicate manipulation. I think it may also be found of value in tinnitus due to Eustachian trouble. The instrument is used by dentists, and it is claimed that it lessens the pain in filling the teeth.

A FEW OBSERVATIONS OF SOME EASTERN EUROPEAN TOWNS AND HOSPITALS.

BY CASEY A. WOOD, M.D.

CHICAGO.

The disputed question as to the whereabouts of the largest hospital in the world will be decided in a year or so when the great *Ospedale Romana* is completed. This enormous establishment was begun in 1893 and has already cost many millions of *lire*. It will inclose within its limits, in northeastern Rome, all the various public hospitals, dispensaries, laboratories and clinics now scattered over the Imperial city. Instead of numerous isolated institutions, most of them housed in old, insanitary and dingy quarters, there will be but one collection of clean, well built, well drained, well ventilated, well lighted pavilions, replete with all the appliances, and provided with all the improvements that distinguish the modern hospital. On the other hand. the present father of hospitals, the great Allgemeines Krankenhaus at Vienna, grows more and more out-at-the-elbows, down-at-the-heels and baggy-at-the-knees. Nobody has better reason than the writer to appreciate how much the whole profession owes those ancient buildings in the Josephstadt, but surely the time has come for a change, not only in the nursing methods that have so long prevailed there, but in the old microbeladen walls themselves—a thought suggested by contemplation of the recent hospital erections that almost every small town in Europe and America seems to be making in response to the demand for absolute cleanliness on the part of everything and everybody who enters hospital doors.

When the city hospital in Rome is ready for occupation it will afford ample facilities for study and if a liberal policy be pursued toward foreigners, the Italian capital will make a most attractive and profitable center for medical study and may divert to itself some of that large stream of students that for so many years has been steadily flowing toward Vienna. The work done by Italians in all departments of medicine and surgery deserves to be better known than it is. Moreover, the language, spoken, written and, printed, is much more easily learned by Americans than is German, especially when the student has been assisted by a previous acquaintance with more or less French or Latin. In the province of ophthalmology and otology, with which the writer is most conversant, it may be said with truth that not to know enough Italian for translation purposes is to miss almost as much as not to be able to read French. Certain it is that the medical schools of Pavia, Turin, Rome, Naples and Palermo all have well informed ophthalmologists and otologists attached to them whose activities are of a kind by no means inferior to the best effort of the professors in German, American and French universities.

Although we found Athens in a state of general war depression, the hospital service seemed good in all its appointments. There is an ophthalmic hospital of considerable size for a city of 200,000, that is to say, its dispensary department is largely attended and it has twenty-four beds for indoor patients. Professor Anagnostakis, who had for years held the foremost place in Greek ophthalmology, having just died, I was indebted to the courtesy of Dr. Georgios Gazepy for my news. Although the limestone dust of Athens covers everything, including the bodies of its visitors, it does not appear to set up any particular affection of eyes, throat or lungs. The rather severe winter and the elevated site of the town probably serve to neutralize the harm done by the breathing of a summer air impregnated with lime and dust. So far as I could learn, Athens presents no peculiar eye or ear disease. There are very few cases even of trachoma, although intercourse with Asia Minor and Egypt is frequent and easy. Gazepy illustrated some of the difficulties the oculist who practices in the east has to contend with, by showing me his test cards and types, arranged for ten languages, all of which he is at times called upon to use, viz., Greek, Turkish, Arabian, Servian, Roumanian, Bulgarian, Armenian, French, Italian and Russian.

So far as we could learn, the unfortunate Greek army operating on the Thessalian frontier during the Turko-Greek war, was entirely without surgical equipment. A spasmodic attempt to establish a first-aid line was, after a time, made with the assistance of some English nurses that accompanied the troops as far as Volo, but even this was entirely inadequate, especially as the temporary hospitals had to be abandoned to the enemy shortly after their establishment. The polite Turk sent a message to these brave women, who had been instrumental in carrying out the project, that they entirely approved of the arrangements and found their quarters of great service! About the only consolation the Greeks seem to have derived from the recent contest is the fact, corroborated by our subsequent experience of the military hospitals in Constantinople, that their guns of the old Chassepot type had done more execution, both in killing and wounding, than the modern rifles of the Ottoman troops.

A most curious custom prevalent among Greeks of all ages and both sexes (but especially among the men), has a remote medical interest. One of its virtues is that it enables even prisoners condemned to solitary confinement, as most prisoners are in Greece, owing to public sentiment that opposes their competing with non-convict labor, to relieve the tedium of prison hours. Instead of twirling his thumbs, or chewing the ends of his moustache, as the nervous American is wont to do, to while away an idle moment the Greek deliberately provides for such a contingency by carrying about a string of beads that, by the way, have nothing to do with any religious observance whatever. These he draws from his pocket, wherever he may happen to be, and monotonously counts them one by one, or simply pushes them along singly, or two at a time, from one end of the string to the other. Surely this is an improvement on gum chewing, rocking chair exercise, or toying with some article of use or adornment as an occupation for nervous individuals, and is particularly recommended as an addition to the pharmacopeia of the neurologist.

As soon as we reached Smyrna evidences of smallpox, from which vaccinated Athens is fairly free, began to appear in the pitted faces of all the numerous races that throng the busy streets of that quaint old town. There seems to be no rooted objection to vaccination on the part of either Mahommedans or infidels; only, nobody seems to interest himself in the matter and there is no such thing as a compulsory law. Remembering Mary Wortley Montague's experience of inoculation one would expect prophylactic measures to be widely practiced among a people that are proverbially frugal, abstemious and personally clean. I looked in vain for signs of that ophthalmia which one sees everywhere in Egypt; the people seem to be almost as free of eye affections as the Greeks.

Constantinople is fairly well supplied with both indoor and outdoor hospital service, while the enormous military hospital at Scutari, first established by Florence Nightingale, is, according to Dr. Nicholas Senn, who inspected it during our visit as the guest of the Turkish government, an admirably conducted institution. I was entertained by Dr. Edwin Van Millingen, oculist and aurist to the Sultan, and son of that Dr. Van Millingen who was the friend and medical attendant of Lord Byron during his career in Greece. Van Millingen *père* was with Lord Byron when he died and made the postmortem on his body. The son has recently arrived from a visit to Smyrna and Cairo and in the latter place made a special study of trachoma. It is a generally accepted axiom among ophthalmologists that certain races, as well as the inhabitants of certain localities without regard to race, are practically immune to this formidable disease, and among these are counted mountaineers and negroes. Another affection said to be rarely or never seen in the negro is convergent strabismus, and this rule certainly holds good for the American continent. Dr. Van Millingen's experience in Egypt has disproved its universal application, as he found trachoma very prevalent among the pure native and immigrant negroes of Egypt. Although it is very infrequent he has seen, indeed had a case under observation in Constantinople at the time, well-marked instances of convergent squint among pure north African negroes. As a result of several months' examination of the various races in Egypt he found trachoma in the following proportions: Among the native (1,000 of each race examined) Mohammedans, 86 per cent., Copts, 85 per cent., Jews, 92 per cent.,-blacks 60 per cent. Among the foreign population, of which 200 of each were examined, the proportion was: English soldiers, 0; Syrians, Jews, Hindoos, Armenians, Turks, 24 per cent; negroes who have lived in the delta from four to thirty years, 50 per cent.; negroes born in Egypt, 70 per cent. Not only is the disease thus prevalent in such awful proportions, but it is more acute and more destructive than with us. Pannus is comparatively rare, but corneal ulcers are more common than in European countries. He denies that the Soudanese negro is more prone to contract granular ophthalmia than his cousin of the west coast, because he has a mixture of Semitic blood in his veins since the Soudan has only recently had intercourse with Arabia.

The principal military surgeon-oculist is Dr. V. Behjet, who is also the professor in the University. He has to deal, in common with other gunshot wounds inflicted during the war, with a number of interesting cases of injury to the orbit, some of them involving the ocular structures. His station was the Yildiz Hospital attached to that imposing array of barracks that surround and protect the palace of the Sultan.

I was much interested in the question of the prevalence of tobacco amblyopia, considering the large amount of the weed consumed in Turkey. Van Millingen informs me that he has never seen a case in a nargileh smoker during his twenty-six years of practice. All the cases of tobacco blindness occur in cigarette, cigar and ordinary pipe smokers. He thinks that the water-pipe undoubtedly prevents the disease, and that in the case of cigarette smoking the nicotin is largely absorbed by the lips. As might be expected also, alcohol poisoning (amblyopia included) and trichinosis are practically unknown among a population that really obey the commands of the Koran in the matter of wine and pork. In a country where blindness in both eyes is common from the formation of large scars over the whole cornea, Van Millingen tried the experiment of trephining a piece of opaque cornea when all other experiments had failed. He then placed over the globe a protective glass shell. The opening in the cornea often persisted for weeks and even months, and when the parts are kept aseptic the patient is able to see (in some instances to read), for quite a long period. When the wound finally cicatrizes the patient is not in any worse state than before the operation and has enjoyed some months of vision, during which time he may have transacted business or have accomplished something that with his blind eyes he could never have succeeded in doing. At any rate, the patient will be able to refer to the period of temporary vision as a pleasant experience when it was better to have seen the happy things of earth for a season than not to have seen at all.

The medical institutions of Moscow are admirably planned and equal in efficiency to those of the other large continental cities. Its public sanitation is, however, not as well looked after as in Berlin or Paris. The drinking water supply is defective and the sewerage system is very incomplete. Water for table use must be carted in casks from distant springs and the antiquated cesspool, with all its discomforts and dangers, still remains. The mortality rate is, notwithstanding these drawbacks, not high (29.5 per 1,000 of 1,000,000 population), although in 1896 there were nearly 6,000 cases of continued fevers of all kinds, 164 cases of smallpox, 2,380 of diphtheria, 3,500 of intermittent and recurrent fevers and 1,000 cases of chickenpox. The pure Russian is a sturdy and healthy-looking individual, somewhat given to drunkenness and other bad habits, but probably preserved from excessive alcohol and tobacco indulgence by having access to tea as a stimulant. The almost entire absence of smoking among the lower classes is strangely contrasted with the persistent use of cigarettes and cigars by the upper ten thousand. The latter smoke all the time, even between courses at meal time, while the peasant and his city equivalent never smoke, out of doors at least. The *samovar*, or hot water kettle for tea making, is everywhere, and it is astonishing to note the quantities of boiling hot tea drunk by all classes at all times of the day. We noticed a large number of persons going about in all the cities with their heads tied up in bandages, handkerchiefs, etc. It was as if there had been a recent epidemic of mumps. We found the trouble to be often middle ear suppuration, complicated with sore throat, decayed teeth, etc. It was explained that the Russians drink their tea so hot that actual burns of the pharynx and oral mucous membrane frequently occur. This sets up, by infection mainly, acute inflammatory processes in the walls and contents of the naso-oral cavities that often lead to serious consequences.

The majority of the hospitals, clinics, dispensaries and laboratories of medical and surgical Moscow are clustered together in a district called *Dievitchie Pole*, much as they are in Vienna, but with differences greatly in favor of the former city. The buildings are well separated, surrounded by plentiful breathing spaces and provided with an abundance of light and air. Here it is that most of the clinical and didactic teaching of the medical department of the Imperial Moscow University is given. The material for this purpose is practically endless and there seems no reason why the average Russian doctor should not receive an education quite equal to that furnished by the other continental schools. For example, in obstetrics there were, in 1896, nearly seven thousand accouchments in the eight public stations of the city, all of them accessible to students. The fact that out of the 31,000 births in Moscow that year, more than nine thousand were illegitimate throws some light on the advantages of this town as a center of obstetric study. A similar story could be told of general and special surgery in all their various branches. The bacteriologic institute, for instance, has a fine collection of animals and, during 1896, delivered to various public and private institutions more than twenty thousand bottles of serum anti-diphtheria, streptococcus infection, tetanus, recurrent fever, etc. I have been informed that the dental clinic, attached to the University Dental School (where five sessions of six months each are required for graduation) was attended by nearly ten thousand patients in 1896. Although the methods employed are still somewhat antiquated, it is housed in a building whose appointments far surpass anything of the kind we have in America. It has, among other conveniences, two laboratories, a library and a large museum filled with all sorts of anatomic, microscopic and chemic preparations.

There are many hospital and dispensaries not attached to the University, some of them of considerable size and importance. Ophthalmology is well represented among these. The Moscow Ophthalmic Hospital has 100 beds, with 722 indoor patients during 1896, and in it 1,750 major operations were done. Twelve thousand patients attended the outdoor department. Connected with this extensive charity is a blind asylum with beds for twenty-five inmates. An account of most of the other hospitals and medical conveniences of the city would be merely a tedious repetition of descriptions applicable to any other large European town, but there are at least two institutions peculiar to this part of Russia and of considerable interest.

The first is the great Foundling Hospital instituted by Catherine II. in 1764. Twenty large halls accommodate 980 beds for nursing infants. In summer most of these are transferred to the gardens of the Hospital in which are erected twelve *marquées* with 730 beds. This institution received: 1. Illegitimate infants deprived of their mothers. 2. Abandoned infants. 3. Illegitimate children whose mothers are living but who are unable to care for them at home. 4. Legitimate children to be cared for until they are a year old, when the illness of the mother or the poverty of the father prevents their receiving proper care. The average stay of the children in the hospital is thirty-seven days. For about a month each child has a special nurse and for ten days more one nurse looks after two children. When there is a dearth of nurses the mothers of some of the illegitimate children are requested to act in that capacity, when she is paid about $1 a month (fair wages in Russia) for the service. In case of a refusal the child is not admitted. The average daily attendance in

1896 was 1,005 children and 675 nurses. In an annex are buildings with 150 beds, usually full, where children and sick nurses are treated. All the children are vaccinated as soon as possible at a station where vaccine is also prepared and distributed gratuitously to all who apply. From the Foundling the children, regarded as wards of the State, are sent to certain districts in the country. Hundreds of villages receive their yearly quota, all of whom remain under the care of inspectors and physicians appointed by the State until they are able to take care of themselves. In spite of all sanitary and other precautions the death rate is enormous. Of about eleven thousand children cared for in 1896, 4,028 died, 5,175 being sent to the country. In the beginning of 1897 there were living in the districts above described nearly twenty-nine thousand small foundlings under the care of the hospital authorities. The income of the institution for 1895 was about $600,000.

There are several stations for the sale and preparation of koumyss (or kumys) in and about Moscow (the Maretzky establishment at Sokolniki, for instance), but if we are to believe most authorities the simon-pure article must be made near and drunk in combination with exercise on the *steppes* of the Volga. Samara, about a day's journey from Moscow, has two of the most noted and oldest of these Russian sanitaria, gotten up pretty much in the same style as similar resorts elsewhere. They are naturally surrounded by pine forests and artificially by lawns, gardens and pleasant walks. The management has also provided them with various kinds of outdoor amusements. One of the best is called the *Datcha Annaeva.* The season is May and June and the visitor is generally expected to take baths, outdoor exercise and to drink unlimited kumys. The Tartar mares feed on the rich plume grass and wild strawberry of the steppes, which give the milk of this region certain peculiarities. It is particularly rich in sugar, somewhat defective in fat and contains a portion of albumin resembling that of the human animal. It does not bear transportation and is readily affected by any departure from certain rules governing the collection and fermentation processes. The mares are carefully tended, never overworked and milked five or six times daily. Each milking yields about three-fourths of a liter of thin bluish-white milk, of a sweetish taste and peculiar odor. The milk is received in well-boiled wooden pails. The fermentation is brought about by adding, in a churn, fermented to fresh milk in the proportion of five pints of fresh to one of fermented milk. The whole is then churned for an hour and set aside in a temperature of 25 degrees R. The whole quantity begins to ferment in a couple of hours, when it is again churned and again set aside for several hours until it begins to exhale a distinctly alcoholic odor. Fresh milk is again added and the fermentation is stopped at the proper point by cooling. It is now bottled in soda water or champagne bottles and kept at 10 degrees R. The strength, chemic composition and therapeutic action of kumys vary greatly according to the method of preparation; it may be strongly alcoholic and decidedly intoxicant or it may be as faintly spiritous as the mildest Weiss Bier. Probably the outdoor air, regular exercise, pleasant surrounding and careful dieting of the kumys cures have as much to do with the improvement of patients as the drink itself, and this is the reason, no doubt, that the city stations are not as satisfactory places for treatment as the wild steppes themselves. Moreover, unless tested by an expert "taster," too little or too much fermentation of the kumys may occur and even the best mare's milk be spoiled in the preparation. "Cream Kumys," made of cow's milk, is entirely unlike the original, as it necessarily contains ingredients entirely unlike the mare's milk product and can not, therefore, be therapeutically compared with it. The kumys cure is regarded in Russia as a specific in all cases of chronic pulmonary diseases, anemia, chronic digestive derangements, most kidney diseases, scurvy and "general debility." The allowance for each patient is from six to sixteen bottles daily.

SOCIETY PROCEEDINGS.

International Medical Congress.

Twelfth Triennial Meeting Held at Moscow, Russia, Aug. 17-20, 1897.

The opening address in the Section of Neurology was presented by OBERSTEINER of Vienna, on the

PATHOGENESIS OF TABES.

He ascribes it principally to syphilis, although other causes may also be included: traumatism, intoxication, cold, etc., in addition to, or in the absence of, syphilis. We have reason to suppose that the pathogenic agent is a combination of different processes, co-ordinated, presenting various differences in intensity of action, yet all connected with some fundamental cause, probably toxic in nature, still unknown. It may affect all parts of the nervous system anatomically, but the spinal cord forms the essential seat of the lesions; a degeneration of the posterior bundles, especially those which are the intramedullary prolongations of the posterior roots. The alterations disclosed in the centripetal neurons are very important. They are constant and very pronounced in the central intramedullary part of these neurons, a little less in the posterior roots, still less in the cells of the spinal ganglia, and least in the peripheric nerve-fibers. These facts militate in favor of the hypothesis which locates the elective point for the action of the pathogenic agent in the most vulnerable part of the posterior root, the spot where it enters the medulla. Several symptoms of tabes, particularly the lightning pains, may be invoked in support of this theory. Darkchevitch announced that the lesions just described are not primary but secondary to inflammatory alterations in the peripheric nervous system and spinal pia mater, according to the results of his recent research. The lesions of the peripheric nervous system may cause an ascending degeneration in the sensory nerve-fibers, which does not stop in the intervertebral nerve ganglia but extends to the fibers of the posterior roots. In the medulla these morbid alterations are localized in the zone of the posterior radicular fibers which corresponds exactly to the localization of the medullary lesions of tabes in their initial stage. The anatomic modifications in the cells of the intervertebral nerve ganglia, consecutive to this ascending degeneration of the sensory fibers, are merely simple atrophy, and correspond in every particular with the alterations in the cells of the anterior cornua, caused by retrograde degeneration of the motor fibers. The leptomeningitis which induces the medullary lesions of tabes is localized exclusively or chiefly in the region irrigated by the posterior spinal artery. It only engenders tabetic lesions as the morbid process invades the posterior roots. One of the anatomo-pathologic characteristics of this leptomeningitis is the existence of venous alterations very much like the vascular affections of syphilitic origin.

GRASSET asserted that tabes can be clinically cured, although the lesions still persist; it can also be notably improved or at least arrested in its course. Antisyphilitic treatment is imposed whenever syphilis is certain, probable or even possible. It should be continued three months, but if no improvement can then be observed it is useless to persist further. The mercury can be given by the mouth; 5 to 10 centigrams of mercurous iodid, or 5 to 10 milligrams of sublimate, but Neapolitan frictions with massage under the arm-pits and knees, or along the spine, are [illegible] ra [illegible] tramuscular injections can also be made of [illegible] rcuric cyanid or gray oil. The frictic [illegible] ow [illegible] ten days of rest, for [illegible] m iodid should be administered in daily doses, increasing from 1 to 6 or 8 grams daily by the mouth or in rectal injections. If the effect of the antisyphilitic treatment is very marked, or if moderate, with a history of insufficient previous treatment, it should be continued by the alternate method, first mercury and then potassium iodid. If the effect is moderate with sufficient previous treatment, it should be suspended and resumed three months later. In the general formula for the treatment of syphilis, the specific medication should figure twice a year, in the spring and fall, each time three months. The antiarthritic treatment includes alkalines, iodids, arsenic, etc. They can be combined by giving 50 centigrams of alkaline iodid in solution at the two principal meals of the day, also a powder containing 50 centigrams of salol and 50 centigrams of sodium bicarbonate. The ten days following, give instead 50 centigrams of lithia salicylate in a wine-glass of alkaline water. The last ten days of the month the patient can rest or take twice a day 5 drops of Fowler's solution, or 50 centigrams of sublimed sulphur. The sclerosis can be combated with iodin preparations in antiarthritic, not antisyphilitic doses; silver salts if there is intolerance for the iodids, and lastly with ergot, although the latter may exert a depressing influence on the spinal cord or favor the development of gangrene. Large doses and too long continued use must be avoided. Medullary fluxion is the indication for it in tabes, consequently it is the medicament for acute or subacute attacks; much less useful in chronic cases and injurious in recurrences. If it is alternated with the iodid, it can be given three days each week or five days in two weeks, prescribing 5 centigrams morning and night the first day, and increasing by 5 centigrams each day up to 15 or 25 centigrams *pro die*. The diet is important, and if the sclerosis has invaded the kidneys very much an absolute milk diet should be imposed for a certain length of time. He treated of suspension and electricity as local treatment for the spine, and the necessity of seeking some remedy for the pains, with morphin as the last resort, never giving the syringe to the patient. He mentioned that the gastric crises can be treated with cerium oxalate, 5 to 15 centigrams three or four times a day, although his preference is a mixture of equal parts of chloroform and tinct. iodi. 3 to 4 drops two or three times a day. Injections of artificial serum can now replace the Séquard medication and nervous transfusion for the amyosthenia and asthenia. For this tonic medication, massage, hydrotherapeutics and electricity are applicable. The ataxia can be combated with the Frenkel method of re-educating the muscles, which Erb confirmed, stating that this constitutes the one advance in the treatment of tabes of late. The neurotic phenomena are more important in the symptomatology of tabes than has heretofore been realized. The first and the principal means to conquer them is suggestion. Local troubles, trophic, circulatory, etc., require special therapeutics. Raïchline stated that tabetics need substantial food, fresh air and rest, the same as tuberculous patients. Eulenburg rejects antisyphilitic treatment unless there are other indications that it should be prescribed. Dr. Daniel R. Brower of Chicago urged the importance of climatic treatment of tabes. A warm, dry climate without sudden vicissitudes, should be sought by the tabetic. If it is not a case of extremely gradual development, a sea voyage allowing abundance of pure air without exertion often results most favorably. Rest he added is another important factor in the cure. When the disease develops rapidly, immobilization in bed for six to eight weeks with daily massage and faradization of the muscles proves extremely effective. In cases that have developed rapidly, or cases with recent syphilitic antecedents, energetic specific treatment gives good results, but in his experience it has been rather deleterious in cases that develop slowly, or in which the infection is of long standing.

We translate in full Marinesco's address on the

PATHOLOGY OF THE NERVE CELL.

After remarking the great progress accomplished during the last ten years in our knowledge of this subject, thanks to Golgi, Flemming and Nissl, he spoke of the discovery of the chromatophilous element in the protoplasma of the cell, so called from its affinity for aniline stains, and continued: "These elements vary in shape and size with the different cells, but this is due, as I was the first to proclaim, to the structure and arrangement of the achromatic elements. This achromatic substance is composed of an organized part and a fundamental substance, as has been demonstrated by Flemming, Becker, Levi, Lugaro and myself. The organized achromatic substance is found in a large number of cells in the form of fibrillæ, and in the interior of the cells, in the form of a very delicate network. The fibrillæ of the prolongations are lost in, or rather continue into the cytoplasmatic network. In the spinal ganglia of the dog, after certain pathologic processes, the fibrillæ of the axis cylinder are plainly to be distinguished crossing the neck of the cell-like radiating bundles, whose fibrillæ give out collateral ramifications and disappear, the network of the cytoplasma. The crossbars of the network are inserted in the periphery of the cell or in the wall of the nucleus. The chromatophilous elements are molded by the shape of the interstices in the network, and hence the shape of these depends upon the shape of the interstices. The fibrillary part of the nerve cell serves for conducting, while the chromatophilous part owing to the chemic phenomena that occur in it, has probably the function among others, of increasing the potential energy of the current. We owe to Nissl the great discovery which was the starting port for the histo pathology of the nerve cell. He demonstrated that section of a sensory or motor nerve entailed a disintegration of the chromatophilous elements, a process to which I applied the term chromatolysis. It had been assumed since Waller, that the central end of a nerve and its center of origin remained intact. These secondary lesions consecutive to section of a nerve present a special type and differ from those determined by the action of the various toxic substances on the nerve cell. I have studied the different phases through which the nerve cell passes after section of the nerve: first, the reaction and then regeneration, or if this fails to appear, degeneration and atrophy. I have only been able to observe the reparation phase experimentally in animals in which the regeneration of the resected nerve occurred normally. I observed that it is characterized by a progressive hypertrophy of the nerve cell. The lesions of the nerve cell produced by the direct action of poisons are extremely variable, forming a marked contrast with the uniform type of the secondary lesions. The intensity of the poison and the variety of cell explain in great measure the variable reaction of these elements to toxic substances (Nissl, Marinesco). This field of primary lesions is so extensive that I will restrict my observations to the lesions produced by experimental anemia, by rabies, botulism, alcohol and tetanus, which have been the special objects of my researches. In experimental anemia, realized by ligature of the abdominal aorta, a peripheric chromatolysis in certain cells of the anterior cornu is observed; in others the coagulation of the cellular protoplasma brings out a shining network, that stains highly with methyl blue. Some cells, especially when the anemia is of long duration, show a destruction of the achromatic substance with fragmentation of the cell and its contents. Gaps and cavities can be seen in the interior of the cytoplasma. Rabies produces very distinct and characteristic lesions; but their intensity and form depend upon the intensity of the virus as in any other intoxication. It is in rabies that I have observed most distinctly the peripheric chromatolysis, which sometimes is so extensive that nothing is left of the chromatophilous elements but a very dense and highly colored perinuclear layer. This disappearance of the chromatophilous elements renders the structure of the achromatic substance very prominent, plainly showing the network with its rather large meshes. Destruction of the cross-bars of this cytoplasmatic reticulum results in the formation of cavities in the interior of the cell. This destruction is followed by the destruction of the axis cylinder and its prolongations, owing to the continuity which exists between the cytoplasmatic network and the fibrillæ of the latter. It is for this reason that lesions of the achromatic substance are serious and most probably irreparable. Babes and Sabrazès have found lesions in the cord of individuals who have died from hydrophobia. Lesions of the nerve cells produced by the toxin of the bacillus botulinus resemble, in some respects, those produced by rabies. Their maximum is found in the spinal cord and in the gray bulbar nuclei. The first stage of the lesion consists in the rarefaction and the disappearance of the chromatophilous elements. The lesion starts in most cases in the periphery of the nerve-cell, showing a more or less complete belt free from chromatophilous corpuscles. In a more advanced stage the chromatic substance is reduced to granulations of varying size or into fine powder. This is diffuse chromatolysis. As the degenerative process continues its evolution we can see in certain cells a tumefaction of the prolongations with deep color, and even holes in the interior of the cell owing to destruction of the achromatic substance. I must add that the neuroglic cells, considerably multiplied, join with the leucocytes to play the part of neurophagi—agents destroying the altered nerve cell. It was an interesting question to decide the effect on the nerve cells of repeated doses of alcohol, administered by the stomach or the veins. For this purpose I injected a dog of 7.5 kg. weight, with 100 grams of 50 per cent. alcohol in two days. After each injection the animal fell into a state of somnolence, and when he awoke manifested the phenomena of drunkenness. I found in the cells of the anterior cornua very marked lesions consisting in the disintegration and atrophy of the peripheric chromatophilous elements. In some other cells the lesion was localized, mostly around the nucleus. Tetanus determines characteristic lesions in the guinea pig at a certain period of its evolution. They are localized in a region occupying the quarter, the half or even three quarters of the cell, and usually on the side of the axis cylinder. I failed to encounter this lesion in rabbits inoculated with Brieger's toxin, with spasms of local contractions. The bacillus of the bubonic plague also determines in the cord of the guinea pig lesions studied by Babes and Lugaro—their conclusions confirmed by myself. In the less altered cells there is diffuse or peripheric chromatolysis. At a more advanced stage cavities or gaps form in the interior of the cell, by the destruction of the achromatic substance, and the great change in the nucleus renders these lesions absolutely irreparable. The vessels contain the bacilli of the plague which, Babes asserts, can even penetrate into the nerve cells. We have not confined our investigations to experimental research. Pathologic anatomy of the nervous system in man has revealed in many instances important lesions. The severe infections affect almost always the central nervous system and determine more or less serious lesions. In two cases of Landry's paralysis, examined with Marie and Ettinger, we found considerable lesions not only in the vessels of the cord, but also in the nerve cells. Other authors, Ballet, Dutil and Bodin, have found lesions of the nerve cells in Landry's paralysis. Other infections like pneumonia, typhoid fever, "granulia," are accompanied by lesions of the central spinal system, even when the functional disturbances are not sufficient to attract the attention of the physician."

Gaucher concluded his address in the Section of Dermatology with the statement that dermatology and syphilography should by no means be confined to a specialty, as no branch of medicine requires a more extended knowledge of general pathology. There is no tissue and no organ exempt from the possible action of syphilis, for instance. Much of what used to be called scrofula: ocular, aural, nasal, pharyngeal and osseous lesions, meningitis—only to be distinguished from tuberculous meningitis by its curability—hepatic and pulmonary lesions, etc., are now recognized as more or less tardy manifestations of inherited syphilis, while this disease dominates the entire field of nervous pathology. One of the new facts established is that we must not conclude from the absence of the microbe that an affection may not be caused by it. This applies particularly to tuberculosis and to leprosy, as Zambaco Pasha has recently established, proving the existence of aborted leprosy. Such is Morvan's analgesic panaris and certain cases of syringomyelia. The microbes not only act directly, but through their products. Many cases of exfoliating dermatitis are in fact a toxidermia, usually an unrecognized hydrargyria. It is through the nervous system that all the toxidermias and pathogenic eruptions develop. In infections also the nervous system is the intermediary between the microbian toxin and the cutaneous affection. Eruptions of the vesicular or bullous type are directly under the dependence of the nervous system. He also observed that dermatoses from auto-intoxication include all the cutaneous affections formerly called diathesic, so that the old theories persist, rejuvenated under the new name.

The usual discussion of "Appendicitis" elicited nothing new, although Roux observed that the reason he had never attempted to copy the Americans was that in his country the physician did not often arrive in time to operate in the first hour, which would be the ideal if every one lived in a hospital. Grinda proclaimed the superiority of an incision following the external edge of the sacrolumbar mass, curving in below, and carried parallel to and just above the iliac crest to a point 3 cm. from the anterior superior iliac spine. It is advantageous in all cases of retrocecal abscesses and when the location is indetermined. It opens up the cecum and appendix by the most direct route, avoiding loops of the small intestine, and ensures perfect drainage. In the question of "Hernias," Duplay and Cazin stated that time had confirmed the value of their method of radical cure without buried sutures, as performed on thirty-three patients. Twenty three can be considered absolutely cured; the rest only date from a few months. The sac is not resected, but utilized to tie, splitting it and tying it again and again in superposed knots (*vide* Journal, Vol. xxvii, p. 1318). The solidity thus obtained is extremely satisfactory.

A "Study of the Properties of Formol and of Parachlorophenol" was presented by Le Dentu of Paris, who announced that the sterilizing power of formol being twice that of sublimate, a 1 to 200 solution was ten times as energetic as a 1 to 1000 sublimate, solution. Also that formol has a most extraordinary deodorizing power. Gangrenous tissues lose their fetidity at once in contact with a 1 to 200 solution. It is valuable for the immersion of instruments in this proportion, as it does not affect them. I know nothing that can equal it for washing infected wounds, and I have always found the 1 to 200 solution well tolerated.

Laache of Christiania reported three cases of anuria, the urinary secretion ceasing completely for six days, with symptoms of obstruction from some mechanical obstacle. Venesection was performed and all the accidents disappeared, the diuresis amounting in one case to eight liters in twenty-four hours. He usually withdraws 400 grams, but in two cases he allowed one liter to be taken. Pick advocated venesection in pneumonia and cerebral hemorrhage, but in uremia prefers a rectal injection of a 10 per cent. salt solution, which Pisek endorsed, as the effect of venesection is transitory. Ughetti announced that pure uremia is always characterized by a lowering of the temperature, and hyperthermia is always due to some concomitant cause, convulsions or acute inflammation, not to any substance contained in the urine.

THE RÔLE OF THE VESSELS AND PARENCHYMA IN INFLAMMATIONS, was the subject of Virchow's address in the Section of Pathologic Anatomy, a comprehensive review by the master of the evolution of the present conceptions of inflammation. He referred to his still disputed assertion that the fibrin in exudations is a product of the parenchymatous metabolism and does not proceed directly from the blood, as generally assumed. He also called attention to the distinction between inflammatory and non inflammatory fatty degeneration. In the latter the cells pass at once from their normal into the fatty condition, which is merely a disturbance in nutrition, while in the former the inflammation consists in the intermediate stage of "cloudy swelling," which precedes the fatty degeneration. He grouped the main points in conclusion as follows: 1. Inflammation as we are able to define it now is not a single process with constant characteristics. 2. At least four varieties of inflammation can be distinguished: the exudative, the infiltrative, the parenchymatous or altering (metamorphosis or degeneration) and the proliferating. 3. The necessity of grouping these different varieties under one head is more diagnostic than scientific. We merely wish to distinguish inflammatory exudations, infiltrations, degenerations and neoplasms from the non-inflammatory. This diagnostic interest is strengthened by the therapeutic, in so far as the different varieties of inflammation require a certain similarity of treatment. Although the antiphlogosis of the present has not been able to retain the simplicity of the older methods, yet treatment even in the future will proceed on analogous lines to a certain extent, although perhaps no longer from one simple or the identical standpoint. 5. The condition of the vessels and of the local circulation is a source of considerable difference in the various kinds of inflammation. While inflammatory hyperemia seems to be in exudative and infiltrative inflammations, a chief cause of the disturbances that appear, it plays a subordinate part in degenerating and proliferating inflammations. The different course of the inflammation in vascular, extremely vascular and non-vascular tissues must also be borne in mind. 6. The condition of the parenchyma is likewise subject to no less important variations. The exudative inflammations entail the least, proliferating and degenerating the greatest, changes in the parenchyma. The infiltrative resembles more the exudative, but there is no inflammation in which the parenchyma is not involved to some extent. In many cases this participation is principally passive, as in the increased friability of the lung tissue in exudative pneumonia and the destructive effect of some infiltrations. In other cases, as in the secretion of mucus, the parenchyma produces through the activity of its cells the larger part of the exudation. 7. The character possessed in common by inflammatory alterations in the vessels and in the parenchyma is that the foundation for the alteration is to be found every time in an irritation which starts certain activities into operation (action, reaction). The first consideration of the diagnostician should therefore be to determine whether the process is fundamentally an irritative one or not. 8. The irritation involves nerves as well as vessels, specific as well as non-specific parenchyma. It varies according to the constitution of the irritated parts and the nature of the irritating influence. These injurious influences are sometimes of a mechanical, but far more frequently of a chemic nature. The irritating effects of many bacteria proceed from their chemic products. 9. The not unjustified comparison of inflammation to fever, founded on the rise in temperature of the outer parts, does not apply to inflammation in general but only to the fluxion to the inflamed part. The modern opposition to the essentiality of fever stands in the same line with the opposition (not very widespread as yet), to the singleness of inflammation. There are feverish diseases and there are inflammatory diseases, but there is no separate existence of fever alone as there is no separate existence of pure inflammation. The address will be found in full in the *Therap. Woch.* of August 29.

Gley and Ewald delivered the addresses on myxedema, the former dwelling on the importance of Baumann's discovery of iodothyrin and his own researches, which with others have determined the fact that the thyroid gland is not single, but that there is a thyroid system, including four accessory glandules. The extirpations of the gland which have not been followed by accidents are simply due to the fact than one or more of these parathyroid glands were left. Surgeons in future should learn to locate these glandules so as to leave one or more of them intentionally.

British Medical Association.

Proceedings of the Section on Public or State Medicine at the Sixty-fifth Annual Meeting, held at Montreal, Canada, August 31 to September 4, 1897.

(Concluded from page 646.)

Thursday, September 2.

The session convened at 10 o'clock, with the President, Dr. Lachapelle, presiding.

The first paper presented was

OBSERVATIONS ON POLLUTION OF GROUND AIR,

by Dr. James MacLoud of Charlottetown, P.E.I. He described the drainage system of his city of 12,000 inhabitants, deprecated the idea that Charlottetown has no well defined system of sewers, and that the arm of the sea upon which the city is built is polluted by sewage, poisoning their water to the imminent danger of public health. The paper was briefly discussed by Drs. Bryce and Oldright of Toronto, the latter stating that soil pollution had occurred in his city, caused by a broken "main." He illustrated a case of this kind where a medical gentleman's health was so seriously impaired that he recovered damages from the city.

The next topic was considered by Dr. F. Montizambert (Superintendent of the Canadian Quarantine Service, Grosse Isle, Quebec),

ON THE UTILITY OF QUARANTINES AS NOW CONDUCTED.

The general consideration of infectious diseases in connection with the subject of this discussion divides itself naturally under two heads: The prevention of disease from without getting into the country, and the dealing with it once it has entered in. A system of arresting disease at the coast and frontier entrances, and a system of preparedness in the interior communities. Neither of these is sufficient without the other. Coast quarantines and inland health organizations form the double line of sanitary defense. The interior communities ughout the length and breadth of the land have an interest, nd a very close and vital interest, indeed, in the fittings and orking of the quarantine service at the various ports of entry. But confidence in a quarantine system, however perfected, must never be allowed to lull us into a false sense of security to the neglect of striving ever more and more toward the sanitary improvement of the cities, villages and districts in which we dwell.

From the long period of incubation of some of the infectious diseases, and the relative shortness of the voyage from many ports outside the country, occasional cases of infectious disease in the stage of incubation, and the micro-organisms of disease lurking in unsuspected clothing or merchandise, may pass from time to time, in an invisible and unrecognizable stage and condition, the most efficient quarantine that is practically possible. This can not be entirely avoided without such routine detention of vessels and passengers at the ports of arrival, such routine disinfection of all clothing and merchandise from abroad, and such consequent interference with travel and traffic as would be altogether unjustifiable and impracticable. Quarantines must not be expected to do the impossible; nor must they be leant upon as an excuse for lessened effort inland. But, admitting this, they certainly may be depended upon for dealing with actual cases of infectious disease, with infected vessels and effects, and with those suspected of being infected. In this way they strain out and protect the country from a very large percentage indeed of the exotic disease which threatens it from time to time. And thus they do a great and invaluable work.

In the first place, healthy persons arriving at our ports in infected vessels may be held under "observation" at our quarantines during the accepted period of the incubation of the disease in question from the ascertained date of last possible exposure. In Great Britain, from her comparative smallness in area, the number of her ports, the extent of her shipping, the almost continuous influx of passengers from the Continent, the shortness and compactness of her railway systems, the completeness of her inland sanitary organizations, and the perfection to which the sanitary condition of the homes of our people has been brought, this precautionary "observation" at the port of arrival is replaced by "surveillance" at the place of destination. In Great Britain the ports are so numerous that to equip and maintain quarantines at them all would probably cost more than the average annual expense in money of letting in disease and fighting it inland; in Canada there are practically but four sea-gates of passenger entry from abroad, St. John, Halifax and the St. Lawrence on the Atlantic side, and the Straits of Fuca on the Pacific side. In Great Britain the rapid crossing in a few hours of passengers from the Continent offers no parallel conditions for the spread of disease amongst such passengers to those obtaining in an infected vessel, possibly crowded with emigrants, during a passage of nearly three weeks from Asia, or one of more than a week from Europe, to Canada. In Great Britain the place of destination is presumably reached within the first day after landing; in Canada it may not be reached until after a week or more of continuous railroad traveling. In Great Britain it may be possible to isolate suspects in separate compartments of the divided railway carriages during the short journey from port to destination; in Canada during the possible many days travel in our large and undivided cars no such isolation would be practicable; but with the constant coming and going of passengers into and out of the cars at every station and cross-line, any infectious disease would be liable to be spread broadcast through the country. In Great Britain the inland sanitary organizations and the sanitary condition of the homes of the people are considerably nearer perfection than they are, as yet, in this country.

For such reasons as these Canada can not depend to the same extent as Great Britain upon inland "surveillance," and "observation" of suspects at quarantine must form part of our system of protection. Accordingly, in becoming a party to the Dresden Sanitary Convention, this country accepted its conclusions fully, and without the reservation made by Great Britain in her own case, that healthy persons landing from infected ships should not be detained.

In the second place, under the regulations in the United Kingdom no mail matter, except that by parcel post, is liable to detention or disinfection; in Canada disinfection of the mails is not forbidden, and is sometimes considered necessary. Notably is this the case, for instance, for the local mail arriving at Victoria from China. But little is known of the sanitary conditions in the interior of China, and that little is anything but reassuring. The disinfection of the mails from that country is, therefore, considered advisable.

In the third place the regulations of the Local Government Board for ports in the United Kingdom limit the term "infected" to infected with cholera, yellow fever or plague.

Under the Canadian regulations actual cases of any of the infectious diseases are removable at quarantine so as to prevent the importation of new cases, even of the minor diseases, to become fresh centers for the spread of infection throughout our country. And the arrival of all classes of infectious disease is notified inland from our coast quarantines. Under this head perhaps the most noteworthy difference between the two countries is with regard to smallpox. In the Canadian regulations smallpox is included amongst the graver forms of infectious disease, and there are indeed special regulations concerning it. According to the English regulations, and the English usage, as reported to me, a vessel arriving at a port of the United Kingdom with smallpox on board, is not considered an infected vessel at all. In Canada the protection of the people by vaccination is not sufficiently complete and general to justify us in excluding smallpox from our meaning of the term "infected" as applicable to vessels and persons arriving at our sea-ports.

With regard to our minor ports, and our land frontiers, we have regulations which can be fully amplified should an emergency so require. But with respect to the importation of disease from Europe, Asia, Central and South America, etc., via the United States and across the frontier, we put our main dependence upon their protection of themselves by the well-worked quarantine of our southern neighbor, such as those of Boston, New York, Portland and New Orleans, and their admirable national quarantine service.

Dr. J. A. Duncan, secretary of the Provincial Board of Health of British Columbia, in the discussion dwelt particularly upon the plan of preparing the ship and passengers in health at the starting point in China or elsewhere, and that quarantine stations of foreign countries should be thoroughly equipped. The recommendations he submitted would prevent delay at the strait of Juan de Fuca and other ports along the Pacific coast.

Dr. S. MONCKTON COPEMAN of London, England, referred to the threatened cholera invasion in 1893 in England, and the plan in vogue to resist the invasion of the disease in his country by the efficiency of the medical men in the Public Health service.

Dr. A. R. REYNOLDS, Commissioner of Health, Chicago, pointed out the utility of the quarantine system that was practiced in New York City during the summer of 1893. The result was, when we were receiving people and guests from the world over, not a single case of cholera developed in Chicago during the World's Fair.

Dr. HARVEY LITTLEJOHN of Edinburgh thought there was no practical difference in the quarantine system of the countries either in the United States, Great Britain or Canada. What ever difference or system adopted in the United States was accounted for by circumstances arising at the time such system is in effect.

Dr. FELIX FORMENTO of New Orleans, La., spoke of the State quarantine that is in vogue in the State of Louisiana. He advocated that in some States they are very well able to protect themselves. He also argued that there is much to be said *pro and con* in the matter of the United States Government taking charge of State sanitation. In New Orleans, yellow fever is constantly threatening us, and we must protect ourselves from foreign invasion of that disease. Since 1878, however, we have had no yellow fever in the city of New Orleans except one or two cases in 1879, and possibly one or two cases in 1882 and 1883. Maritime sanitation is the term that should be used when the Federal Government takes hold of this matter. We have gradually modified the system of detention by disinfection of a ship so that three days' observation is the minimum limit of detention of passengers. This will protect public health and commerce, and in this we have been successful. This is American sanitation.

Dr. WOLFRED NELSON of New York—Constant vigilance is necessary in the South for yellow fever. On the Isthmus of Panama the distribution of yellow fever occurs continually, and if it were not for the magnificent quarantine system in some of the Southern cities, the South would be swept by it.

SOME ALLEGED DANGERS OF VACCINATION AND THEIR PREVENTION,

was read by Dr. S. MONCKTON COPEMAN, Medical Inspector to the Local Government Board, London, England.

The writer maintained that the main practical danger arose from the uncleanly habits of a patient (vaccine). Microbes could be excluded by the use of glycerinized lymph, although the vaccinator should use precautions in having his instruments and hands clean. If the elementary principles of cleanliness are carried out by the operator and the quality of the lymph product pure, no danger from the operation will ensue. The diseases that have been known to occur, if these precautions are not observed, are erysipelas, abscess and septicemia. The transmission of syphilis and leprosy can not be gainsaid. Septic inoculation may be accomplished by the instrument or hand. If erysipelas should develop, it will arise within three days of the operation. Vaccinia occurs in a certain number of cases. Comparing the percentage of deaths due to chloroform, ether and anesthesia to those due to vaccination, the preponderance of deaths attributable to the former is greater than could be attributable to vaccination, and yet we would not be without anesthesia. In England fifty deaths occur every year attributable in one way or another to vaccination. Some writers deprecate the inoculation of calf lymph, but a person need not be required to submit to vaccination unless it is procured from the calf. The writer's method of procuring the lymph from the calf and preserving it consists in the well-known method of preparing it with 50 per cent. of chemically pure glycerin and sterilized water. This will insure the absolute extinction of all germs and render it free from pathogenic bacteria of erysipelas, tuberculosis, etc. Scientific observation and official recognition is in favor of calf lymph.

Dr. A. R. REYNOLDS, Chicago—The use of recent glycerinized lymph bids fair to do away with the fear of vaccination, as it remains pure for sixty days, and is growing in favor every year.

Dr. WYATT JOHNSTON of Montreal contributed "Some Notes on Room Disinfection by Formaldehyde," or, "Experiments in Household Disinfection." The paper was read by Dr. Littlejohn in the absence of the author. The desiderata obtained from its use are freedom of injury to the goods treated. Its penetration is more powerful than the fumes of sulphur. The apparatus and its use was shown by Dr. D. D. MacTaggart of Montreal. It consisted of an air-tight tent which is used to place the goods in, and the condensed formalin vapor escapes under a pressure of fifteen pounds.

THE RELATIONSHIP OF THE HEALTH OFFICER TO THE REGISTRATION AND CERTIFICATION OF DEATHS

was read by J. R. Kaye, M.D. He advocated reform. A portion of his paper was historic. In 1837, in London, the act was decreed that certification of death be required, and the Registration act and great act in London, 1875, enjoins upon medical men to certify, to the best of their ability the cause of death, and specifically so, and not to use ambiguous terms, and to do away with significant symptoms as a cause of death such as jaundice, dropsy, hemorrhage, etc.

Dr. P. H. BRYCE—In Ontario, the act of two years ago requires that the householder and attending physician certify and both be satisfied as to the cause of death. This makes the correctness more accurate and illegality less liable to occur.

Dr. THOMAS CARR of Essex, Eng., and the author closed the discussion by stating, that registration in England is completely carried out, and that all returns should be made to the Health Officer for transmission to the registrar general.

The subjoined list of papers were read by title: "The Sanitation of Militia Encampments" by Dr. W. Henry Egle of Harrisburg, Pa.; "Tuberculosis in Animals in Relation to Human Tuberculosis," by Dr. G. de Schweinitz, Director of the Biochemic Laboratory, Department of Agriculture, Washington, D. C.; "Consumption in Australia," by Lane Mullen, M.D., of Sydney, Australia; "Notes on Bermuda as a Winter Resort," by Eldon Harvey, M.R.C.S.; "A few Observations on Bermuda," by Surgeon-Captain H. A. Cummins.

FRIDAY, SEPTEMBER 3.

The Section was called to order at 10 A.M. with President LACHAPELLE in the chair.

The first paper,

ON THE DIFFERENT PROCESSES RECOMMENDED FOR THE TREATMENT OF SEWAGE,

was prepared by Mr. GEORGE JANIN, C.E. (formerly of the Corps des pontes et Chaussées of France), Montreal and was read by Dr. C. De Martigny.

The author described the various attempts which had been made in other countries to purify sewage, with the indifferent results attending the same. The soil is the instrument of purification, although air and water may move the sewage, and by so doing a phenomenon of slow combustion goes on and is the best method of purifying sewage. Mr. Janin is an enthusiastic exponent of purification through filtration or irrigation in this method of permeable soil. The effects of this in France and Germany were set forth as abundantly successful, both from the hygienic and economic points of view. Some of the chief features referred to were, that the town, city or municipality secures a certain amount of land into which the sewage is poured by means of ditches. The porous nature of the soil permits percolation, while simultaneously the chemic properties of the earth render the sewage matter innocuous in its passage, the result being that the effluent, when it reaches the stream or river into which it is to finally empty itself, is free from organic impurity and does not in the slightest degree contaminate the water with which it mingles. As for the economic results it was pointed out that in France and Germany great profits had accrued from land so treated, the crops being nearly double and the greatest eagerness being displayed to acquire purification on land, as it is called, in the neighborhood of large cities. If there had been any failures in the instances in which the system of filtration or irrigation had been employed it was not owing to the principle involved in the system itself, but to an improper application of those principles. The system is approved by all the great sanitarians of both France, Germany and England and he instanced the case of England particularly, because in that densely populated country, with its large cities and the comparative smallness of its rivers, it had been found necessary to pass a "Rivers Pollution Act," and several systems had been tried to comply with the terms of that act, soil purification being finally accepted by those in authority as the best and indeed the only system [illegible]

Dr. HARVEY LITTLEJOHN of Edinburgh, [illegible] with Mr. Janin that the system which he [illegible] the only one from which complete success could be expected. Sewage has been so treated in England and Scotland during the last ten years. Precipitation by lime was adopted many years ago, although no known precipitation is reliable. No doubt the urgency of this matter is not so great in Canada and in the [illegible] States [illegible] was [illegible] glance, but still, if he [illegible] oul [illegible] t [illegible] the time to begin to make provision for the purification of their sewage in large centers of population, while their beautiful rivers and lakes had not become as the rivers and lakes in older countries had been allowed to become, simply sewers, past cure or hope. The passing of the "Rivers Pollution Act" in England made it incumbent upon local authorities to exert themselves to devise a scheme for sewage purification. Indeed, the local government board had brought pressure to bear upon the municipal authorities with the result that several experiments had been tried, such as precipitation, but that which had given most satisfaction was the soil irrigation. The difficulty, however, in England was that land was enormously dear, so dear, indeed, as to preclude the possibility of its being purchased in many instances, certainly in the case of land situated close to large centers of population, by the municipal authorities. Land is still comparatively cheap in this country and he thought now was the opportunity to provide for the future.

Dr. Wm. Oldright mentioned that filtration by irrigation has been successfully introduced in London, Ont., and that crops raised there were very valuable because the irrigation was the best he had ever seen.

Dr. P. H. Bryce added his testimony to this fact also, viz., that the action of the asylum authorities at London, Ont., where the experiment of sewer purification by the soil had been to such an advantage that potatoes raised upon the land thus irrigated averaged a value of $300 per acre, wholesale price. To conduct a sewage farm with success, the sand should be sharp and the sewage poured on; the running of the water would not be interfered with by our winter climate.

Dr. De Martigny explained that in several of the towns in northern France and Germany the experiment had been successfully carried out in the winter, when the frost was three feet deep in the ground, while the crops resulting from the land thus used were wonderful in their increase.

Dr. C. O. Probst—In Ohio broad irrigation is not used. There is not a river in the State that has pure water, and we will have to face this question. Alum treatment will precipitate the sewage and by that means we can purify the water, but the expense attending this is great. He then instanced the cities in that State where this had been tried.

Dr. J. C. Shrader of Iowa City, said that in his State it is a very difficult thing to purify the streams, or prevent the contamination of the waters. So far as the Mississippi and Missouri Rivers are concerned, it has never been attempted.

Dr. H. J. Herrick of Cleveland, Ohio—This question is occupying the attention of the world. Cleveland with her 400,000 inhabitants, drinking the water from Lake Erie, suffers at times from the lake water becoming bad. I believe that the system suggested by the author of the paper is the best one. Nature takes care of the sewage by oxidization, sedimentation and aeration. Then the disinfection takes place in the soil below. We should secure a large surface to do this.

Dr. Woods Hutchinson of Buffalo thinks that admission of air to soil is a desideratum necessary, and that the micro-organisms should have credit for a portion of the work they perform, for were it not for the purifying action of these bacilli in the soil this experiment or irrigation would be a failure resulting in the poisoning of the soil and the contamination of the district with disease germs.

Dr. Alexander Johnston—The present process consisting of precipitation of sewage by lime and alum has been discarded; that is, lime has been discarded and final filtration is made through a sand base. The difficulty really consists in irregular discharges of sewage, and its treatment by chemic processes can not be correctly done.

The next paper was

RESULTS OF MECHANICAL FILTRATION PLANTS IN ONTARIO,

by Dr. J. J. Mackenzie (Bacteriologist Provincial Board of Health of Ontario). The author referred particularly to the methods in vogue at St. Thomas, Ontario, where the water was purified to the extent of 96 to 99 per cent.

Dr. C. O. Probst instanced the experiments by the dual mechanical filter that had been tried at Lorain, Ohio, situated on Lake Erie, where during the first week 2.58 grains of alum to the gallon of water was used and showed such bacterial deficiency that the water was 98.9 per cent. pure. During the second week 2.50 grains of alum were used and the water was 98.4 per cent. pure. In the third week, when 2.27 grains were used, the water was 97.5 per cent.; in the fourth week, when 1.7 grains were used, the water decreased to 90.9 per cent., and the fifth week with 0.94 grains the water decreased to 86.3 per cent. It would cost $5,000 per year for alum alone in that place to procure pure water.

The succeeding paper, by Dr. F. F. Westbrook, Bacteriologist, State Board of Health of Minnesota, was entitled

A PRELIMINARY COMMUNICATION ON THE BACILLUS OF EPIDEMICS OF DIPHTHERIA.

The author cited one case where seventeen examinations of the secretions of the throat in one child had been made, covering a period of 181 days, in which fifteen of the examinations showed the typical bacillus diphtheriæ. Antitoxin and corrosive sublimate solution, 1 to 1000, and even 1 to 250, failed to remove all the bacilli diphtheriæ in this case. The paper dealt largely in statistics regarding the typical and atypical variety of the bacilli and how children may be reinfected.

The next paper, by Dr. E. B. Shuttleworth, Bacteriologist to the City Board of Health of Toronto, was

OBSERVATIONS ON THE ETIOLOGY OF DIPHTHERIA.

In 1,000 cases tabulated by the author he showed that in Toronto the throat and tonsils are prone to the disease.

The following papers completed the program: "The Future of Public Health, Judged by a Quarter of a Century's Experience of its Past," by Dr. C. N. Hewitt of Red Wing, Minn.; "Paper on Yellow Fever," by Dr. Wolfred Nelson of New York.

PRACTICAL NOTES.

Orthoform, a New Local Anesthetic, does not substitute cocain, but has a field peculiar to itself. It is absolutely non-toxic; applied as a powder it produces a slow progressive anesthesia wherever there is solution of continuity, lasting hours and days. It has no effect upon sound skin or indurations, but in all burns, wounds, fissures, ulcerations, excoriations, etc., it abolishes sensibility, diminishes the secretions and exerts a pronounced antiseptic effect. Orthoform is a methyl ether compound of amidoxybenzoic acid, discovered by Drs. A. Einhorn and R. Heinz of Munich. In combination with hydrochloric acid it forms a soluble salt which can be administered internally, ½ to 1 gram several times a day, to remove the pain in cancer and round ulcer of the stomach. Intra-urethral injections in chronic gonorrhea have also proved effectual.—*Semaine Méd.*, September 1.

Cocain as a Safeguard in Anesthesia by Chloroform.—A London chloroformist claims that the trigeminus is responsible for the dangers to the heart and respiration by the reflex irritability of its terminations at the mucous membrane of the nose. His method is to anesthetize the nasal mucous membrane, which is done by requiring the patient to blow his nose and then, leaning forward or sitting, but never lying, to sniff a centigram of a powder consisting of 10 per cent. of cocain hydrochlorate and some inert substance. Repeat in about three minutes, and begin use of chloroform. In fifty cases in which cocain was employed in this manner the conclusions were: The commencement of anesthesia is less disagreeable to the patient, who never makes defensive movements; oftentimes the excitement stage is wanting, and is always slight, except in cases of alcoholics; during anesthesia the patient rarely vomits, and if vomiting does occur it is accompanied with slight retching; upon awakening the patient experiences no disagreeable sensation and is not troubled by the after-smell of chloroform or ether.

The Toxin of the Gonococcus has been isolated by Wassermann from the dead cocci. It is so virulent that the smallest amount produces inflammation at the spot where applied, fever and violent pain in the muscles and joints. This discovery explains the phenomena which occur in gonorrheal affections even after all the cocci have disappeared. The best medium for cultivating the gonococcus has been found to be the albumin of animal serum. He prevents coagulation when heated, the principal difficulty hitherto, by the use of nutrose (casein, sodium phosphate). 15 c.cm. pig serum are mixed with 30 to 50 c.cm. water, 2 c.cm. glycerin and 2 grams nutrose, added and sterilized over a spirit flame. This is enough for six or eight plates. He concludes by liquefying a few 2.5 per cent. agar tubes, and he has then a culture medium in which the gonococci thrive finely. He succeeded in isolating the toxin by adding peptone bouillon to the cultures and killing them after a three days growth.—*Deutsche Med. Woch.*, August 12.

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SATURDAY, OCTOBER 2, 1897.

INTERNATIONAL MEDICAL CONGRESSES.

Among the medical events of the present year, which has been in this respect a rather notable one, the International Medical Congress at Moscow ought not in the natural order of things to be considered the least. Its cosmopolitan character, drawing its attendance from all countries, and presumably from the most eminent in each, ought to give it a rank amongst medical conventions well above any merely national and annual gathering, and should lend to its deliberations an equally enhanced importance.

It is doubtful, however, whether there has been, at least of late years, an international congress that has met expectations, or that has not in fact been a disappointment to an extent much beyond the mere failure to reach some very high ideal. The causes for this are numerous and some of them have been recently summarized in an editorial in one of our French contemporaries, the *Medical Week.* It finds that this, like other congresses, failed in organization, and that the adoption of four official languages was a serious embarrassment, crippling discussion, as comparatively few of the attendants, even amongst the Russians themselves, who are as often as any others accomplished in this direction, were such polyglots as to be able to intelligently follow all the communications. This is and will be an embarrassment in any international meeting of the kind till some one or two languages become universal, and must have been especially felt at a meeting in a country like Russia, whose vernacular is almost as unknown to foreigners as the Hungarian or Japanese. The protests against the restriction of the polyglot privileges in the late Congress are fresh in everyone's recollection, and the adoption of the four official languages was practically a necessity, but it was none the less an embarrassment. Such a gathering will probably have to continue to be a sort of medical Babel and that is not one of the least of its disadvantages. In fact, it is perhaps the most serious one of all, as it prevents that interchange of opinion and scientific communion which it is the great object of these assemblages to favor. The attendance at any meeting of the kind will be predominantly from the country in which it is held, and when this is one whose language is unfamiliar to the great mass of cultured physicians, the members from the outside can the better appreciate the embarrassments of an international congress.

This leads naturally to the second objection raised by the *Medical Week*, viz., the immense attendance at these gatherings, which seems to increase with each triennial meeting. The opportunity of a pleasure trip at reduced rates and of meeting and hearing the celebrated men who are on the program insures a large attendance, especially from the country in which the congress meets, but this fact itself reacts badly upon the scientific value of the session. There is also, under present conditions, necessarily a lack of discrimination in the publication of papers read, and the result is overloaded volumes of contributions of very unequal value. There is still an additional objection connected with these large numbers in attendance, they make it impossible for them all to be included in the invitations to official entertainments, etc., and it would be a task for something more than human wisdom and tact to avoid occasions for some heart-burnings and disappointments.

The cost of these assemblages is also mentioned as a drawback, and it is stated by the *Medical Week* that municipal and national governments are beginning to be alarmed at the increasing expenses and to seriously consider the question of their expediency. It would certainly be unfortunate if what ought to be the highest medical convention of the world should thus come to be officially considered a nuisance, and if there is any imminent or remote danger of such a thing happening, for that is what it would practically amount to, it is advisable to use prompt measures for its avoidance. The remedy proposed by our contemporary, that of making these congresses less frequent, partially meets this objection, but leaves the others mentioned still in full force. The crowds, the lack of discrimination, the inevitable defects of organization and the confusion of tongues would still be as objectionable as ever whenever the congress took place, no matter what the interval may be, unless something is done to amend the present existing conditions. Perhaps if the congress could be made altogether a delegated body with limited membership, each national organization, general or special, sending a proportional number of delegates, it would relieve the present difficulties and also make it a more representative and international body, as well as elevate its scientific character. In addition to the regular delegations the official committee might be authorized to specially invite possibly an equal number of the most prominent members of the profession from all parts of the world, and in this way the congress might be made truly representative of the highest medical science, and fitted to discuss and decide important international medical questions. To be a member of it would then be one of the highest honors in the profession, its decisions would have weight not merely amongst medical men, but also with rulers and governmental bodies, and it would have an influence far beyond what it has at present or is likely to have under the present status and with the tendencies now apparent.

The wish expressed by the *Medical Week* that the next session of an international medical congress, at Paris in 1900, will be utilized to inaugurate a new era in these events with the opening of a new century, is one that ought to be most heartily endorsed by the medical press and the profession in general. During the next three years some valuable suggestions ought to be offered that can materially aid in the reform that is undoubtedly so necessary.

THE SO-CALLED FRUIT CURES.

The conditions of true therapeutics impose the obligation of knowing how to utilize all the resources of nature that may relate to our simple selves, whether they be pharmaceutic, surgical, moral or hygienic. There is consequently, with the advance of modern and rational methods in medicine, a growing disposition on the part of the latter-day physician to do away with the use of drugs as much as possible, and to rely more upon the influence of hygienic and dietetic means in the prevention and healing of disease. In fact, we are modified by the alimentary regime even as to sociologic influences, and men can no more escape the effects of alimentation than they can other great mesological conditions. To say that diet is a necessary adjunct in the treatment of disease would be to repeat the obvious; but many of us do not recognize that it is easier to improve health than to cure sickness, and that much of this improvement, if not the greater part, is brought about by well-regulated dietetics. In no other country than ours is there a greater variety and abundance of food, and in none is it worse prepared. Consequently dyspepsia and Bright's disease are almost as marked characteristics of American nationality as the consumption of beefsteak and of mixed iced drinks of alcoholic nature. It is far from our purpose to condemn the meat-eating proclivities that obtain among our people. Indeed, if they were not nourished as they are, the English-speaking race would not hold its present place in the affairs of the world. It is rather our wish to protest against the too exclusive use of meat and starch and to modify this diet by the introduction of the kindly fruits of the earth, which teeming orchards and full vines have at this season brought forth in such profusion as to induce the enlightened physician to look upon them as a preponderating influence to counteract the amylaceous dyspepsia that inflicts two-thirds of our patients.

The uses of fruit as a medicament appear to be very little known, not only in the United States, but among English-speaking people generally, and no special publications comparable to the German ones on the *Obst* cure are to be cited. A comprehensive article, "The Grape as a Food and Medicine," in the *Medical Record* of Oct. 10, 1885; the "Grape Cure," in "Reference Hand-book of the Medical Sciences," and "The Appendicitis Craze and the Grape Cure," *Maryland Medical Journal*, Oct. 24, 1896, all contributions by the same writer, seem to be most worthy of mention as explaining the cause of regimen that has for its object the amelioration of sundry chronic ailments by the rational and systematic employment of a diet composed almost exclusively of fruit. The salient facts relating thereto, being pertinent and timely, are none the worse for repetition.

The so-called fruit cures are among the most useful of the applications of bromatology to medicine, and the direct use of figs, cherries, greengages, currants, raspberries and of strawberries has long been in repute with some European plague physicians. Van Swieten is said to have recommended in special cases the eating of twenty pounds of strawberries a day. He also reports a case of phthisis healed by strawberries, and cites cases in which maniacs regained reason by the exclusive use of cherries as an aliment. Hoffman (Fred.), Richter and Bergen report analogous cases.

According to Geoffroy ("Materia Medica," Paris 1750, Vol. I, p. 52), Forestius has seen inveterate diarrhea that had resisted all treatment, healed by the sole use of over-ripe medlars. Linnæus, a great sufferer from gout, thought he remedied and lessened its attacks by a fruit regimen. It is within the memory of many men living that obstinate cases of bowel disease among soldiers of the late civil war recovered rapidly on eating peaches, the result no doubt being attributable to the correction of a scorbutic tendency. The dietetic virtues of apples has been also much praised, articles thereon having appeared from time to time in the newspapers; so that anything we might say would only corroborate what has already been given wider publicity. It is, however, to the capital virtues of grapes, which contain nutritive principles necessary to maintain health that we must look for the attainment of determinate results. The landmarks of what may be called botryo-therapeutics, though very old, do not appear to have excited the same attention in our country as in Europe, where special works on the grape cure, mostly in German, give methodic instruction regarding the chemical study of grapes and the clinical observation of their effects.

To mention the therapeutic uses of grapes would be to repeat much of the nosologic tables. Their earliest physiologic effect is the promotion of the secretions and of the excretions, without irritation of the intestinal canal, and their use suddenly breaks up all the errors of nutrition, rapidly reconstructs the blood, exercises a salutary action on the nervous system, and favors the formation of fat. Aside from physiologic speculation, the laxative effect of grapes is superior to the mere purgative mineral waters; for while increasing the excretions a grape diet at the same time increases bodily weight and vigor. The action of this fruit is particularly beneficial in constipation and in hypochondriasis, and is to be recommended as of inestimable value to persons of irregular digestion, who have deluded themselves into the habit of taking purgatives. Its virtues as a reparative agent are particularly recommended by its partisans in scrofula, in diseases of the liver and spleen, in hyperemic congestion, in hemorrhoids, in menstrual derangements, in chlorosis and in anemia, particularly that of convalescence. The sequelæ of alcoholism, particularly the stomachic and abdominal troubles, are greatly benefited by the grape regimen. It has been recommended in chronic diseases of the genito-urinary organs, and the aphrodisiac effects of grapes, which **Rhazes** in the ninth century formulated *erectionem augmentat*, have been turned to advantage in treating impotence, and even in breaking up the bromid habit in obstinate insomnia when all other means had failed.

Lately the appendicitis craze being a subject of much popular concern, many people could not be induced to eat grapes, owing to the mistaken belief that the seed would lodge in the vermiform appendage. So fixed indeed is this delusion that many grape growers felt the injury to their crops, which they were obliged to feed to hogs or let rot on the vines.

As a matter of fact the danger from a grape stem or seed lodging in the appendix is no greater than that arising from other articles of food, and there is no evidence to show that grapes have anything to do with causing appendicitis. On the contrary, a grape diet is one of the best prophylactics and correctives of the diathesis causing that form of phosphatic deposit in the vermiform appendix erroneously thought to be a grape seed. Late hospital records of nearly a thousand necropsies, in which the appendix was examined, failed to show the presence of a grape seed, and impacted feces, containing large quantities of grape seed have been observed to cause no interference with the diverticulum. Moreover, an examination of the health statistics of Chicago show that during the months of the grape season there is a notable diminution in cases of appendicitis, and it is stated by **Rosse** that during a considerable residence in Southern Europe and in California, where grapes are used extensively both as food and medicine, he has never heard of a case of appendicitis. Moreover, it is not necessary to swallow grape seeds while eating the pulp.

Notwithstanding the high authority of his holiness the Pope, in extolling the wholesomeness of fruit, like many other good things in connection with the healing art, the fruit cures have their contra-indications, and if applied indiscriminately may even do harm. The grape cure is considered of doubtful efficacy in the uric acid diathesis. Its use is contra-indicated in chronic tuberculosis and in hemoptysis, unless the digestion is good, but some authorities think it of great utility in pulmonary lesions. During menstruation and in hemorrhoidal bleeding the cure should be interdicted, and it is never to be employed in pregnancy and nursing.

In the present state of our knowledge of the subject we may not look for the immediate dissipation of popular error regarding grapes, nor for the establishment of rural stations such as are found abroad; yet it is earnestly to be wished that the foregoing remarks may cause the more frequent appearance of fruit on the tables as a wholesome accessory, and bring to notice a method that may be employed either as a principal or adjuvant resource of treatment in a wide selection of cases with the happiest results.

ETIOLOGIC THERAPY ON EXPERIMENTAL BASIS.

At the Fifteenth Congress for Internal Medicine, held in Berlin from June 9 to 12, this year, **Behring** made some remarks concerning the therapy of infectious diseases that contain points and suggestions of great importance (*Centralb. f. allg. Path. u. Path. anat.*, Bd. viii, No. 14, p. 587). **Behring** first speaks in very discouraging terms of the therapy of the pharmacopeia. His theory of the etiologic therapy of infectious diseases is then explained in the following manner.

Every living organism contains a number of valuable means of protection as well as of cure. These are: 1. The curative powers of the elements of the body which are brought into operation in phagocytosis. 2. The eliminating faculties of glandular organs which are in position to excrete solid and dissolved substances from the body. 3. The protection offered the body by the skin and the mucous membranes. These are mechanisms that can only benefit the individual to which they belong. They are not transferable to a second individual that, for the time being, perhaps needs their help more. But the substances brought about by the action of bacteria in the living body are transferable. Whether alexins or the bodies that cause bacteriolysis and processes of agglutination can produce healing, is doubtful. Healing power is as yet surely demonstrated to belong solely to the antitoxins, and up to the present time these are known to develop only in diphtheria, tetanus and very likely the bubonic plague, as shown by recent reports from the Institut Pasteur. The antitoxins that develop in the blood are absolutely harmless for healthy individuals. All the subsidiary effects of the curative sera that still are observed will be removed by means of improved technic in their preparation. BEHRING reports that he is already on the track of the removal from the sera of the cause of the urticaria not infrequently observed after the use of antitoxins.

The various healing sera act as absolute specifics. In all probability it does not concern an "antitoxic substance" but an "antitoxic power" in the blood which is connected in some way with the proteids of the blood. BEHRING compares this power with that connected with a magnetic metal. In immunization it does not concern a chemic change but a change in the physical condition of the serum albumin. This is the probable reason why it has not been possible to isolate the antitoxin in pure form.

The active and passive immunity differ only in their mode of production; in both it concerns the same antitoxin immunity. The earlier disappearance of the passive immunity is due to the fact that the antitoxins introduced into the body are eliminated more rapidly than those formed in the organism itself.

The failures to apply the antitoxin treatment to all infectious diseases depend on the following conditions:

1. The infectious agents of all these diseases are not known.

2. The agents may be known, but not the toxic substances produced by them.

3. The toxic substances known are relatively very weak and these weak substances give rise to very weak antitoxins in the animal body. These facts are particularly applicable to the septicemias and also to tuberculosis. If immunization against tuberculosis is to be expected then it must first be demonstrated that a stronger tuberculous toxin can be produced than the efforts of v. LINGELSHEIM and RUPPEL, though in part successful, have done. BEHRING has only very recently succeeded in isolating a tuberculous poison in such a degree of purity that it could be used for the purpose of immunization. The recent improved tuberculin of KOCH has only a very weak toxic action. It is five times weaker than the original tuberculin and consequently there could only be expected an absence of reaction in the therapeutic use of the improved tuberculin. BEHRING thinks the new tuberculin is far too weak to be used for immunization purposes: he thinks it rather improbable that substances can be isolated from the bacillus of tuberculosis that can be used for the cure of this disease.

OSTEOPATHS ON OSTEOPATHY.

Nearly all the bills introduced by trained lobbyists into legislatures modifying medical practice acts in favor of osteopathy contained clauses (as the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION pointed out) limiting this favoring modification to the system of osteopathy taught by Dr. A. T. STILL of Kirksville, Mo. It now appears that osteopaths untaught by STILL are trenching on his Missouri monopoly, whereupon, in righteous indignation, he has exposed these appropriators of his "science." WILLIAM SMITH (M.D. of the "Royal College of Physicians and Surgeons of Edinburgh," an editor of the *Journal of Osteopathy* and a professor of "Symptomatology and Surgery" in the Kirksville School of Osteopathy) has lately exposed the "National School of Osteopathy" of Kansas City, Mo., in a letter to a newspaper of that city, wherein he claims that this last school sold him a diploma for $150 without any course of study. The Kirksville osteopaths threaten the Kansas City ones with criminal prosecution. A threat it is devoutly to be hoped they will carry out, since, if they demonstrate their charges of diploma-selling, one diploma-mill will be shut up. On the other hand if they do not, the Kansas City set may smash the act legalizing STILL's school on the ground that it is special legislation and creates a monopoly. In either case the people of Missouri will profit. The profession has lately received new light on osteopathy from its recently established organ. In their wandering from the hackneyed limits of the actual to the realms of the mendaciously bizarre, the Kirksville osteopaths excel Madam MOPP, the 18th century bonesetter (JOURNAL, Vol. XXVIII), and even the SWEETS (the notorious hereditary bonesetters of New England). "Dr." WILLIAM SMITH (the aforesaid graduate of the non-existent Edinburgh college whose title resembles that of one of the "schools" of Buchanan of diploma-mill fame) has recently contributed the following case illustrating "osteopathic science." The patient (*Journal of Osteopathy*, Vol. I, No. 1) after being told that no one could do him any good and that it would only shorten his life to move him, was given up to die with that "terrible disease cancer of the stomach." "For three months before his arrival he had passed no urine. During the progress of the disease the patient and his wife mentioned that fact to the attending physician, who explained that the tumor had closed over the tubes leading from the kidneys to the bladder. Nothing could be done, he must pass away. Against the advice of his physicians his wife brought him to Kirksville and at once found that the 'terrible cancer of the stomach' was a distended bladder." Here the distended bladder was relieved by means of a catheter and seventy-two ounces of stale ammoniacal urine was drawn off. In thirty hours, 300 ounces of urine were voided and the patient is in a fair way to recovery."

According to the *Journal of Osteopathy*, STILL is a case of reversion to the old medicine-man—*of the* trance-medium type. He "sees visions at night of future events which are afterward fulfilled." In one of these visions he "discovered the science of osteopathy." The Shaman (or medicine-man of the races that have passed slightly beyond the lower fetichic stage) used to have visions before his patients, whereafter, to quote BURNS:

> "Baith thur disease and what well mend it
> At ance he tells it."

Judging from the case he reports, SMITH is not far behind his chief in "seeing visions." HOGARTH, when he ridiculed Madam MOPP and bonesetting, little thought that her pretenses would reappear in a presumedly enlightened Anglo-Saxon land a century later, thanks to the control of legislators through lax incorporation acts permitting banks to loan money on the wild-cat stock of rupture-cure "systems," and "medical institutes" or "colleges" for the manufacture of osteopaths.

THE AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.

This Association has just completed its seventh annual meeting at Harrisburg, Pa., under the presidency of Dr. W. T. BISHOP of that city. The scientific business of the meeting embraced a wide range of subjects extending from committee reports on the standardizing apparatus for the medical use of electricity to wider considerations of the expenditure of electric energy in therapeutic applications and its special uses in various diseases.

Among the subjects of a practical nature that were considered were the value of electricity in the uric acid diathesis by Drs. ROBERT NEWMAN and J. G. D. DAVIS of New York. Goiter and its treatment by electricity was considered by Dr. CALEB BROWN of Iowa, the chief point made being the easy curability of the earliest manifestations of this affection in young girls and the neglect of physicians in instituting treatment at this stage. An interesting point was raised by Dr. COOVER of Harrisburg as to the value of electricity in impending heart failure. In the discussion it was brought out that the members present thought electrization of *any* nerve trunk, particularly the pneumogastric, unwise, but that any faradic brush battery, or even the severed wires of an alternating house-lighting current of 100 volts made to press lightly on the bare skin would act as a valuable stimulant by reflex action.

The most novel feature of the meeting was the presentation, by Dr. MASSEY of Philadelphia, of a paper on a new treatment of cancerous growths, the essential element of which was the cataphoric injection of mercury, in a nascent condition of its oxychlorid, into the cancer in such massive doses as to cause a death of the cancer cells. It was claimed that this method permitted the minutest prolongations of the cancerous infiltration to be followed by the mercury-laden current, which caused death and absorption of cancer cells beyond the point where all the tissues were killed by the very strong current used.

A paper by Prof. DOLBEAR of Tufts College, Boston, on "The Molecular Effects of Electricity," was most interesting to merely practical ears and was an invitation to wider views of the possible control that may be exerted by electric currents over normal and abnormal nutritive processes.

The list of new officers is as follows: President, Dr. C. R. Dickson, Toronto, Canada; Vice-presidents, Dr. F. Schavori, Connecticut and Dr. Caleb Brown, Iowa; Secretary, Dr. John Gerin, Auburn, N. Y.; Treasurer, Dr. R. J. Nunn, Savannah, Ga.; Executive Council, Drs. Robert Newman, W. J. Morton, W. J. Herdmann, W. T. Bishop and G. Betton Massey.

CORRESPONDENCE.

New Quackery or New Clothes?

BIRMINGHAM, ALA., Sept. 16, 1897.

To the Editor:—To one who takes a little dip into the history of medical quackery (there are all sorts), the methods all seem so threadbare. Each new "boon to humanity" is such a wearying repetition of the last that it would seem nothing new could possibly be developed. Perhaps this is true, but as far as one with a limited education in medical history can see, the present popular plan of the nostrum-vendors and quack discoverers within our ranks, of ignoring the laity directly and preying upon the gullible portion of the medical profession, is no less than a grand glorious inspiration. All quackeries have "worked the profession," but as a *specialty* I believe this is new. Many of us are familiar with the more conspicuous (not more successful) of these gentry, but even with the most suspicious of us in the beginning these quacks are hard to detect. The pages of many of our journals teem with the advertisements of pharmaceutic nostrums, patent and proprietary, some few of slight value or convenience perhaps, but the vast bulk of them flared forth with bright labels and catchy names, differing in no particular from the nostrums offered the laity: Beautiful waters to dissolve stone; devitalizing phosphates of many brands—"jingoine," "hurraho" and the like. There is hardly any doubt that the long humbugged and suffering laity swallow yearly a much larger amount of patent cure-alls on prescriptions from their confiding family physicians than they do of the much decried, open and above board nostrum, whose sole support is the certificate of the elderly female in Oshkosh, who sends her portrait with it to show that she has an honest face. It is not, however, of these I would speak at present, but of the well disguised commercial gentlemen within our ranks. These, according to the letter of code are in good standing; they belong to all medical societies and are so prominent and ever present in the columns of the medical press that one, the least unsuspicious or ethically near sighted, is apt to be overcome by them before he knows it. Why is our army of confiding innocents so large and what convenient remedy (necessarily a nostrum, they would take no other) can we offer them? What Widal's ear marks whereby they may know these germs they fatten?

This army is large because of the state of medical education. A large proportion of the practitioners of the country were educated before there were any laboratories; or in the cheap schools of the present, the degenerate survivors of those old lecture halls. They are deficient in scientific knowledge, especially so in pathology and bacteriology, and their ability to reason along such lines is at the lowest mark. They detest all bother about lesions and the natural history of disease, they dream constantly of specifics and they are perfectly sure that that medical Utopia, where but "given the disease the remedy follows, given the remedy the disease disappears," is somewhere within their reach. Their very souls yearn for something to cure with, and the supply is always equal to the demand.

Our only cure for this state is higher medical education; there is no hope for this gullible class except that with better schools it will gradually grow less and finally cease to survive.

How shall we know these professional perverts? Those who wring tears of sympathy and weak-minded support and dollars from the laity as do the quacks who follow the old beaten paths of homeopathy, mesmerism, patent cure alls, amulets and incantations, cry out that the medical profession damns them without a trial, and so discover themselves; but this poisonous fungus of our own, apes in every particular the wholesome investigator and discoverer and modestly and merely in the line of discussion, exhibits the *endorsements* of the *regular profession.*

There is no greater fallacy than to suppose one must try all fooleries to know them for fooleries. A profession so beset as ours must have other means. There is one sure sign and but one that will always differentiate one of these pretended discoveries from a real one. The real ones are offered to the medical profession to handle, pick to pieces, and prove worthless if they can; the pretended discoveries are always protected from such handling by being kept a *secret*, behind which secret is a *money value.*

The medical man who offers a secret remedy of which he has exclusive control in the manufacture or a share in the profits and by which he enriches himself, differs no jot from one of the horde of nostrum-vendors who live by obtaining money under false pretenses; the only false pretenses by which money is obtained not punishable by fine and imprisonment.

Life is too short to try all these nostrums, and no one but a lunatic would ever think it part of an honest man's duty to attempt it. The burden is on the *discoverer* to free himself from every suspicion of secrecy and commercial interest (those legitimate and copyrighted marks of quackery) before offering his method to decent and intelligent physicians.

This quackery within the ranks is most difficult to discover; it is so smooth and tactful in mimicking the talk of the laboratories; it speaks so familiarly of rabbits and guinea pigs, of experiment number 140 and of control animal number 175, of cell construction and the like; and withal so modestly of its fabulous cures, that the honest general practitioner is sharp indeed if he can always detect the cloven hoof.

But the work of these (pseudo) laboratories is not secret; no indeed, it is merely that this one large brain, ceaselessly at work on all sorts of germ juices (that will sell), can not take time to acquaint the knowing world with what he is doing and how he is doing it. Each batch of his product is better than the last, and although he has little time to make his claims, his statistics vociferate that the death rates of consumption and typhoid fever have turned pale in the face, and that the goal of this benefactor is plainly in sight.

These pretenders occupy much space in our best journals, and even much time in our best associations, are listened to respectfully and treated politely in the discussions, when many, nay, probably a majority of us, know them for what they are: rank pretenders, ostensibly for a place in company with Koch, Pasteur, Jenner and Lister, but really for the notoriety and money there is in it. Probably not one of these loudest has had a laboratory training, or even enjoys a speaking acquaintance with one eminent bacteriologist or pathologist, and yet we sit silent and see them enrich themselves by selling the product of these spurious universal laboratories to our unsuspecting brothers. These wholesale laboratory merchants like good company, and in the most casual manner possible constantly associate and compare their work and methods with the work and methods of real investigators. The consumption quacks speak glibly of Koch's work and then of their own, in a way to suggest that Koch and all real toilers are back numbers. The typhoid fever millennists speak of the Brand method as of an old used-up competitor. The consumption quack does not pretend to work miracles. No, he is most particular in his painstaking efforts to be exactly honest in the report of his work, and that of his colleagues, with this gradually improving remedy. Too much weight, forsooth, is given his every utterance to permit him to say that consumption is ever *cured*, but in all its many stages there is just a steady improvement in from 10 to 80 per cent. of the cases over all heretofore used remedies. *All* the incipient cases, *most* of the second class and *many* in the last stages have had their coughs, expectorations, night sweats and fever stopped; have gained from ten to one hundred pounds in weight and have returned to work, and are keeping it up year in and year out, ten hours a day, without the return of a symptom; but, of course, the manufacturer of this anti-death does not claim a cure. Oh, no! he says he has not had time enough yet, nor patients enough; he is too honest and accurate and scientific to pronounce anything positive until the profession of the entire country have sent him all their patients for a number of years (their well-to-do patients; the stuff won't work on paupers). No, they refuse to blow their own horn; they modestly insist that their statistics must make or unmake them. Possibly, like Simon Suggs, whose legal fame and usefulness rested on his proficiency in hunting up evidence among the busy haunts of men rather than on the distasteful drudgery of studying the legal merits of his cases in the books, these our friends may snatch a few moments now and then from their brain-wearying scientific research to give to the easier pursuit of garnering statistics.

GEORGE S. BROWN, M.D.

A way to Settle the Respective Merits of the "Brand" and "Woodbridge" Treatment of Typhoid.

SEPTEMBER 21, 1897.

To the Editor:—Much valuable space in the JOURNAL has recently been devoted to communications from Dr. Upshur and Dr. Woodbridge, anent the treatment of typhoid fever. What we of the disinterested third party had hoped to find a critical presentation of the merits of the case has degenerated into a petty squabble, redolent with personalities, which redounds neither to the credit of those concerned nor is of benefit to the science of medicine. This fact is much to be regretted. The treatment of typhoid fever is a subject of too vital importance to be even temporarily obscured by the mud with which these estimable and gallant gentlemen have been so assiduously pelting each other. What the profession at large desires is to arrive at the truth of the matter; and the sooner this can be reached the better for medical science and humanity in general.

In all justice, what right has Dr. Upshur or any other man to assume to condemn a treatment which, either right or wrong, he has never even tried? It would seem as if *a priori* reasoning were a trifle presumptuous in the face of the bulk of statistics which Dr. Woodbridge appears to possess. By what right *does Dr. Upshur calmly* wave aside as "*mistaken diagnoses*" the several thousand cases which had been considered as typhoid fever by supposedly intelligent physicians! *Does* he arrogate to himself and the few who shall name the exclusive power of recognizing typhoid fever? Dr. Upshur has never tried Dr. Woodbridge's treatment. Instead of appealing for information on the subject from those who have done so he cites as authority a half dozen men who themselves have never tested the treatment, and yet he and they assume to discredit it without hearing or trial; truly a case in this instance of the "blind leading the blind," for even these "princes of medicine," as Dr. Woodbridge truly styles them, must learn by experience like the rest, and do not acquire knowledge by simple intuition. Dr. Upshur believes that the microscope proves the inutility of the so called eliminative treatment. If Dr. Woodbridge's statistics are reliable, and they must be considered as such until *proof* is given to the contrary, a thousand laboratory conclusions and unfortified suppositions are worthless in the light of the clinical results there demonstrated.

As to Dr. Woodbridge, he has evidently permitted his enthusiasm to get the better of his discretion. The unqualified statements that every case of typhoid fever can be aborted and that it is an affection which need never prove fatal are not supported by even his own statistics. That these same statistics do show a wonderful improvement over those given by the Brand or other method of treatment is none the less a fact. Their rejection is not warranted merely because they do not coincide with our preconceived ideas. Medicine is constantly progressing and possibly the Woodbridge treatment may be a step in advance. At all events, the matter is of such importance and Dr. Woodbridge has already received such strong support that the matter can not be tossed contemptuously aside. Let us have it settled at once and definitely; settled beyond doubt or question. Let there be an end to these recriminations and puerile personalities. Let some medical society appoint a commission of reputable and conscientious men to personally test and report upon the matter. Let Dr. Woodbridge appear before such commission and fully explain his methods, they to be minutely adhered to in the treatment of all patients. Require the symptomatic diagnosis to be in all case to be confirmed with Widal's serum test. Take the cases as they enter hospital, without regard to the age of the patient or the duration of the disease, and treat every alternate patient by the Brand method for purposes of comparison. If the results reached are an improvement over the present methods a grateful profession would not withhold the honors due the originator of the improved treatment. If the method is not what it is vaunted—well, we would be no worse off than at present, and the Woodbridge treatment would be at once and permanently relegated to obscurity.

Let us have this question settled, and incidently stop this useless and petty wrangling.

Very respectfully, M.

BOOK NOTICES.

A Manual of the Injuries and Surgical Diseases of the Face, Mouth and Jaws. By John Sayre Marshall, M.D., Chicago. Philadelphia: The S. S. White Dental Manufacturing Co. 1897. Pages 716.

This book is intended for the class room, and is quite as useful to the general surgeon as to those confining themselves to the surgery of the face, mouth and jaws. The text, although written by a dental practitioner, is essentially a work for the general surgeon, as most of the operations figured in this book will often be undertaken by them. The illustrations are copious and well selected and no fault can be found with the method of the work and the manner in which the subject is presented.

The chapters are as follows: 1 and 2, surgical bacteriology; 3, 4, 5 and 6, inflammation and treatment; 7, abscess; 8, ulceration; 9, necrosis, caries and gangrene; 10, traumatic inflammatory fever; 11, septicemia; 12, pyemia; 13, erysipelas; 14, tetanus; 15, shock and collapse; 16, ligatures, sutures and suturing; 17, wounds; 18, treatment of wounds; 19, gunshot wounds; 20 and 21, fractures of the inferior maxilla; 22, fractures of the superior maxilla and upper bones of the face; 23 delayed union in ununited fractures; 24, dislocation of the inferior maxilla; 25, ankylosis of the jaw; 26, periostitis of the jaw; 27 and 28, necrosis of the jaws; 29, stomatitis; 30, 31 and 32, surgical tuberculosis; 33, 34, 35 and 36, diseases and tumors of the maxillary sinus; 37, diseases of the salivary glands; 38, neuralgia; 39, treatment of trifacial neuralgia; 40 and 41, congenital fissures of the lip and vault of the mouth; 42, 43 and 44, tumors; 45, 46 and 47, cystomata; 48, 49, 50, 51 and 52, carcinomata; 53, mesoblastic tumors; 54, chondromata; 55, osteomata; 56, angiomata; 57, 58 and 59, sarcomata; 60 and 61, odontomata, and 62, retention cysts.

After each chapter is a series of questions for review, especially adapted for students or classes in recitation. The book is a valuable one and will be found extremely useful for students and instructors, and no doubt the general surgeon will find it a handy volume for reference. We regret to see pictured in the book the old Hey's saw, an instrument, by the way, which is scarcely used by any modern surgeon. Although Hey had described it in his book, it had long before figured in Scultetus' "Chirurgeon's Storehouse."

Rheumatism and Its Treatment by the Use of the Percusso-Punctator. By J. Brindley James, M.R.C.S. Second Edition. London: Rebman Publishing Co., Limited. 1897. Pages 39.

This opusculum is devoted to showing the relief sometimes afforded in lumbago, vertigo, hemicrania, pleurodynia, sciatica, by the percusso-punctator, which is really multiple acupuncture. Incidentally the author gives some space to the treatment of sciatica and lumbago by the injection of sulphuric ether, which he warmly advocates in certain cases. He states, after some preliminary remarks, that "dry cupping over the seat of the lesion, I inject with subcutaneous syringe daily ten minims of sulphuric ether. If in the course of a week I find no marked progress, I gradually increase this injection dose up to the maximum of thirty minims. Concurrently with this external treatment I have found it advisable to administer internally, first, at the outset, a brisk purgative; second, a mixture containing 5 grains of salicylate of soda (30 centigrams) in 1 ounce of infusion of gentian, 32 c.c., with 10 minims of chloric ether and 10 minims of tincture of ginger, every four hours. In not one solitary case have I found this prove a curative failure. Usually in two weeks' time my rheumatic patients have found themselves cured. In cases of lumbago and sciatica I have found it work more expeditious wonders still."

While we doubt if every practitioner's experience would be so pronounced as has been that of our author, yet there are many points worth considering in this entertaining volume.

Notes on Pathology for Students' Use. By W. A. Evans, B.Sc., M.D. Chicago: The W. T. Keener Co. 1897. Pages 472.

This book, which is written for students, has been interleaved, and is evidently intended as a recitation book. It has no index. The style of the writer is peculiar. The following are specimens:

Page 206: "In discussing stomach conditions, it is to be borne in mind that the stomach remains in contact with the gastric juice after death, and that therefore punctures, holes, loss of mucosa, etc., may be present, independently of pathologic processes." It might be asked of the author how can a hole be present, or how can the loss of mucosa be present? Again: "The stomach is a large viscus in which substances remain for some hours; therefore violent irritants show their effects markedly here." Here is another involved sentence (page 324): "This organism is essentially an epithelial organism. Its toxin absorbs, producing some inflammatory reaction in the lymph channels in which it travels, and also general toxemia." Now, it would seem to be the toxin which absorbs something. What is it that the toxin absorbs? Furthermore, "when strictures result there is probably secondary infection of the mucosa with other germs. It is prone to wander into the crypts of glands and there lose its virulency sometimes on proper occasions, and sometimes never." Whether it is the stricture or submucosa which wanders into the crypts it is difficult to understand from this sentence.

Page 380: "The parenchyma: Our known technical methods are of very little service in showing cells of the nervous system." The inference is, then, that it is the unknown technical methods that are all right. On the same page we find, "the perverted chemistry in a nerve cell will give expression to symptoms far more promptly than any other structures." Let this sentence be carefully pondered. Page 396: "Anatomy: The meninges are thickened and adherent, especially in its posterior segment." Page 218: "On the peritoneal surface the epithelium again breaks out into greater activity." That the epithelium breaks out will be a novel statement to most pathologists. Page 134: "This protoplasm may be quite granular. Tubercle bacilli can frequently be stained within them, though when they *pick up the bacillus*, the bacillus very promptly loses its power to *take up the stain*." (Italics ours.)

Looseness of statement is characteristic of the book throughout. We regret to see this carelessness of expression because the author has shown a fair knowledge of the subject.

Tuberculosis of the Genito-Urinary Organs, Male and Female. By N. Senn, M.D., Ph.D., LL.D. Illustrated. Philadelphia: W. B. Saunders. 1897. Price, $3 net; pp. 311.

It has been the aim of the author in the preparation of this work to place available clinical material upon an etiologic and pathologic basis and to give due attention to the bacteriology of tubercular affections of the genito-urinary tracts. It is a very fair and complete statement of the existing state of knowledge on the subject-matter of this work. It is intended as a companion-piece to the author's work on "Tuberculosis of Bones and Joints," and as such will add to the already great reputation of its distinguished author. The illustrations are largely original and are fairly well representative of the affection under consideration. The type is large and clear, the paper is excellent, and the book will long remain as an admirable monograph on this subject.

Appendicitis and Its Surgical Treatment; with a Report of Seventy-five Operated Cases. By Herman Mynter, M.D. (Copenhagen). Pp. 303. Philadelphia: J. B. Lippincott Co. 1897.

If there were any doubt as to the great variance of opinion in regard to the treatment of appendicitis, that doubt would have been set at rest by the discussion and papers read at the last meeting of the British Medical Association; and in view of this uncertainty, notwithstanding all the works that exist on the subject, it is well to have a book of this character, which is a careful compilation of the existing opinions on the subject with a record of the author's own cases. The author's classification of the different forms of the affection is admirable and his presentation from a surgical standpoint is unexceptionable. There is a moderately complete bibliography at the end of the volume. The work as a whole constitutes an important contribution to the literature of the subject, although it must be confessed that little new matter has been added. But its manner of presentation is concise, clear and perspicuous.

Transactions of the Sixty-Fourth Annual Session of the Medical Society of the State of Tennessee. Nashville, 1897. Cloth, 300 pages.

The report comprises the proceedings, list of members, constitution and by-laws, code of ethics and numerous papers: "Plea for the Better Care of the Teeth, etc.," "Impure Milk and its Evils," "Antiseptic Treatment of Typhoid Fever," "Vesical Calculi," "Brandt(?) Method of Treatment of Typhoid Fever," "Bovine Tuberculosis," "Antiseptic Midwifery," "The Pregnant, Parturient and Puerperal Woman," "Eclampsia," "Headaches," "Shock," "Are We Doing Our Duty,' "History of the X-Rays, Their Medical and Surgical Application," "Facts and Theories as to the Law of Direction," "Gallstone Surgery," "Extra-uterine Pregnancy," "Drifting Away," "Purulent Conjunctivitis, its Treatment with Argonin," "Constipation and Rectal Diseases," "Duty to the Insane," "Observations in Electro-therapeutics," "The Pathology of Malarial Hematuria," "The Correction of Refractive Defects of the Eye a Branch of the Practice of Medicine," "Antitoxin in Diphtheria," "A Modified Thorner's Mastoid Retractor," "The Abuse of Antipyretics," "Typhoid Fever," "Summer Diarrhea in Children."

Transactions of the Medical Association of the State of Alabama. Cloth, 456 pages. Montgomery, Ala.: Brown Printing Co., 1897.

This volume contains the minutes of the session held by the Society at Selma, Ala., April 20-23, 1897, comprising reports of officers, roll of county societies, etc. The appendix presents 186 pages of "Medical and Sanitary Dissertations and Reports," among them the following: "Endemic Multiple Neuritis," "Sterility of the Sexes," "Puerperal Eclampsia," "Renal Calculus," "Medical Topography and Climatology of Southern Alabama and the Gulf Coast," "Medical Topography and Climatology of North Alabama," "Bacteriology, its Value in the Diagnosis and Treatment of Disease in Alabama," "Importance of the Microscope as an Aid to the General Practitioner," "Shall We Do an Iridectomy in Extracting Cataract?" "Case of Spina Bifida, with Operation," "Morbid Mental Action from a Physiologic Standpoint," "Stone in the Bladder," "Granular Urethritis," "The Necessity of Immediate Operation in Mastoid Disease."

Transactions of the Medical Society of the State of West Virginia, held at Charleston, May 19-21, 1897. Paper, 148 pages. Wheeling: 1897.

The constitution and by-laws of the Society are given, together with minutes of the thirteenth annual session, catalogue of members and the following papers: "Post-graduate Medical Education," "The Etiology and Treatment of Puerperal Eclampsia," "Air and Water as Therapeutic Agents," "Treatment of Chronic Suppuration of the Middle Ear," "Antitoxin," "Acute Intestinal Obstruction," "Ophthalmia Neonatorum," "Ovariotomy in a Child Thirty-three Months Old," "Thoughts on the Causes of Typhoid Fever and Diphtheria," "Cardiac Valvular Diseases," "A Curious Sequence and Complication of Diseases," "The Pioneer Physicians of the Kanawha Valley," "Venesection."

Transactions of the Maine Medical Association, 1897, vol. xii, part 3. Paper. Portland: 1897.

This part contains various reports made at the forty-first annual meeting held at Portland, June 2-4, 1897, also a list of members and the following papers: "The Technique of American Surgery," "Hip-joint Disease," "Accuracy and Honesty of Purpose in the Practice of Medicine," "The Frequency of Errors in Medical Certificates," "Physical Training and its Therapeutic Value," "Two Complicated Cases of Nervous Disorders in the Same Family," "Resuscitation after Submersion," "Addison's Disease," "The Bacterial Features of Typhoid," "The Treatment of Labor," "The Later Results with Diphtheria Antitoxin," "Static Electricity," "New Methods in Disinfection," "Preventive Medicine, or Notes on Sewer Air Poisoning and Sanitation."

Fifteenth Annual Report of the Provincial Board of Health of Ontario, 1896. Paper, 318 pages. Toronto: Warwick Bros. and Rutter. 1897.

This report is admirably arranged and will be of value to anyone desiring information on almost any matter in public health concerning the Canadian management of such matters. The appendix presents reports of cities, towns, villages and townships in tabulated form.

PUBLIC HEALTH.

Diphtheria in Woonsocket, R. I.—Since July 1, it is estimated that over one hundred cases of diphtheria have occurred in this city with a population of a little over 20,000. A report dated September 19, informs us that there have been five deaths from the disease within a week, and from ten to fifteen new cases. The parochial and Sunday schools now hold no sessions. The health officers, the mayor and the board of city physicians were called to joint meeting for the 20th inst., to devise means for stamping out what may yet prove an epidemic.

Chemic Adulteration of Milk.—According to a statement in the *Revue Scientifique*, the chemic adulteration of milk is one of the hygienic factors now to be dealt with. It seems that M. Denigès of Bordeaux, having obtained possession of three samples of yellow powder used by certain milkmen of Bordeaux to preserve their milk, made a chemic analysis of it. This analysis showed that two of the powders were composed wholly of neutral chromate of potash, that the third was a mixture of one part bichromate of potash and two parts neutral chromate, and that the suspected milk had been adulterated with the last substance in the proportion of 0.30 gram to the liter, say five grains to the quart. The alkaline chromates are, in fact, powerful antiseptics, capable, even in small quantities, of retarding lactic fermentation very noticeably, if not of stopping it entirely. But because of the deleterious action of these salts on the organism, the *Revue* calls emphatically for their complete exclusion from food substances, and particularly from milk, of which so many young children drink relatively large quantities.—*N. Y. Tribune.*

Yellow Fever.—Yellow fever is still a mournfully interesting factor in the South. Our record closed last week on September 22. The dispatches since then furnish the following data: September 23, 4 deaths and 9 new cases at New Orleans; 1 death at Louisville, 9 at Edwards, and 1 case at Atlanta. It is reported that at Mobile there have been, up to this date, 38 cases, with three deaths, 19 still being under treatment. September 24, 4 deaths and 10 new cases at New Orleans; 15 new cases at Biloxi, 30 new cases in and near Edwards, and 3 new cases with 2 deaths at Mobile. September 25, 23 new cases at New Orleans; 5 new cases at Mobile; 10 cases at Edwards, and 10 cases at Biloxi. September 26, 23 new cases at Edwards, with 1 death; 17 new cases at New Orleans, 1 more death at Ocean Springs, 1 more death at Scranton, 5 new cases at Mobile, 1 case at California, and 10 new cases at Biloxi. Our record closes with the dispatches of September 27, which cite 2 deaths and 22 new cases at New Orleans, thus making 19 deaths to date in that city, with a total of 160 cases. At Mobile, 1 more death increases the deaths to date to 8, and 3 new cases make the total number of cases 54, of which about 20 are still under treatment. At Edwards, Miss., the deaths to date have been 7, and 12 new cases bring the total up to 188; while at Biloxi 1 more death makes the number of deaths to date 5, and 17 new cases reported, bring the total up to 114.

NECROLOGY.

Edward A. Cason, M.D., died of typhoid fever at La Grange, Ga., September 16, aged 27 years. Dr. Cason was born at Jewells, Ga., Sept. 1, 1870; was educated in the public schools and graduated from the Georgia Military and Agricultural College at Milledgeville; then studied medicine and was graduated from Bellevue Hospital Medical College in 1891. He practiced medicine at Jewells until 1895 when he came to La Grange. He was a member of the Georgia Medical Association.

Marinus W. Seaman, M.D., of Shipman, Ill., at Denver, September 16, aged 67 years. He was an ardent Republican, and attended the first Republican State convention held in Illinois in the year 1856. He was an abolitionist, and in October, 1862, he enlisted in the Union army and was commissioned as second assistant surgeon of the 122d Illinois regiment infantry volunteers, with the rank of lieutenant by Richard Yates, then governor of Illinois. On Sept. 17, 1863, Dr. Seaman was promoted to surgeon of his regiment, with the rank of major. For a time he was surgeon-in chief for the district of Cairo. He served from the time of his enlistment continuously until the close of the war. He then returned to the practice of his profession and continued until about four years ago, when he retired and went to Denver to live with his son. During the war he was for the most part under the direct command of Gen. A. J. Smith.

C. Fumagalli, surgeon-in-chief to the Hospital Maggiore of Milan, with which he had been connected for forty years. His contributions to medical literature have been numerous and important, including a large work on the diseases of children.——Dr. P. Ambrosoli, aged 54 years, physician-in-chief to the same hospital.——J. B. Luys, Paris, age 69 years; well-known alienist and neuro pathologist; author of numerous works on the brain and the treatment of the insane, and one of the first to apply photography to the study of the nervous system, for which he had to invent new processes and instruments. His name has been applied to two regions of gray matter, the corpora Luysii. He lost some prestige in late years by his assertions in regard to the effect of medicines at a distance, having been seduced beyond his depth by the study of hypnotism.——William P. Jones, M.D. Medical College Ohio, 1854, died in Nashville, Tenn., September 25, aged 78 years. He was born in Adair County, Ky., but had resided in Tennessee for nearly fifty years. His prominence made him a postmaster of Nashville, and President of the Medical College there.——Braxton Hicks, M.D., F.R.S., formerly physician accoucheur to Guy's and afterward to St. Mary's Hospital, London, August 28, aged 72 years.——J. C. Howden, M.D., of England, August 17. He was superintendent of the Insane Asylum at Montrose, Forfarshire, from 1857 until last June, when ill-health compelled him to resign.——Ira H. Adams, M.D., West Derry, N. H., September 14, aged 51 years.——L. O. Eastman, M.D., Union, N. Y., September 15.——Horatio A. Hamilton, Perrysburg, Ohio, September 8, aged 68 years, Medical Department University of New York, 1852. Member of the Ohio State Medical Society and the American Medical Association.——John Harrison, M.D., Covington, Ohio, September 15, aged 76 years.——John W. Roberts, M.D., Clarksdale, Mo., September 19, aged 30 years.——G. M. Roberts, M.D., Dade City, Fla., September 19.——Julius F. Schmittle, M.D., assistant house surgeon of the Charity Hospital, New Orleans, September 20, of appendicitis, aged 33 years.

SOCIETY NEWS.

Tri-State Medical Society.—The following papers appear on the program for the meeting at Nashville, Oct. 12–14, 1897: President's address: Carcinoma of the Breast, W. F. Westmoreland, Atlanta. Psychology, J. B. Cowan, Tullahoma, Tenn. The True Physician, His Responsibilities, His Duty to His Profession and the People, John C. LeGrand, Anniston, Ala. A Pessimistic and an Optimistic View of Medicine, Y. L. Abernathy, Hill City, Tenn. A Bouquet of Remedial Agencies, John P. Stewart, Attala, Ala. Treatment of Typhoid Fever, John A. Larrabee, Louisville. Abortive Treatment of LaGrippe, E. H. Richardson, Atlanta. Electro-therapy in Medicines, Louise Eleanor Smith, Chattanooga. A New Mode of Internal Electro-therapy, R. P. Johnson, Chattanooga. Common Sore Throat, James H. Atlee, Chattanooga. Vaccination, Seale Harris, Union Springs, Ala. The Pathology and Diagnosis of Early Phthisis, Llewellyn P. Barbour, Tullahoma, Tenn. Sero therapy in Tuberculosis, Paul Paquin, St. Louis. Importance of Early Recognition of Pleural Effusions, Due to Causes Other than Those Located in the Pleuræ, Louis H. Jones, Atlanta. Abnormal Metabolism, G. W. Drake, Chattanooga. The Subject of Hematology, E. C. Anderson, Chattanooga. Inhibition, Physiologic and Pathologic, J. F. Peavy, Atmore, Ala. The Rational Treatment of Cancer of the Uterus, Geo. Wiley Broome, St. Louis. A Case of Fracture of the Skull, Followed by Basilar Hemorrhage; Trephining; Recovery, Curran Pope, Louisville. The Relation of the Cause to the mmediate and Remote Results of Fracture, R. M. Cunningham, Birmingham. Is Cancer Contagious? E. Mather, Paterson N. J. Stimulants and Narcotics in Obstetrics and Gynecology, R. R. Kime, Atlanta. Surgical Shock, Gilbert I. Cullen, Cincinnati. Cystitis, Its Course and Treatment, W. L. Nolen, Chattanooga. Stricture of the Urethra and its Treatment, William R. Blue, Louisville. Operative Treatment in Enlarged Prostate, H. H. Grant, Louisville. Treatment of Chancroidal Ulcers, A. R. Danforth, Atlanta. Ablation of the Scrotum for Conditions other than Varicocele, W. S. Goldsmith, Atlanta. The Treatment of Cancer of the Rectum, J. M. Mathews, Louisville. Burns and Scalds, G. A. Baxter, Chattanooga, Metatarsalgia, or Morton's Painful Toe, George S. Brown, Birmingham. The Application of Plaster Jacket and Dressings, F. B. Sloan, Cowan, Tenn. Surgery of the Stomach, H. Berlin, Chattanooga. Report of Operative Cases (brain), S. G. Courtney Pinckney, Atlanta. Fracture of the Elbow, B. G. Copeland, Birmingham. Treatment of Fractured Maxillaries, D. S. Arnold, Atlanta. The After-Treatment of Abdominal Operations, Valentine Taliaferro, Atlanta. Epiplocele, Report of a Case, J. W. Griggs, West Point, Ga. Appendicitis, G. Manning Ellis, Chattanooga. The Evolution of the Treatment of the Stump in Operations for Appendicitis, W. D. Haggard, Jr., Nashville, Tenn. Obstetrics, W. G. Bogart, Chattanooga. Some of the Mammoth Ovarian Tumors of Surgical History, A. M. Cartledge, Louisville. Cases of Ectopic Gestation, Operated on by the Vaginal Route, W. E. B. Davis, Birmingham. The Technique in Hysterectomy for Uterine Myomata, W. H. Wathen, Louisville. Hysterectomy, Louis Frank, Louisville. Hysterectomy in the Treatment of Pelvic Diseases, George R. West, Chattanooga. Flap Operation for Atresia Vaginæ, George H. Noble, Atlanta. Meningitis in Children, J. W. Russey, Chattanooga. Mouth Breathing in Children and its Dangers, William Cheatham, Louisville. Injurious Results of Incompetent Refraction Work, Frank Sims, Atlanta. The Causes, Diagnosis and Prognosis of Valvular Diseases, Hazle Padgett, Columbia, Tenn. Rheumatism as an Etiologic Factor in Cardiac Diseases, S. W. Fain, Chattanooga. The Treatment of General Peritonitis, L. S. McMurtry, Louisville. Asylum Reform from the Gynecic Standpoint, Charles A. L. Reed, Cincinnati. Pot Hunter in Surgery, Joseph Price, Philadelphia. Reports of Some Cases of Abdominal Surgery, James M. Black, Knoxville. Abscess of Thigh and Pelvic Cavity, with Report of a Case, B. P. Key, Tracy City, Tenn. How to Elevate the Profession in the Country, T. S. Hughes, Cohutta, Ga. Various Treatments of Epithelioma, M. B. Hutchins, Atlanta. Posterior Urethritis, R. H. Tatum, Chattanooga. Stricture of the Nasal Duct, B. F. Travis, Chattanooga. Chloroform, Cooper Holtzclaw, Chattanooga. Cataract Operations, James Moorse Ball, St. Louis. An Original Method of Preparing Catgut for Ligatures and Sutures, St. Joseph B. Graham, Savannah. Leukemia and Report of a Case of Hodgkin's Disease," A. W. Mardis, Lebanon, Ohio.

MISCELLANY.

To Study the Dental Schools of the United States.—Dr. P. Gires has been officially commissioned by the French Government (July 31) to visit this country and study the workings of our dental colleges.—*Gaz. Méd. de Paris*, August 21.

Correction.—Owing to error in copy in the letter entitled "Improved Method of Cocain Anesthesia" (*vide* JOURNAL, September 18, p. 602), "fine" was used instead of "full" in the last line of the first column, and in the twentieth line of the second column 1.5 per cent. should read ½ of 1 per cent.

An Epidemic of Puerperal Pneumococcus Infection recently occurred at the Nancy Maternity, with various manifestations from pleurisy to inguinal phlegmons, and purulent ophthalmia in one of the infants. The Maternity was disinfected as for puerperal septicemia and the epidemic arrested.

Natural Bitter Water.—W. S. Bogoslowsky, from clinical observations on the action and value of a constant bitter water, draws the following conclusions ("*Transactions* of the Moscow Section of the Society for the Preservation of Public Health," No. VI.): Systematic treatment with Apenta water is especially indicated for constipation produced by atony of the bowels, and it has the advantage that its use does not give rise to subsequent constipation. Its action is more gentle than that of some other bitter waters because it contains less calcium sulphate and no magnesium chlorid.—*British Medical Journal*, August 28.

Appointment.—Dr. Robert Hessler of the Northern Indiana Hospital for Insane, formerly pathologist to the Indianapolis City Hospital, and demonstrator of pathology in the Medical College of Indiana, has been appointed pathologist to the recently completed pathologic laboratory of the Central Insane Hospital at Indianapolis.

C. V. Mettenheimer's Fiftieth Professional Jubilee.—*Memorabilien* for August contains a brief sketch of the career of this popular practitioner, naturalist, author and composer, physician to the Mecklenburg Court, and the recipient of eight orders, including one from the sovereigns of Russia, Greece and Turkey. Two important hospitals owe their erection to his efforts, the Children's Hospital at Schwerin and the Sea-Coast Hospital at Gross Müritz, besides numerous others in which he was actively interested. His name is familiar in medical literature.

Effect of Varnishing the Skin.—Laulanié concludes from experiments on eight rabbits that the physical effect of varnishing is an increase in the emissive action of the skin, while the physiologic effect is an interruption of the digestive function, producing rapid and almost complete inanition, showing a functional relation between the external and internal integument, which is still a mystery to us.—*Ann. de Derm. et de Syph.*, July.

The Proportionate Weight of the Brain in comparison with the spinal cord constantly increases in man from infancy to maturity, while in animals the proportion is reversed; the spinal cord develops at the expense of the brain, as Mies has established by hundreds of observations. Men prove to have a heavier brain in proportion to the spinal cord than wome even in the senile insane, who have the lightest brains of in proportion to the spinal cord, although the average is m times higher in them than in animals. The *Deutsche Med. Woch.* of August 12 contains Mies' communication on the subject to the Berlin Medical Society.

Color Blindness in Japan and China.—The *Lancet* states that a surgeon in the United States Navy reports as a result of an examination in Japan, among 1,200 soldiers, some 1.58 per cent. who were red blind and 0.833 per cent. green blind; among 372 boys, 1 per cent. were red blind, and among 270 girls, 0.4 per cent. Of 596 men in Kioto, 5.45 per cent. showed defective color sense. Dr. Fielde of Swatow, China, examined 1,200 Chinese, using Thompson's wool tests; among 600 men were nineteen who were color blind, but among 600 women only one. It seems that the percentage of color blindness among Chinamen is about 3 per cent. and consequently does not vary greatly from that in Europeans. Dr. Fielde found, however, that fully half the number mixed up blue and green, and that many are quite blind to the perception of violet colors.

Overlying Child.—The evidence in the case against a certain Mary Egan was to the effect that, having a male infant about eleven months old, on the 13th of February, after having been drinking, and being somewhat under the influence of drink, she took the child into bed with her, and in her drunken or semi-drunken sleep lay on the child, and the child died from suffocation. Mr. Justice Hodges of the supreme court of Australia, before whom the trial took place, told the jury to convict the prisoner if they believed the evidence. The jury having convicted her, the learned judge reserved for the considerat of the full court the question of whether his direction was co- rect. Its decision is that the proposition involved was a gether too broad, and that the circumstances disclosed tha charge of manslaughter was not supported. Chief Ju Madden, delivering the opinion, goes on to say, if a wo resolved to do away with her child, and having become somewhat drunk, took it to bed with her with the knowledge that she would probably sleep heavily and overlie the child, doing this apparently innocently, but at the same time with the intent to destroy her child, that would be murder. If, being in that state, she, with the knowledge that she might overlie the child, and against the remonstrances of her friends, negligently took the child to bed with her and overlay it, that would be manslaughter. But here the evidence was that the woman had been drinking and was somewhat under the influence of drink, and having taken her child to bed with her, unhappily overlay it. That was not sufficient to support a charge of manslaughter.

Spasm of the Pylorus in Saturnine Intoxication.—Two instructive cases are reported by Layral which simulated completely the picture of cancer of the stomach in one, and of cicatricial stenosis of the pylorus with dilatation in the other. One was a farmer, the other a carpenter, with nothing to suggest lead poisoning, but the discovery of the gingival line and appropriate treatment cured both. The first case was treated with belladonna, five to six tablespoons of olive oil a day, with milk, followed by copious purgations with senna; the second case with potassium iodid, 1 gram, 50 centigrams a day, with sulphur baths, preceded by the application to the skin of a 10 per cent. solution of hydrochloric acid. He concludes his communication to the *Loire Méd.* by calling attention to the rapid spread of lead poisoning, as the metal is being used more and more in the industries, so that saturnine intoxication may be encountered in every class of society.—*Sem. Méd.*, August 18.

Constitutionality of Privy Vault Legislation.—Chapter 777 of the Public Laws of Rhode Island of April 25, 1889, as amended by chapter 1407 of March 1, 1895, so far as it relates to privy vaults, being the only portion called in question in the case of Harrington v. Board of Aldermen of the City of Providence, the supreme court of Rhode Island holds constitutional, Aug. [illegible], 1897. The first section of the act provides that the Board of Aldermen of the city of Providence may compel any abutting owner or occupant of land upon any street in said city in which there is a sewer to connect the drainage of his land and premises with such sewer, and may direct said owner or occupant to fill up and destroy any cesspool, privy vault or other arrangement for the reception of drainage. It being clearly intended to be an exercise of what is called the "police power," the court does not think the statute unconstitutional because no provision is made for notice to the owner or occupant of premises and no opportunity for hearing thereon is given to the owner or occupant before the passage of the order or direction by the board of aldermen, nor because by the provisions of section 3 of the act, the pendency of an appeal will not affect the power of the board to fill up and destroy the privy vault of such owner or occupant of the premises. Neither does the court deem controlling the contention that a privy vault itself when properly used is neither a nuisance nor injurious to health or comfort. But it emphasizes that the action authorized to be taken must be reasonable and reasonable methods followed.

A Two-dollar Fee for Night Medical Service Visits at Paris.—A disagreement has recently arisen between the prefect of police and the surgeons attached to the night medical service of the sixteenth arrondissement with reference to the payment of fees for which police are liable, the services having been rendered at the request of their officers. By a new regulation the prefecture bases its calculations upon the amount allotted for fees to each quarter, an average for three years being taken, and every three months the whole sum should be divided among those to whom it may be owing. In the Passy quarter, however, the sanitary conditions for the three months, January, February and March, were practically favorable and accordingly the fee worked out at about $4.75 for each visit. The administration considered this too high, and one medical sent in his resignation. With a view of healing the breach prefecture proposed as a way out of the difficulty that made during the first three months of the year in the quarter should be paid for at the rate of 10 francs for every night call.

Literary Notes.—The editor of *Janus* has instituted an inquiry having for its object a uniform system of reporting epidemiologic data. All medical men especially interested in this line of work are invited to communicate with Dr. A. Davidson, No. 30 Morningside Drive, Edinburgh, Scotland.

Dr. A. M. Brown of London has published a book on Molière, in the course of which he argues that the chronic ill-health of the great French dramatist was pulmonary phthisis. Molière was an ordinary *poitrinaire*, suffering from a hacking cough, emaciation, occasional hemorrhages and general debility. If the author is correct, as seems to be the fact from his collation of evidence, he has thrown much light on the inner life of the poet and on the motives that led him to select the medical profession as one of the objects of his satire. Dr. Brown's book, entitled "Molière and his Medical Associations," is published by the Cotton Press of London.

Hospitals.

Speers Memorial Hospital was dedicated at Dayton, Ky., September 23. The building is 185 by 75 feet and cost $75,000.——August F. Brecht, Philadelphia, recently deceased, left the following bequests to hospitals: Samaritan Hospital, $1,000; Orphans' Home and Asylum, $1,000; German Hospital, $500.

Societies.

The following societies have recently held meetings:

Indiana.—Maumee Valley Medical, at Columbia City, September 21; White River District Medical, at Vincennes, September 16; Vanderburg Medical, Evansville, September 21.

Iowa.—Scott County Medical, at Davenport, September 16.

Maryland.—Maryland Medical and Chirurgical Faculty, at Ocean City, September 15 and 16.

Minnesota.—Interurban Medical, at Duluth, September 17.

Missouri.—St. Louis Medical Society of Missouri, September 25.

Nebraska.—The Omaha Medical held its first fall session September 14.

New York.—The Brooklyn Medical, September 17; Onondago County Medical, at Syracuse, September 21; Westchester County Medical, at Echo Bay, September 21.

Ohio.—North Central Ohio, at Marion, September 24.

Pennsylvania.—County Medical Institute, at Scranton, September 14.

Texas.—Briggs Medical, at Waxahachie, September 15.

Idaho.—The Idaho State Medical Society concluded its session in Boise, September 16. Officers for the ensuing year were elected as follows: President, C. A. Hoover of Montpelier; vice-president, G. A. Coffer of Moscow; secretary-treasurer, E. E. Maxey of Caldwell; board of censors, S. L. Gritman of Moscow; E. F. Guoyon of Montpelier; J. V. Givens of Blackfoot.

Virginia.—Richmond Academy of Medicine and Surgery, September 15.

Wisconsin.—Association of Assistant Physicians of Hospitals for the Insane, at Madison, September 20; Sheboygan County Medical, at Plymouth, September 10.

Philadelphia.

THE WINTER COURSE of free clinical lectures at the Pennsylvania Hospital will be given in the new Garret Memorial Building, corner of 8th and Spruce Streets. The first lectures are to be delivered October 2, and they will be continued thereafter on Wednesday and Saturday forenoons from 10 o'clock to 12 o'clock, as usual.

THE CLINICAL LECTURES at the Philadelphia Hospital began two weeks ago.

THE ANNUAL COURSE of clinical instruction by the medical staff of the German Hospital will be given during the winter, commencing October 2.

THE PALATIAL CLINICAL AMPHITHEATER of the Medico-Chirurgical College will be formally opened, October 4th, when the Introductory Lecture of the Fall and Winter Term will be given in it. The Faculty of this school has recently received four valuable accessions to its teaching force. Wm. Louis Rodman, A.M., M.D., of Louisville, has been elected Professor of General Surgery and Clinical Surgery. Charles E.

M. Sajous, recently of Paris, has been chosen Dean of the Faculty and Professor of Laryngology. Dr. John C. Heister of Philadelphia has been given the Chair of Anatomy, general and descriptive, and Dr. Geo. Herbert Meeker has been elected Professor of Medical Chemistry.

THE NEW DENTAL DEPARTMENT of the Medico-Chirurgical College begins its first course on Monday October 4.

DR. HELEN KIRSCHBAUM, who for the past three years has been the resident physician and superintendent of the Maternity Home of Philadelphia, and manager of the Jewish Seaside Home at Atlantic City, has just resigned and has been elected a member of the visiting medical staff of the Maternity Home.

DR. HOBART A. HARE, who has been seriously ill with typhoid fever at the Presbyterian Hospital for the last three weeks, is convalescing and is considered now out of danger.

A BRUTAL MURDER of an elderly librarian was recently committed in this city under circumstances possessing many sensational features. Not the least among these is the statement going the rounds that the district attorney is said to have declared that a man now in prison under suspicion of having committed the crime, is held in spite of there being no evidence pointing to his guilt; while the coroner's physician is studying bloody finger marks and hoping to recognize the criminal by their aid (as in the celebrated case of Puddin' Head Wilson).

DR. H. AUGUSTUS WILSON has resigned from the Chair of Orthopedic Surgery in the Polyclinic and will devote himself to the service in the same department in Jefferson College. The trustees of the Polyclinic passed a series of complimentary resolutions expressing regret in accepting the resignation.

CHANGE OF ADDRESS.

Archibald, O. W., from Jamestown, N. D., to Loury Arcade, St. Paul Minn.

Adams, S. S., from Mountain Lake, Md., to 1 Dupont Circle, Washington, D. C.

Burtch, L. A. W., from Morrison, Ill., to Clifton, Ariz.

Bonnaffou, S. A., from Philadelphia to Williamsport, Pa.

Brener, C. H., from Seguin to Hallettsville, Texas.

Cole, A. B., 1519 M. St., N. W., To 1130 15th St., N. W., Washington, D. C.

Caley, W. B., from 52 W. 35th St., to 5 Park Ave., New York, N. Y.

Collins, T. S., from Globe, Ariz., to Santa Monica, Cal.

De Long, W. H., from Emporium, Pa., to Emporia, Fla.

Dewey, C. R., from Bangor to Mattawan Mich.

Dargatz, G. G., from 960 Main St., to 507 Ridge Blk, Kansas City, Mo.

Haskin, H. P., from Mansfield to 126 Pine St., Williamsport, Pa.

Hessler, Robert, from Logansport to Central Insane Hospital, Indianapolis, Ind.

Harrelson, N. O., from 31st and Main to 703 E. 9th St., Kansas City, Mo.

Hawley, E. A., from 4156 St. Lawrence Ave. to 477 E. 45th St., Chicago.

Klinkowstrom, E. V., from 477 W. Division St. to 493 N. Robey St., Chicago, Ill.

Kurkbride, M. F., from Spring Lake Beach, N. J., to 2212 Green St., Philadelphia, Pa.

Lewis, E. R., from 131 N. Meridian St., Indianapolis, Ind., to 1623 N. St., N. W. Washington, D. C.

Leidy, J., from Narragansett Pier, R. I., to 1319 Locust St., Philadelphia, Pa.

McBride, M. A., from Tahlequot, I. T., to Senior Bexar Co., Texas.

Taylor, P. K., from Mineville to 211 W. 139th St. New York, N. Y.

LETTERS RECEIVED.

Ayer, N. W. & Son, Philadelphia, Pa.; Atkinson, William B., Philadelphia, Pa.

Brooks, F. T., Greenwich, Conn.; Brown, George S., Birmingham, Ala.; Bausch & Lomb Optical Co., Rochester, N. Y.; Brown, G. V. I., Duluth, Minn.; Boehringer, C. F. and Soehne, New York, N. Y.; Bashore, S. D., Bachmanville, Pa.

Catlin, E. P., Rockford, Ill.; Cooley, E. M., Oblong, Ill.

Davis, Charles Gilbert, Chicago, Ill.

Elliott, A. R., New York N. Y.

Fischer Chemical Co., New York, N. Y.; Farles, Rudolph, Philadelphia, Pa.; Fairchild Bros. & Foster, New York, N. Y.; Fisher, J. L., Laurel Hill, Tenn.

Griffith, J. P. Crozer, Philadelphia, Pa.; Gerard, James C., Detroit, Mich.

Hobson, A. J., Hampton, Iowa.; Humiston, W. H., Cleveland, Ohio.; Hammond, J. C., Hanna, Wyo.; Henderson, H. C., Milford, Ill.; Hummel Advertising Agency, A. L., New York, N. Y.; Hull, W. H. H. & Co., New York, N. Y.; Hobart, John P., Cincinnati, Ohio.

Jackson, Edward, Philadelphia, Pa.; Jones, Thomas S., Louisville, Ky.

Kress & Owen Company, New York, N. Y.; Klump, John A., Williamsport, Pa.

Lyon, S. B., Chicago, Ill.; Lathrop, Helen M., Wausau, Wis.; Lewis, H. K., London England.

Mulford, H. K. Co., Philadelphia, Pa.; Montezuma, Carlos, Chicago, Ill.; Musser, J. H., Philadelphia, Pa.; Massey, G. Betton, Philadelphia, Pa.; Merrick, M. B., Passaic, N. J.; Martin, William, San Francisco, Cal.; McAdoo, E. E., Ligonier, Pa.

Pasteur-Chamberland Filter Co., Chicago, Ill.

Rockw[illegible] Ransom, J. B., Dannemora, N. Y.

Smith, [illegible] Tenn.; Sherman, A. W., Lamoni, Ia.; Smal[illegible] [illegible]abin, W. E., Highlands, Colo.

Tuley, [illegible]

Upjohn Pill & Granule Co., (2) Kalamazoo, Mich.

Wingate, U. O. B., Milwaukee, Wis.; Wolff, Bernard, Atlanta, Ga.

Ybarra, A. M., Fernandez, Schenectady, N. Y.

PAMPHLETS RECEIVED.

Addresses at the Unveiling of the Bronze Statue of Samuel D. Gross. Paper. Illustrated, 18 pages. Reprinted from Transactions of the American Surgical Association, 1897.

Annual Announcement of Baltimore University School of Medicine, 1897-98.

Cardiac Disturbances from Gastric Irritation. By H. Illoway, M.D. Paper, 28 pages. Repr[illegible] Journal.

Case of Double Pulmonic [illegible]ing Pleurisy; Interrup[illegible]; Case of Pulsat[illegible]ginating in Colorado; Physical Sign[illegible] N. Hall, M.D. Reprints.

Clinical Lecture on an Obscure Tumor of the Abdomen, etc.; Literary Methods in Medicine; Resection of the Sternum for Tumors; Treatment of Cancer of the Rectum; Tuberculosis or Carcinoma (?) of the Stomach. By W. W. Keen, M.D. Reprints.

Clinical Study of the Ophthalmic Symptoms Seen in a Case of Fracture of the Anterior Base of the Skull; Clinical and Histologic Study of a Case of Epithelioma of the Corneo-Scleral Junction; Clinical History of Series of Operative . . . . . Cure of Cicatricial Ectropium from Antral Disease; So-called Traumatic Enophthalmos; Case of Reparation from Extensive Injury Involving Inner Angle of the Eyelids; ; Case of Subconjunctival Dislocation of Crystalline Lens; Ophthalmic Representation of Traumatic Rupture of Inferior Temporal Vein of Right Retina. By Chas. A. Oliver, A.M., M.D. Reprints.

Congenital Absence of Uterus and Vagina. By W. L. Burrage, M.D. Paper. Illustrated, 12 pages. Reprinted from American Journal of Medical Science.

Diagnosis and Treatment of Chronic Gastric Catarrh. By Frank H. Murdock, M.D. Paper, 8 pages. Reprinted from New York Medical Journal.

Distinctive Features of Railway Surgery. By R. Sayre Harnden, M.D. Paper, 10 pages. Reprinted from International Journal of Surgery.

Epiphora, or Watery Eye; Lachrymal Abscess; Necrosis of the Bony Walls of Lachrymal Canal; Implantation of a Glass Ball for Support of an Artificial Eye; Grattage for Radical Cure of Granular Lids. By L. Webster Fox, M.D. Paper, 8 pages. Reprinted from International Clinics.

Medical Expert Testimony. By Wm. L. Foster. Paper, 32 pages. Reprinted Trans. of New Hampshire Medical Society.

Progress of Laryngology and Rhinology in Victorian Age. By St. Clair Thomson, M.D., M. R. C. V., Lond., F. R. C. S., Eng. Paper, 8 pages. Illustrated. Reprinted from British Medical Journal.

Recurrent Gall-Stones; Angioma of Spleen; Excision of Cecum. By John Homans, M.D. Paper, 8 pages. Illustrated. Boston.

Remarks on Laminectomy. By Oscar J. Mayer, M.D. Paper, 12 pages. Reprinted from Annals of Surgery.

The Technique of Prof. Keen's Surgical Clinic in Jefferson Medical College Hospital. By Thos Leidy Rhoads, M.D. Paper, 46 pages. Reprinted from Therapeutic Gazette.

The Serum Diagnosis of Enteric Fever by the Dried Blood Method. By J. C. DaCosta, Jr., M.D. Paper, 30 pages. Reprinted from New York Medical Journal.

The Work of the Medical Department on United States Naval Vessels. By C. A. Siegfried, M.D. Paper, 32 pages. Columbus, Ohio; Berlin Ptg. Co., 1897.

Trade Pamphlets.

A Story of Some Phaetons. Columbus Phaeton Co., Columbus, Ohio.

Catalogue No. 23; Anatomy, Physiology, Zoology. Alfred Lorentz, Leipzig.

Medic[illegible] n Drug Co., St. Louis.

Moun[illegible] Announcement. Mount Clemens, Mich.

Prof. [illegible]-Milk as a diet for Infants and Invalids. New York City.

Selected Medical Works; Catalogue. Lea Brothers & Co., New York City.

THE PUBLIC SERVICES.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from September 18 to 24, 1897.

Lieut.-Col. Johnson V. D. Middleton, Deputy Surgeon General (chief surgeon, Dept. of California), leave of absence granted is extended one month.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending September 25, 1897.

Asst. Surgeon C. E. Riggs, detached from the New York navy yard October 4 and ordered to the "Newport" October 4.

P. A. Surgeon J. F. Leys, detached from the "Helena" September 20 and ordered to the "Vesuvius."

Surgeon N. H. Drake, ordered to the "Minneapolis," "Columbia" and other vessels in reserve at League Island, Pa.

P. A. Surgeon M. F. Gates, detached from the "Minneapolis" on relief and ordered to the Boston hospital.

Surgeon G. P. Lumsden, detached from Port Royal on relief and ordered to special duty attending officers at Norfolk, Va.

P. A. Surgeon G. A. Lung, detached from the Boston Hospital on relief and ordered to naval station, Port Royal, S. C.

P. A. Surgeon M. S. Guest, detached from the "Vesuvius" and ordered to the "Helena" September 20.

Surgeon F. Rodgers, when detached from Boston navy yard, ordered home and be ready for sea.

Surgeon H. E. Ames, ordered to the navy yard, Norfolk, Va., October 2.

Asst Surgeon M. S. Elliott, detached from the "Indiana" and ordered to the "Porter."

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ADDRESS.

THE PROGRESS AND RESULTS OF PATHOLOGIC WORK.

An address delivered at the opening of the Section of Pathology, at the Sixty-fifth Annual Meeting of the British Medical Association, Montreal, Aug. 31 to Sept. 4, 1897.

BY W. WATSON CHEYNE, M.B., F.R.C.S., F.R.S.
PROFESSOR OF SURGERY, KING'S COLLEGE, LONDON, ETC.

[Abstract from advance sheets of the British Medical Journal.]

To trace the history of pathology during the last sixty years would be to follow the science practically from its commencement and to go back to a state of matters which it is almost impossible for us now to realize. Even going back twenty-five years, the changes which have taken place are enormous. At that time the lectures on pathology consisted practically entirely of morbid anatomy—long descriptions, for the most part very accurate and not materially different at the present day, were given of the naked-eye appearances of the diseased parts, but as to how or why these changes were brought about hardly any reference was made. Indeed, very little was known, and when an explanation was attempted it was generally of a mechanical or physical character. At the present time, while of course the changes which take place in disease must be known, the study of pathology is especially directed to the discovery of the mode in which these changes occur and the reasons why they appear. Today it is the etiologic side of pathology which occupies our attention, and deservedly so, for, so far as practical results in the treatment of disease are concerned, the knowledge of the changes produced is of comparatively minor importance as compared with that of the reason why they are set up and how they take place.

The most striking and important advance has been the growth of the great science of bacteriology. Twenty-five years ago bacteriology as a science was non-existent. So far as I remember, bacteria were not even alluded to in our course of pathology, and it was only from Lord Lister that we heard the real facts so far as they were known, or gained any idea of the importance of their study; but even at that time, although his methods of treatment were already yielding brilliant results and saving many lives, and although he had deduced from clinical facts many points in the life-history of bacteria and their relations to the living body, which were only confirmed by experiment subsequently, still the number of actual proved facts was extremely few.

It is difficult for those who have only taken up the subject of bacteriology comparatively recently to realize the absolute blank which it presented even twenty years ago. When I became house surgeon to Lord Lister in 1876, objections of all kinds were urged against the theory on which Listerism was based, some denying the existence of bacteria at all, others maintaining the theory of spontaneous generation; some asserting that organisms were always present in the healthy tissues, others denying that they had anything to do with disease. These objections led me to take up bacteriology, for it seemed to me of great importance to ascertain whether or not, as the result of antiseptic treatment, organisms were absent from the discharges from the wounds. Although at the present time such an investigation would be one of the simplest, yet when I came to carry it out I was met with the greatest difficulties. Practically nothing of the kind had been done before, and all the means of investigation had to be devised. Methods of staining bacteria had not been introduced, we had no oil immersion lenses, and I very soon found that by looking at discharges from wounds containing leucocytes, granular matter and débris with dry or water immersion lenses, and without substage condensors, no satisfactory result could be arrived at. Hence I came to the conclusion that attempts must be made to see whether organisms grew in suitable fluids inoculated from the discharges. Here again everything had to be devised. A suitable pabulum, methods of sterilization, of inoculation and of incubation had to be worked out. A large amount of time was spent in getting over the preliminary difficulties, and after a satisfactory method had been found, much labor had to be devoted to preliminary questions, such as spontaneous generation, morphologic characters of bacteria, their presence or absence in the living body, conditions of growth, and so on.

A great advance which followed soon afterward was the remarkable research by Lord Lister on the bacterium lactis, in which he devised a method of separating bacteria by fractional cultivation, which resulted in the separation of the bacterium which causes lactic fermentation from other organisms. By this research, apart from the method, a great step was gained in the proof of the specificity of a particular bacterium, both as regards morphologic characters and chemic action.

Then came Koch's work on infective diseases of wounds, and the publication of his methods of staining and examining bacteria and of cultivating them on solid media, and this work is at the foundation of all modern bacteriologic research. From this period the investigations have branched off in two directions: 1, almost all the infective diseases have been investigated for parasitic organisms, and in a large number the causal agents have been identified; 2, researches have been carried on tracing out the life history and functional activity of bacteria, and in ascertaining what occurs in the body when organisms or their products are introduced.

From the latter point of view we come to another great landmark in the study of bacteriology, namely, Metchnikoff's work on phagocytosis, a theory which has proved a most suggestive working hypothesis, leading to many of the researches which have given bacteriology its present position.

Many problems remain unsolved. In tuberculosis, why is it that in one part of the body we have a slow growing lupus disease, and in another part, perhaps of the same body, a rapidly developing tuberculosis? None of the explanations usually given, such as differences in the structure or resisting power of the tissues affected or of the individual, differences in the virulence or activity of the organism, etc., seem to furnish sufficient explanation. And the same problem is apparently presented with regard to the bacilli of diphtheria, in that we may have in one case a true diphtheria, in another a membranous rhinitis, while in a third, although the bacilli are present in the throat, the individual may be apparently healthy.

Another very remarkable problem is presented by the results which follow free incisions into tuberculous tissue. An incision is made into the abdominal cavity, masses of tuberculous tissue and tubercle are found scattered over the peritoneum, nothing whatever is done, the wound is stitched up, and yet in many cases the patient, who up to that time has been going steadily down hill, begins to pick up, and the disease may come entirely to a standstill. This phenomenon is not limited to peritoneal tuberculosis. When I was a student, the tuberculous nature of what are now recognized as tuberculous diseases of the bones and joints was then only suspected, and was not generally accepted by the medical profession. At that time Lord Lister, under the impression that these diseases were of a simple inflammatory nature, and having observed the improvement which often followed free incisions into chronically inflamed tissues, began as an ordinary line of practice to make free incisions through the thickened synovial membrane of tuberculous joints with the view of relieving tension, which he looked on as the chief cause of the continuance of the trouble. Nothing else was done, the joint was not even washed out, nothing was taken away, and yet in a considerable number of cases so treated improvement began from the time that the incisions were made; the patients lost their pain, the wounds gradually healed up and the disease subsided. Even in cases in which the results were not so satisfactory it could as a rule be noted that, although the swelling continued in other parts of the joint, and although the disease began again after a few weeks as vigorously as before, yet for a time at least the thickening disappeared in the neighborhood of the scars, showing that there at any rate temporary benefit had occurred. What possible explanation can we give of such a result? The older surgeons used to speak of "setting up a healthy action in the part," and were quite satisfied with that statement. Such a view is too vague for us nowadays, but may there not be here a possible working hypothesis which if followed out might throw light on this matter? May not the occurrence of healing processes at one part influence in some way or other morbid processes in the vicinity?

Again, what is the meaning of a chronic abscess? How is it that the tubercle bacilli at one time produce a quantity of tuberculous tissue, at another a cheesy mass and at another a chronic abscess?

In connection with the pyogenic organisms also we have many problems. How is it, for example, that after an abscess is opened antiseptically suppuration at once ceases? If instead of opening the abscess antiseptically a poultice be applied, suppuration goes on and may be very profuse. But if it be opened at a time when there is free fluctuation and when it is beginning to point, and if the necessary antiseptic precautions be taken and proper drainage provided, no more pus forms, and yet when the abscess is opened it is found to contain living pyogenic organisms. We can easily understand that the subsidence of the fever and general disturbance is due to diminished absorption of toxic products. But why do not these living pyogenic organisms keep up the suppuration? and why is it that after two or three days one may fail to obtain any cultivations from the serum which escapes from the wound? If the inflamed part be opened up antiseptically, however, at an early period, just when pus is beginning to form, there is not always the same complete absence of suppuration, although it seldom goes on to any considerable extent.

Again, an operation wound becomes septic and one naturally opens it up freely and establishes drainage; but here suppuration does not cease at once in the same typical manner as in the case of an abscess which has existed for some days. The old surgeons used to speak of an abscess being "ripe," and they allowed it to remain unopened for some days until it was pointing. They found that if they opened a deep abscess early suppuration went on and was apt to extend. No doubt a variety of causes led to this dictum; they did not provide proper drainage; they introduced other and more vigorous organisms at the time of operation and afterward, etc.; but do not the facts seem to indicate that, as regards the cessation of suppuration, there is some ground for this idea of ripeness. Is it possible that when the abscess has attained a considerable size and the tension of the pus in it is great the sudden release of the pent-up fluid may lead to such a pouring out of serum containing antitoxic substances as to absolutely destroy the organisms present, while, the case being treated antiseptically, no fresh organisms can come in to take their place? And yet I can hardly think that that is the whole explanation.

Although it is in the department of bacteriology that the most striking advance has been made, great progress has also gone on in pathology generally, in a considerable number of cases no doubt stimulated by the results of bacteriologic research, and more especially by Metchnikoff's work. The subject of inflammation has had much attention paid to it, although I can not say that to my mind it has been made any clearer. The tendency now appears to be to regard inflammation as the natural effort at repair after injury. At one time this was the view held by surgeons, and the doctrine was that inflammation was essential to healing, and in the description of healing by first intention it was stated that a red blush occurred around the wound, not so severe, however, as where suppuration takes place, and that without this red blush the edges did not adhere. When antiseptic treatment was introduced it became evident that no inflammatory blush or other sign of inflammation was necessary for healing by first intention; in fact, it was found that wounds healed best when no visible signs of inflammation was present. I have, therefore, always taught that inflammation and healing are two different and, indeed to some extent, antagonistic processes, and that although in every wound the tissues in resenting the injury show the early stage of inflammation, yet if no organisms be admitted the inflammatory phenomena soon pass off, and where there is destruction of tissue a second process, namely, that of repair, begins. I still look on inflammation as the mechanism which gets rids of noxious agents or neutralizes their effects, and on the healing process as that which repairs defects, whether they are caused by injury and associated with inflammation or not. In fact, inflammation must be followed by repair if recovery is to take place, but repair need not be preceded by inflammation. The difficulty arises from the close association of the two processes, both of which have to do with the growth of cells, and from the fact that repair follows as soon as the inflammation begins to subside. Hence, under the microscope, except in cases of acute suppurative inflammation, one sees the two processes at work side by side, and it is not a matter of surprise that they should be confounded.

When Cohnheim first published his observations on the *emigration* of corpuscles, it was thought by many that the leucocyte was everything and did everything, but it was soon evident that other cells of different origin must be taken into consideration. When Metchnikoff's theory of phagocytosis first came out some of those who adopted it assumed that all wandering cells were phagocytes; but here, again, further investigation has shown that cells differ greatly as regards their phagocytic action. I think that a good deal of the confusion of these processes arises from the fact that expressions involving a teleologic argument are becoming very common, more especially with regard to the protective arrangements of the body. On the idea of an acting intelligence on the part of the cells, the two processes would naturally go together; but, looked on as the simple effect of an injury, they should, I believe, be regarded as independent, and the less and the shorter the inflammation the better and quicker the healing process.

A very remarkable thing in connection with these advances, especially in experimental pathology, is the enormous direct practical benefit which has already resulted to the human race; and it is sufficient answer to the antivivisectionists who oppose the use of intelligence and observation and experiment, to point to the saving of human life and the relief of suffering which has taken place in the last few years. Since Pasteur's experiments on spontaneous generation were published remarkable results have been attained in treatment as the result of experimental pathology.

Scientific efforts to arrive at the truth are necessarily slow and must be carried on without any regard to possible ultimate practical results. When the earlier investigators studied the phenomena of electric action they could have had no idea of the revolution which this study of electricity would effect in the history of the world. When Pasteur resolved to test the theory of spontaneous generation, it did not seem likely to lead to any beneficial result; indeed, his friends tried to dissuade him from entering into what was apparently a useless investigation, and yet what numbers of human lives have been saved as the result of that work and what incalculable benefit has accrued. It is greatly the fashion with the opponents of experimental research to demand a single instance in which an experiment has led to the discovery of a means of cure; but in no department of science has a single experiment of itself alone led to the practical result. The final observation which led to the practical result has been built up on numerous and laborious preliminary investigations and observations. And similarly, in regard to the cure or prevention of disease, the final trials on man have been led up to by numerous preceding observations and experiments. If these deluded people had their way, the result would be that experiments would be limited to man, and everyone to whom a new idea occurred would apply it without any previous investigation—surely an appalling prospect, whether for physician or patient.

The practical results already obtained affect diagnosis, prophylaxis and treatment. The diagnosis of many parasitic diseases has now been rendered certain and easy by searching for the causal organism, and I need only instance such diseases as diphtheria, tuberculosis, malaria, anthrax, gonorrhea, etc. It is not only by the discovery of the parasite that diagnosis is assisted, but also by other effects of the organism, such as the sort of changes set up in the tissue, the reaction to products of the organism, for instance, tuberculin and mallein, etc. If no other practical advance had resulted from bacteriologic work, the possibility of establishing a definite diagnosis in obscure cases is surely a gain of the utmost importance.

The greatest of all the advances, because so wide-reaching, has been in the prophylaxis of the disease, especially in the prevention of septic disease after operations, as brought about by the discoveries of Lord Lister. By these discoveries the occurrence of sepsis in septic wounds are much diminished and numerous lives are saved, not only in this way but also by the fact that the Listerian treatment permits the performance of many life-saving operations which could not otherwise be attempted.

Lastly, I may refer to advances in the cure of disease. In the case of diphtheria there can be no question that the antitoxin is a most potent curative agent and that used in the early stages it is almost certain to cut short the disease. As regards tetanus, the evidence in the case of animals is absolutely convincing, but in patients suffering from the disease the effect is not certain, probably because we have to do with an acute illness, which runs its course before the serum has had time to act. The same may also be the case with the antistreptococcic serum, although I have great doubts of its value as a curative agent. In other instances, such as plague and snakebite, we may apparently look forward to a cure; and researches are being carried on with regard to pneumonia which may lead to valuable results; nor must I forget to mention Pasteur's system of inoculating cattle against anthrax. What are we to say about the new tuberculin? We all know how careful an observer Koch is, and the fact that he looks on it as a valuable remedy is to my mind sufficient to make it necessary to give it a careful and hopeful trial.

But it is not only in the direction of bacteriology that advantage has resulted from pathologic research. Look at the advances in treatment from the use of organic fluids. As the result of observations on man and researches on animals as to the effects of excision of the thyroid gland attempts were made to transplant the healthy thyroid gland into animals and patients in whom it was absent and following these attempts the use of thyroid extract has ultimately come to be a recognized method of treatment. There is, perhaps, nothing more striking in medical treatment than the rapid and remarkable improvement in cases of myxedema from the use of thyroid extract.

I might enumerate many other instances of direct benefit from pathologic research, such as the advances in the treatment of tuberculous diseases of bones and joints as the result of better knowledge of the nature and distribution of the disease, the treatment of appendicitis and the investigations on peritonitis and diseases of the appendix, the more complete operations for cancer following fuller study of the mode of spread of the disease, and so on.

But while pathologists are thus working out problems which affect the general well-being of mankind and the solution of which can be no personal gain to themselves, is it too much to ask mankind to furnish the means for such research? The English are looked on as a thoroughly practical people, and yet it is a very remarkable thing that England is almost the only country which does not realize the importance of scientific research and the result is that in England, with very few exceptions, men who might otherwise have thrown much light on these matters are compelled to turn their attention to practice in order to make a living. Unless work of this kind is done how can we hope to advance with any rapidity in the treatment and cure of disease? The surgeon or physician must wait till the information of which he is urgently in need has been acquired for him by the pathologist. Such apathy can surely only be the result of ignorance. A rich man affected with an obscure or incurable malady can not understand how it is that he fails to obtain the definite opinion or the relief which he so earnestly desires and for which he is prepared to pay any price. Surely if he understood the meaning and importance of pathologic research and that the practicing physician can only apply and carry out what is taught by the pathologist, he would bestir himself to aid research in order to gather information which might be of much use to him and others.

ORIGINAL ARTICLES.

EXPERIMENTAL BASIS OF THE DIETETIC AND MEDICINAL TREATMENT OF HYPERACIDITY AND GASTRITIS.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY JOHN C. HEMMETER, M.B., M.D., Ph.D.

CLINICAL PROFESSOR OF MEDICINE IN THE BALTIMORE MEDICAL COLLEGE; CONSULTANT TO THE MARYLAND GENERAL HOSPITAL.
BALTIMORE, MD.

Boas, who first used the finding of fragments of mucosa in the vomited matter and gastric wash water for diagnostic purposes, attributed great importance to this way of finding out the real state of the mucosa. He held that, in certain conditions of suppressed secretion, the differential diagnosis between a possible neurosis and a genuine gastritis with a glandular atrophy was only possible by examination of such pieces of mucosa. Rosenheim, Boas and Julius Friedenwald, *Med. News*, June 22, 1895, emphasize the value of qualitative and quantitative testing of rennet zymogen to differentiate between chronic gastritis with glandular atrophy and carcinoma on the one hand, and nervous dyspepsia and secondary gastritis on the other. However, Ewald and also Einhorn have asserted that absolute deficiency of rennet zymogen is not pathognostic for atrophy, therefore it would indeed seem as if a certain diagnosis could only be made by a small piece of mucosa.

Is there any clue which can be derived from these pieces regarding the state of the mucosa in the secretory disorders? This I will try to answer in the following. Hayem, to whom we are indebted for the best histologic investigations of the gastric mucosa, emphasizes that the individual elements of the mucosa, gland ducts, superficial epithelium and interstitial tissue can become diseased in a variety of ways; the various portions of the stomach fundus, pylorus and cardia may exhibit different affections; and finally the mucosa may at different parts show different phases of disease. He distinguishes a parenchymatous and an interstitial gastritis. First the parenchymatous:

1. *Gastrite parenchymateuse hyperpeptique chloro-organique.*—Under this he has two subclasses: *a*, *d'emblée*—dyspepsia coming on at once, in the first stage of digestion; *b*, *tardive*—coming on in later stages, in one and one-half to two hours. Under this hyperpeptic parenchymatous gastritis Hayem means, clinically, a hyperpepsia with hyperacidity, and anatomically, degeneration of the principal central or chief cells with proliferation of the parietal border or oxyntic cells.

2. *Gastrite parenchymateuse muqueuse*—"gastritis mucipara," by which he means a mucous degeneration, a process taking place principally in the vestibules to the gland ducts (which are lined with columnar epithelium), and corresponds to the Schleim Katarrh of most German writers. This is associated with hyperpepsia and subacidity.

3. *Gastrite parenchymateuse atrophique*, which signifies anatomically the total atrophy of the glands without interstitial processes, and clinically, anacidity or achylia. The interstitial forms he separates into two classes: those in which the round cell infiltration, and those in which the sclerosis, *i. e.*, connective tissue proliferation, predominates. These processes are described as occurring purely as such, or mixed with forms of parenchymatous gastritis, and as leading to sub- or anacidity. In order to bring my results in critical consideration with those of Einhorn, I have adopted his classification of the anatomic conditions found in these fragments. There is, however, one objection that can be urged against it, and that is the apparent fact that he has based his system on conditions of the gland tubes and interglandular tissues exclusively, and mentions the state of the cells only once in six types described. I will therefore supplement his categories by adding the state and condition of the vestibular or alveolar columnar cells (Vorraum Zellen), and the condition and numeric relations of the chief, central or ferment cells (Hauptzellen) and the parietal, border or oxyntic cells (Belegzellen).

1. Normal. Gland ducts and interglandular tissues exist in normal proportions. Columnar epithelium of the surface and that of vestibule normal, with scarce cells showing at their free ends slight mucoid metamorphosis. The average number of parietal or oxyntic cells in six ducts which were sectioned very nearly down the center was twenty-two to forty.

2. Connective tissue excess. Proliferation of connective tissue around the glands, glands and epithelial cells as in normal condition.

3. Proliferation of glands. Under this class I have in nineteen cases been impressed with the probability that there must be three types of this condition:

Type *a*.—In this subtype there is a proliferation of gland tubules. Under the same field of microscope there will be more than under normal conditions, since they are much closer to each other, but the number of central and oxyntic cells are from eighteen to forty-two, or the same as under the normal condition.

Type *b*.—Increase of oxyntic or parietal cells with normal number of gland ducts. Here there seems to be no proliferation of the gland ducts, the connective tissue and the ducts bear the same relation as in class 1, but the anilin staining, oxyntic cells may be so increased that they lie in juxtaposition, giving the whole duct the appearance of a peptic duct of the dog; the number may reach seventy in one duct. The oxyntic cells are increased in size; the nuclei stain very dark.

Type *c*.—Increase of the number of ducts in which the number of oxyntic cells appear normal in size and number, and in the same fragment or section portions of mucosa in which the ducts are not augmented, but the oxyntic cells are increased in number and size; this third is then, it would seem, a combination of types *a* and *b*. When there are many oxyntic cells above the normal, the entire gland duct assumes a tortuous or elongated shape. It seldom extends down into the mucosa in the same plane, therefore it is very rare that a section will strike down the middle of a duct. Generally the counts in six ducts struck fairly along the central canaliculus are taken as an average.

4. Incipient atrophy. To the same field under the micrometer there are fewer glands than normally present. They appear shrunken and smaller, and at the same time the spaces between the glands are larger than normal, owing to an increased connective tissue formation; the latter is thickly invaded as a rule, with small round cell infiltration.

5. Atrophy. In complete atrophy there are only remnants of glands left, a few degenerated cells lying in empty circular spaces where glands had previously existed; there is also a diffuse round-celled infiltration.

6. Vacuolization. Round or ovoid vacuoles exist within the glands in large numbers, being the result of mucoid degeneration of some of the glandular cells; this is generally associated with connective tissue proliferation. Vacuoles are present in the gland cells normally and can be seen in the drawings of Kupher and Stöhr. I have also seen them in both longitudinal and cross sections of the gland tubules, but rarely more than two to three to the entire duct. It is conceivable that they may be produced by the process of hardening and imbedding. Some of the fragments obtained from stomachs may show characteristics of two types.

DEDUCTIONS FROM THIRTY-SIX CASES.

In eight *healthy* persons the mucosa fragments were normal in six; proliferation and autodigestion marked in one, which also showed beginning small round cell infiltration between the ducts; connective tissue increase in one. In the first of these cases the examination showed proliferation in one fragment and a normal condition in a second one found in the same wash water.

In eighteen cases of *hyperacidity*, the fragments of gastric mucosa were found apparently normal in four; atrophy of gland tubules and connective tissue increase so that there were fewer glands, but in these few there were contained a larger number of oxyntic cells than normal, in two cases; proliferation of gland ducts with apparently normal oxyntic cells in six cases; proliferation of oxyntic cells, generally without marked increase in the gland tubules, in six cases.

In twelve cases of *anacidity* or *subacidity* the fragment was apparently normal in two cases; proliferation of glands with marked small round cell infiltration was found once. Atrophy in some form was found in the fragments from the nine remaining cases.

In establishing the classification of euchlorhydria and hyperchlorhydria we could not be guided exclusively by the amount of free HCl found after the double test meal used at the Maryland General Hospital and described in the author's book (Hemmeter, "Diseases of the Stomach," p. 111. P. Blakiston Son & Co., Philadelphia, 1897). Thus, a young, vigorous farmer, aged 25, who had never had any disease, showed on repeated examination an amount of free HCl equal to 60 degrees, with a total acidity of 80 degrees. Ordinarily, judging simply from the analysis, such a case would be diagnosed as hyperacidity. However, these cases can be diagnosed justly and accurately when considered together with concomitant signs and symptoms only. Although this case had the large amount of free HCl, there was no starch indigestion, no erythrodextrin, no pyrosis; there were no symptoms referable to the stomach at all, the man was in perfect health.

Another case, a neurasthenic female, had intense suffering from hyperacidity and occasional gastroxynsis, and the amount of free HCl was never over 30 degrees. This case showed hypermotility. The stomach as a rule was empty twenty-five minutes after an Ewald test meal; with my intragastric rubber bag in connection with the kymograph, she showed very frequent and sudden gastric peristalsis of unusual tonicity.

SUMMARY.

Eight *healthy* persons: Perfectly normal in six; *a.* glandular proliferations; *b.* normal in 1; connective tissue increase in 1.

Hyperacidity in eighteen cases: Normal in four; atrophy in two; proliferation of glands in six; proliferation or hypertrophy of oxyntic cells in six.

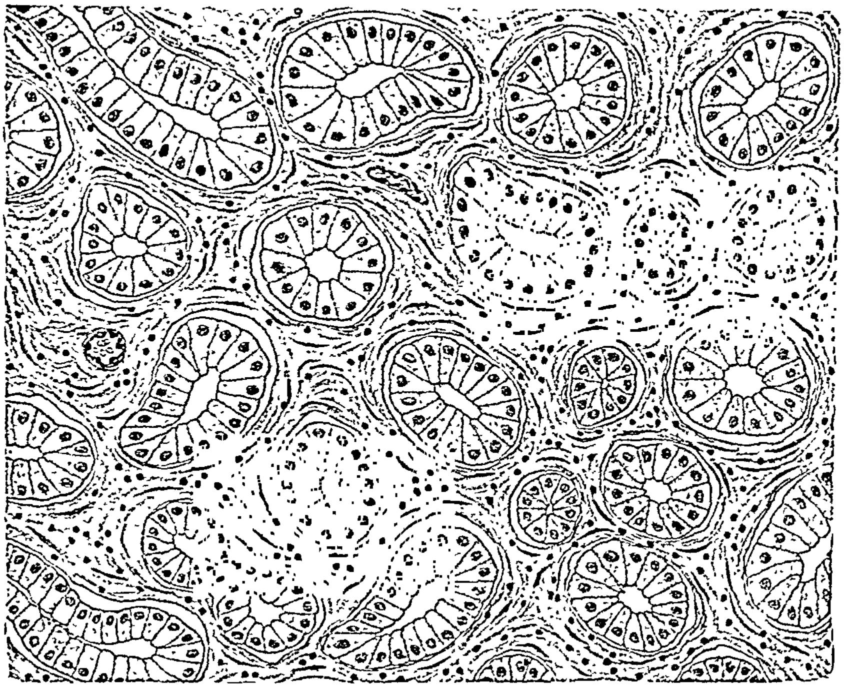
Anacidity or subacidity: Normal in two; proliferation of glands in one; atrophy in nine.

Proliferation, therefore, according to this table is present in two-thirds of these cases of hyperacidity, and atrophy in three-fourths of these cases of anacidity or subacidity. Einhorn does not give any results from examination of perfectly healthy individuals as his cases of euchlorhydria seem to be in patients.

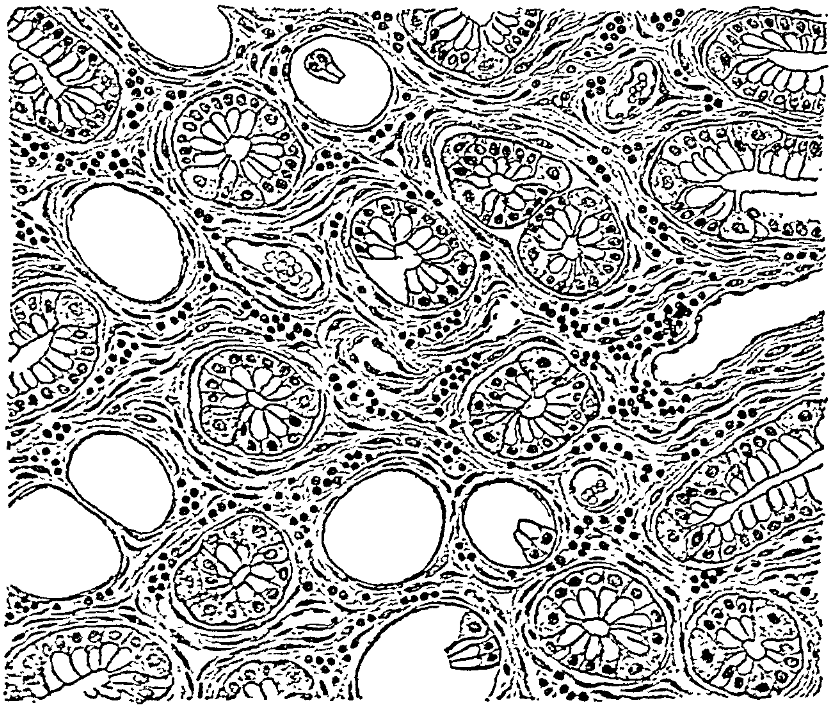
Of his twelve hyperacid cases three were normal or very nearly so, six showed proliferation and three showed connective tissue proliferation. In his cases of anacidity, or rather what he calls achylia gastrica of which there were seven cases, there was atrophy three times, marked vacuolization once, proliferation once, and normal condition twice.

On the whole, judging from Einhorn's results, Cohnheim's, Hayem's and my own, the conclusions seem justifiable that proliferation of glandular elements is present in from one-half to two-thirds of the cases of hyperacidity, and atrophy is present in from one-half to two-thirds of the cases of anacidity.

Adolf Schmidt (*Virchow's Archiv*, Bd. cxliii, S. 478), asserts that the epithelium of the stomach is preserved better than the gland cells in inflammatory conditions of the mucosa. This he says is particularly so in chronic gastritis which forms island-like foci in stomachs otherwise not much changed. My experience and that of W. D. Booker, is not in accordance with this observation (see pathology of simple, acute and chronic gastritis in the clinical portion of Hemmeter's "Diseases of the Stomach"). Although I preserved the stomachs by injecting them with alcohol immediately after death (within twenty minutes), also with formalin and sublimate so that autodigestion was at once checked, my sections showed generally a more serious destruction of the surface epithelium than of the gland cells. At times both are so much altered that it is impossible to say which is most or least affected. It seems in chronic gastritis that new epithelium will be reformed quite rapidly where the old has been lost or destroyed.



Fragment of mucosa showing normal condition of glands; very slight round-celled infiltration. From Hemmeter's "Diseases of the Stomach," P. Blakiston Son & Co., Philadelphia, Pa., October, 1897.



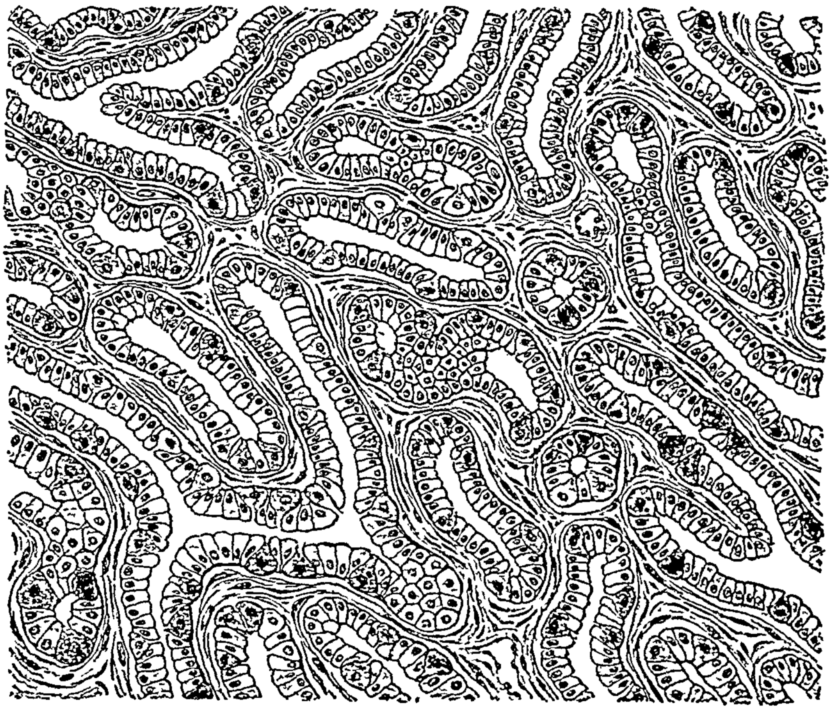
Atrophy and vacuolization of glandular elements; mucoid degeneration of chief or central cells; comparative preservation of border or oxyntic cells; from a case of gastritis acida. From Hemmeter's "Diseases of the Stomach," P. Blakiston Son & Co., Philadelphia, Pa.

In suspected cases of malignant neoplasms fragments of the growth are occasionally found and are of importance in the diagnosis. In carcinoma of the cardia or esophagus they are most frequently found in the lower or side opening of the tube, as it must pass through or over the growth on its way into the stomach; but even in malignant growths of other parts of the stomach, patient searching in the sediment of the wash water will sometimes reward the clinician by the discovery of tumor fragments. The first wash water in the morning, about 500 c.c., should be permitted to settle twelve hours in a conical glass such as is used for the settling of urinary solid constituents, and the sediment should be examined under a low power (about 50 diam.) or the sediment may be more expediently brought down in the centrifuge.

Once I made the diagnosis of carcinoma when no tumor was evident from repeatedly finding involuntary muscle fibers when no meat had been eaten for three days after preceding lavage. It proved to be a broad, flat carcinoma of the posterior wall.

The sections were stained in a variety of ways, principally in the eosin-hematoxylin, Golgi and Bismarck brown stains. The minute communications of the oxyntic or parietal cells with the central duct are best brought out by the Golgi method.

The drawings of fragments found in the wash water of glandular proliferation with glands closely packed and connective tissue diminished, and of glandular atrophy, mucoid degeneration, vacuolization, and small cell infiltration are all explained by the text accompanying the illustrations. These drawings are taken from the author's text-book, " Diseases of the Stomach." We have seen that histologic changes approaching or actually representing pathologic states may be going on in perfectly healthy stomachs. Furthermore, the stomachs of diseased patients may on serial sections show a different pathologic state at different places of the mucosa. Therefore, it must be borne in mind that although the findings in hyperacidity and anacidity appear to be in some relation to the disease, this kind of investigation must not be relied on as representing in a given fragment the condition of the entire mucosa. It represents the state of the location from whence it sequestrated, and that not being accurately known generalizations must be made with caution.



Hypertrophy and proliferation of glandular elements, from a case of persistent hyperacidity.

It is therefore rational to presume that there are at least two kinds of hyperchylia: One which is of neurotic origin and in which the acid elements of the mucosa are not hypertrophied or augmented, and the other in which the neurotic symptoms are absent, or at least not very marked, and in which a decided proliferation of the secreting cells of the gland ducts can be made out. It is conceivable also that in the neurotic type, although there may be no hypertrophy and increase in the number of gland cells at the beginning of the disease, the constant demand upon and stimulation to the increase of acid and ferments may, in the course of the disease, eventually bring about an oxyntic cell, hyperplasia and hypertrophy. Edinger explains the anatomic changes in the spinal cord and nerves by a disproportion of the function of activity and the replacement of nervous elements; an increased activity of an organ leads to straightening of the same and increase in its volume; inactivity leads to a weakening and atrophic state of an organ. W. Roux ("Entwickelungs-Mechanick der Organismen," 1895) uses the expression "each cell gains a living by work, and the more it works the better it is nourished and the stronger it grows." In hyperacidity the elements that come more into play and do more work will increase in strength and numbers and gain supremacy. Dujardin-Baumetz and F. Sohlern (*Berlin. Klin. Wochschr.*, 1891, 20 and 21); Fleiner (Volkmann's Klin. Vortr., 103) and Rummo (*Terapia clin.*, 1892, Nos. 10, 11 and 12), recommended a largely carbohydrate diet in gastric diseases accompanied by abnormal production of acid. We have satisfied ourselves personally, after a very large number of quantative chemic analyses of the gastric contents of healthy individuals after they had taken weighed amounts of pure proteid and pure carbohydrates, that the proteid articles of diet are greater stimulants to the secretion of HCl than the carbohydrates or fats. They therefore stimulate and irritate the secretory layer to a greater formation of hydrochloric acid; this has been experimentally proven to a certain extent by v. Jacksch in children. It is also known that the great variations stated by different authors as to the amount of free HCl that is normal in their localities are explicable by the nature of the various test-meals used by them. The amount of free HCl after the complex test-meal of Riegel and Fleiner in much greater than after a simple test breakfast which contains very little proteid. It must not be overlooked that an exclusive proteid diet causes the formation of excessively large quantities of soluble peptones and albumoses, which undoubtedly have an exciting action on the nervous system and constitute a favorable basis for the development of all kinds of neuroses. Although a diet rich in meat food is [illegible] and [illegible] rect in hyperacidity, careful quantitative analyses of the urine will show that the indican, the ethereal and preformed sulphates are very much more increased under this kind of diet, and that they become reduced as soon as the amount of carbohydrates is increased. Beef, mutton, lamb, venison, fowl and various fishes, undoubtedly relieve the main complaints of hyperacidity for a time. The gastric pain and the pyrosis disappear for a time at least, because the albumin contained in the substances combines with the excess of HCl, but in cases in which a lasting improvement is not affected by these articles of diet, and where the urotoxic coefficient, the amount of indican and aromatic sulphates become increased it is advisable to try a diet in which the proteids do not constitute the preponderance, but at least 50 per cent. of which is composed of fats and carbohydrates.

The following tables show the state of the urine in a case of hyperacidity, both under proteid and under a carbohydrate diet. The case suffered as a rule from auto-intoxication when the proteid food was in excess.

URINARY ANALYSIS.

Case 19.—April 12, 1896. W. M., male, age 35 years, hyperchylia, on proteid diet exclusively; no medicine. Free HCl=48.5 after Ewald test breakfast.

Indigo blue	very strong
Urea	22.712 grams
Uric acid	0.451 grams
Ratio	49.0
Preformed sulphates	1.826 grams
Combined sulphates	0.236 grams
Ratio	7.7

The combined ethereal sulphates and the indigo are present here in great excess; headache and much flatulence.

Case 19.- May 12, 1896. W. M., hyperchylia, Free HCl=59. Mixed diet, containing rice, bread, oatmeal, together with small quantities of beef or soft boiled eggs, and milk and butter. Neutralization with alkalies and aiding the gastric amylolysis with ptyalin at one meal and taka diastase at another.

Indigo blue	very faint
Urea	42.641 grams
Preformed sulphates	4 000 grams
Combined sulphates	0.350 grams
Ratio	11.0

Patient feeling much better, less headache, debility and flatulence. This is an example of twenty analyses, showing that even with an excess of HCl the proteid putrefaction may be considerable and that the symptoms are relieved and the urine shows less of toxins on a mixed diet with treatment by ferments and alkalies.

These are only two examples of a series of eighteen analyses.

It is undeniable that carbohydrates are found undigested six hours after they are ingested, in the wash water from the stomach. This is what one should expect, since if the excess of hydrochloric acid is not neutralized by alkalies, the ptyalin can not act and it is impossible for carbohydrates to be converted into a soluble form, the HCl at the same time producing a pyloric spasm obstructing the passage into the duodenum. Even with a diet almost exclusively of a proteid nature, the alkalies are indispensable, as this food is in itself inadequate to combine with the excess of acid. We advise our patients to take their amylaceous foods in a very finely divided state when possible. Potatoes should only be allowed in form of purée. Beets, turnips and carrots should not be allowed at all. The artificially prepared soup meals (Kufeke's, Maggi's flour, Malto-leguminose) and soups made from aleuronat, and oatmeal flour are in these cases easily digested with the aid of artificial diastase or ptyalin. It is a very important question whether the diastatic ferment of the saliva is destroyed permanently or only temporarily by the excess of hydrochloric acid and whether after its action has been inhibited by the acid it can be restored by subsequent alkalinization. Boas ("Diagnostik u. Therap. d. Magenkrankh.," p. 19) has demonstrated that when saliva is exposed to the action of 0.15 per cent. HCl for one hour its action can be restored by alkalinization with bicarbonate of soda. In hyperacidity the percentage of acid reached is 0.2 per thousand of HCl; in severe cases 0.4 to 0.6 per thousand HCl. We have made a large number of experiments with the effects of hydrochloric acid on saliva, both with artificial test-tube experiments as well as experiments from stomach contents of patients suffering with hyperacidity, and have found that, although Boas's results are in the main true, the action of ptyalin after it has been exposed to an acidity of 0.3 per thousand for forty minutes can not be restored to the same efficiency it showed before it was subjected to the action of the acid; that is, alkalinization restores the action only partially. The conversion of starches by this ptyalin which has been thus detrimentally influenced by HCl takes place only very feebly, in other words, the ptyalin does not recover perfectly, it has been permanently damaged. These experiments have been repeated so often by us and the results have been so constant that they could not possibly be due to accident. They justify us in the conclusion that the internal administration of alkalies in hyperacidity will not restore gastric amylolysis although the distressing symptoms of hyperchylia will be relieved by it. It is therefore necessary, if we wish to aid digestion of starchy foods and not simply relieve the distressing symptoms of hyperacidity, not to depend on restoration of the function of ptyalin by giving alkalies. The employment of artificial ptyalin or diastase is here unavoidable; ptyalin, one-half to one gram (8–15 grains) given fifteen minutes before meals together with alkalies, effectively converts the carbohydrates into dextrose. The more carbohydrate is artificially digested in this way, the less undigested starch will naturally remain in the stomach. We will naturally, therefore, give the preference to a ferment which can in the shortest time convert the greatest amount of carbohydrate into dextrose. We have made a number of experiments with ptyalin and the diastase contained in malt extract, but the most effective agent that we have worked with is a ferment known as taka-diastase. This has the property of being far less susceptible to the destructive action of hydrochloric acid than ptyalin or malt extract. The objection we have to malt extract is that we have to give it in a large bulk to get a very small quantity of diastase. The extract itself contains fermentable sugars which, in some cases of indigestion, may give rise to fermentation in the stomach. Taka-diastase is a substance obtained from a *fungus known as eurotium oryzae*, which is sown on moistened sterilized wheat bran. A growth results which is found, under the microscope, to present peculiar crystals of pure diastase covering the roots of the eurotium which have penetrated the bran. The function of these crystals is to convert the starch of the bran for the nourishment of the fungus. We have employed taka-diastase in hyperacidity and in these rare cases of deficiency of saliva, which are found in the final stages of chronic Bright's disease, and after severe diarrheas. Malt diastase and ptyalin cease acting in the stomach contents much sooner than taka-diastase with a percentage of HCl equal to 0.04 per thousand to 0.05 per thousand of HCl, taka-diastase will still transform more than 50 per cent. of starch into maltose. The following experiments will throw some light on the digestive power of taka-diastase. A starch paste was made from 5 grams of dry arrow-root starch with 500 c.c. of water. Mixtures were then made as follows:

1. 0.5 gram of taka-diastase + 90 c.c. of water + 10 c.c. of starch paste.
2. 0.5 gram of ptyalin + 90 c.c. of water + 10 c.c. of starch paste.
3. 20 gram of malt diastase + 90 c.c. of water + 10 c.c. of starch paste.

These three mixtures were placed at 40 degrees C. and tested from time to time with iodin solution. In periods of time varying from five to eight minutes No. 1 had reached the achromic point, while No. 2 had not reached the achromic point until one hour had elapsed. At the end of three hours No. 3 still gave a bluish violet reaction with iodin. In the presence of 0.015 HCl the action of the ptyalin and the malt extract were arrested, whereas the action of the taka-diastase continued unhindered. We therefore give taka-diastase because of its more effective and permanent amylolytic power, because of its cheapness, and because we are enabled to permit a diet rich in carbohydrate in cases of hyperacidity. The most essential thing in the treatment of an irritable gastric mucosa is rest for a short time, two or three days in every week; no food but milk or thin oatmeal gruel. To give meat and egg with a view to combine with the excess of HCl is only symptomatic treatment. But an amylaceous diet aims at the cause of the hyperacidity, because it is not a stimulant to HCl secretion and does not add to the irritation already present.

In recommending a carbohydrate diet in hyperacidity we are aware that it will generally not be tried until the proteid diet has failed to give permanent relief. The amylaceous diet is to a certain extent antiseptic by its tendency to keep the intestinal chyme acid by formation of lactic acid. The quantitative analysis of indican and ethereal sulphates will keep one posted on the degree of intestinal putrefaction under the two kinds of diet.

It is well known that hyperchylia often occurs in neurasthenia due to uric acid diathesis. The diet must then naturally be adapted as far as is consistent with the gastric function to the uric acid diathesis underlying the whole complication of symptoms (see Diät bei Gicht und Harnsäure dyskrasie, Penzoldt u. Stintzing, Vol. ii).

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DISCUSSION.

Dr. C. B. Lowe of Philadelphia—I had the pleasure yesterday of meeting the Japanese chemist, Dr. Takamine, the discoverer of taka-diastase. The remarkable activity of this amylolytic ferment was demonstrated by his placing a few grains in a test tube containing starch paste. After adding it, either in the dry form or as a liquid, the solution began immediately, and in a moment or two the contents of the tube were liquefied and converted. The experiment was a very striking one and demonstrated the great power possessed by this agent in the digestion of starchy articles of food.

Dr. R. G. Eccles of Brooklyn—Did I understand the lecturer to say that maltose would be absorbed from the stomach? I was under the impression that all starchy foods passed into the intestine where it was converted into dextrose by the pancreatic juice and the intestinal secretion. Perhaps Dr. Hemmeter will set me right on this point. I am not sure whether I fully understand his position in reference to the use of taka-diastase in cases of hyperacidity. It would seem to me that most of the starchy foods are not digested in the stomach, although the proteids are acted upon there.

Dr. F. E. Stewart of Detroit—In reference to the question of the absorption of maltose into the blood from the stomach, I would say that I am under the impression that Professor Chittenden found that it was not essential that the starch be entirely converted before being absorbed. Dr. Roberts of London found that the glycogen of the liver is very much like the same products of starch digestion.

Dr. Eccles—I would like to add that I have tried taka-diastase on myself and on patients and have found the results from it to be very good. I therefore was not criticising the treatment but merely desired information upon the physiologic and chemic basis of the method of treatment advocated by Dr. Hemmeter.

Dr. Frank H. Murdock of Pittsburg, Pa.—I have been exceedingly interested in Dr. Hemmeter's paper. I think that the question of hyperacidity of the stomach is one of very great importance and one which offers the most difficulty to me in my practice. If we can have within our reach remedies which, aided by diet, will afford the patient relief, we would certainly all be glad to know it.

Dr. Hemmeter—I must say that I am very much pleased at the discussion of this paper and at the questions which have been asked. One question was whether or not maltose is absorbed from the human stomach and enters the blood as such. I have invented a method of studying this problem by plugging the pyloric end of the stomach in animals; maltose is then introduced into the stomach. The pylorus being closed by the plug, it can not escape into the intestines. Nevertheless, shortly afterward there is no maltose left in the stomach. It is absorbed into the blood through the walls of the stomach. As Dr. Stewart has said, Sir Wm. Roberts has shown that maltose can be absorbed directly into the blood. Not only maltose, but albumose may be absorbed, and I have no doubt that egg albumin may be injected into the intestine and be absorbed directly into the blood without being digested at all. I have been asked how long amylosis will go [illegible] human stomach after [illegible] Now it [illegible] only one thing, that [illegible] acid re stomach contents. If the food stays long enough and there is not too much acid, the starchy constituents will be entirely converted in the stomach. In dilated stomachs, where there is destruction of the hydrochloric acid cells, the digestion of starch may go on for many hours. As soon as the proportion of hydrochloric acid reaches 0.15 then the action of starch ceases. This generally occurs on the average in about forty minutes after the close of an ordinary meal, so that we have this length of time in which to digest the starchy portions of our food in the stomach. If too much work is thrown upon the amylolytic action of the intestinal glands, there may be intestinal failure and intestinal indigestion. Because the amylopsin of the pancreatic juice digests starch and the ptyalin of the saliva digests starch, we must infer that their actions or end products are the same. The cases which Dr. Murdock has mentioned and in which we find alternating states of the secretion, one day hyperchylia, the next achylia, and perhaps in the next few days hyperchylia again, have been termed by me *heterochylia*. In determining the degree of acidity in these cases it is essential to know the amount of proteid in the test meal, because the secretion of HCl is greater after proteid than after amylaceous foods. The condition causing heterochylia can only be cured by correcting an underlying neurasthenia, by good hygiene, proper diet, electricity, baths, etc. Moreover, I believe that in many of these cases, lithemia and gout are at the bottom of the condition of heterochylia. In cases where this persistently exists, the patient may be taught to pass the stomach tube and wash out the stomach for himself with diluted HCl or alkalies as may be indicated, but it is impossible to go into the details of the treatment or give any sweeping advice for the management of such cases.

A STUDY OF THYROID EXTRACTS.

Presented in the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY W. H. NEILSON, M.D.
MILWAUKEE, WIS.

Interest in the thyroid body is not of recent origin. As far back as 1856, Schiff demonstrated, by his experiments on dogs, that this gland is an absolute necessity for the maintenance of life in these animals and his deductions have been abundantly confirmed by many observers since that time. After the removal of the thyroid gland a number of characteristic symptoms supervenes, as cachexia, emaciation, apathy and muscular tremor which may pass into convulsions before death ensues. The muscular phenomena appear to have a central nervous origin, for section of the motor nerves prevents them; and it is possible that the trophic changes noticed are also due to perverted nervous influence.

In rabbits, Hofmeister demonstrated that by removal of the gland, leaving the glandules of Gley, life might be maintained. The hair became coarse, the body short and thick, the growth of the skeleton was arrested, the epithelium of the convoluted tubules of the kidneys was altered, and enlargement of the hypophysis cerebri occurred (Crary). In monkeys, these changes occur more slowly than in the lower animals and resemble much the condition developed in man through destruction of the function of the thyroid. The pronounced symptoms of this condition are diminished mentality, muscular weakness, marked anemia, dry harsh skin and loss of hair, with an edema of the subcutaneous tissue which does not pit on pressure. If the individual so suffering receive hypodermatic injections of thyroid extract, or if it be administered by mouth, or even the raw gland be fed him, all of these symptoms, except the anemia, rapidly disappear and he regains his normal condition with the one exception. In the case of dogs, if a small portion of the thyroid gland, after its removal, be grafted into the peritoneum, the evil results are averted. So, too, if a small portion of the gland remain or the parathyroids be left the animal will apparently suffer no inconvenience. Thus it becomes clear that the thyroid body is intimately associated with the normal manifestations of life. There are two views obtaining as to the manner of this association. The one is that the thyroid is a destructive agent, destroying poisonous substances formed in other organs, which if undestroyed would cause the various symptoms found in myxedema. In support of this is given as a fact by some observers, contradicted by others, that products are found in the muscles. blood and urine of animals deprived of the thyroid, which are decidedly toxic in character. The other view is that the cells of the thyroid produce a true internal secretion which finds its way into the blood and plays an important part in producing normal metabolic changes in some or all of the organs and especially of the nervous system. This is supported by the facts that the injection of thyroid extract does good when the function of the thyroid is in abeyance; that microscopically it can be proven that the cells secrete the colloid material, and that it eventually finds its way into the blood by way of the lymphatics; that the beneficial portion of the secretion can by chemic means be separated from the gland, thus demonstrating that it is a secretion of that body. A great deal of work has been done to isolate the active principles of the thyroid secretion. Sigmund Fraenkel has been successful in isolating a substance which is intensely hygroscopic and soluble in water and alcohol, the empiric formula of which is $C_6H_4N_3O_5$, to which he has given the name of thyreo-antitoxin.

Experimenting on animals he found that under its administration there was acceleration of the pulse rate without the fall of blood pressure demonstrated by Schaeffer on intravenous injection of the extract. He also found that the heart of a frog, poisoned by muscarin, which had ceased to beat, was stimulated to activity by a few drops of a watery solution of thyreo-antitoxin dropped upon it. Moreover, he demonstrated that in animals deprived of the thyroid gland with the usual subsequent symptoms, that temporary relief, at least, was given by a subcutaneous injection of a 1 per cent. watery solution of thyreo-antitoxin. He maintains that this substance is an exact chemical and that eventually he will be able to give exact dosage. It is without odor and has a beefy taste.

Baumann and Roos make stronger claims than Fraenkel. By a series of experiments they have been able to isolate a brown amorphous substance which contains the remarkably large quantity of 9.3 per cent., dry weight, of iodin. It has been named thyroiodin. It is almost insoluble in water, only slightly so in alcohol, but easily so in dilute alkalies. The discoverers claim that its administration is followed by the same results as follow the administration of the gland itself, or its extract, in myxedema, obesity and parenchymatous goiters, and indeed that it is more rapid in its action. The amount of this substance varies in different thyroids, large ones only containing a trace of iodin, while in children there is less than in adults. Sheep thyroids are relatively richer in iodin and the maximum amount in humans is found between the ages of twenty-five and fifty. Drechsel has isolated two crystalline basic bodies from the thyroid, one of which is apparently identical with Fraenkel's thyreo-antitoxin. Both of these when administered to thyroidectomized animals exert a beneficial influence and Drechsel suggests that there "may be three separate substances formed in the thyroid which are of value to the body and that corresponding to these the thyroids may exert a threefold effect upon body metabolism." Since Dr. R. G. Murray of Newcastle, England, first used the raw gland in the treatment of myxedema the treatment has been so elaborated and refined and its field of usefulness so broadened that thyroid extract has become a firmly established therapeutic agent, yet not so generally nor so fully recognized as it deserves. From year to year fresh triumphs are recorded for this remedy, not only in myxedema where its first laurels were earned, but in cretinism, acromegaly, rickets, obesity, catalepsy and ichthyosis it has scored signal success. The effects of the remedy administered in proper dose, from 1 to 5 grains of the extract, are to accelerate the pulse and respiration, to increase temperature, to improve tissue metabolism, to cause a greater elimination of urea and a more complete assimilation of nitrogenous products. There is also increased activity of the mucous membrane and skin, and the body weight is diminished, while at first there is muscular weakness. If the dose be too large there is flushing of the face, dizziness, accelerated heart action, with rise of blood pressure succeeded by a fall in pressure, nausea, vomiting, trembling of the limbs and other toxic symptoms of more or less gravity. This toxicity depends somewhat on the preparation, fresh glands being less toxic.

Great care must be exercised in keeping the dose within the limit to the individual, on account of the degenerated condition of the arteries in myxedema; over-stimulation of the heart might result in the rupture of a vessel. During its administration, in myxedema, the joint pains are not relieved, but are often aggravated. Indeed in some cases a synovitis develops, which however yields to the salicylates. Neither is the anemia at all relieved. The remedy should not be given in exophthalmic goiter, as the symptoms are painfully exaggerated. This fact has been mentioned by several and came under my observation in the neurologic clinics of the Milwaukee Medical College. That it has a promptly beneficial effect in myxedema I have had the pleasure of observing; also that the general condition of a patient suffering from acromegaly was improved thereby, and I am now treating a case of psoriasis, but have not had sufficient time to demonstrate its usefulness in this disease. If the discoveries of Fraenkel, Baumann, Roos and Drechsel are all that they claim we have a remedy in this extract which will have an application wherever there is retarded tissue metabolism. This opens up a large field and it remains for us to develop it.

SUCCESSFUL TREATMENT OF CHRONIC (SUBACUTE) RHEUMATISM.

BY GUSTAVUS M. BLECH, A.B., M.D.
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Chronic rheumatism, articular or muscular, is considered by the laity an incurable affection. The pain, stiffness, in other words, the disagreeable symptoms of rheumatism, however, drive them into the hands of physicians, usually after every kind neighbor's roots and liniments have failed.

It is this class of cases that the beginner in a community is most apt to get, the older physician's time being taken up with cases of a more or less acute character. Besides, the older physicians have prescribed once or twice for the rheumatic, but no cure being obtained he was dropped.

A few months ago the writer contracted chronic articular rheumatism and pleurodynia. It is therefore but natural that I should have paid some attention to this affection. Summing up my theoretical knowledge of the malady and my experience from actual practice, I think I can say without fear of contradiction that chronic rheumatism is a curable affection, and that every young practitioner could materially benefit his patients if he is willing to devote to them some time and labor.

The trouble is, most of our patients can not carry out instructions with regard to hygienic surroundings, occupation, diet, rest, etc. Chronic rheumatism, while not infrequently met with among the rich, attacks most frequently, however, the poor washerwoman, the bricklayer, and such classes of patients who are compelled to expose themselves to draughts, wet, cold and dampness. That these are etiologic, or at least predisposing agents no one will deny. We know very little and nothing certain as yet about the cause of acute inflammatory rheumatism, but we most certainly know absolutely nothing about chronic rheumatism, save that the above named agents favor the development of one or the other form of chronic, non-febrile rheumatism.

Although this paper can neither deal with either the causes, nor the pathology of the malady under consideration, I beg, for the sake of explaining my standpoint, to make these statements: 1. I am a firm believer in the fact that there are forms of so-called chronic articular and muscular rheumatism which are *never* following an acute attack. 2. That so-called gonorrheal rheumatism is not a rheumatic affection proper, but a complication of gonorrhea, and has no connection with rheumatism whatever. If Dr. Satterlee in his excellent monograph (Geo. S. Davis, 1890) takes an opposite view using "reason rather than empiricism" for his assertions, I speak from practical observation and actual experience among my own patients. That the same facts were observed by the most popular authorities everyone knows. Unacquainted as we are with the real etiologic factors of rheumatism, our treatment must be general.

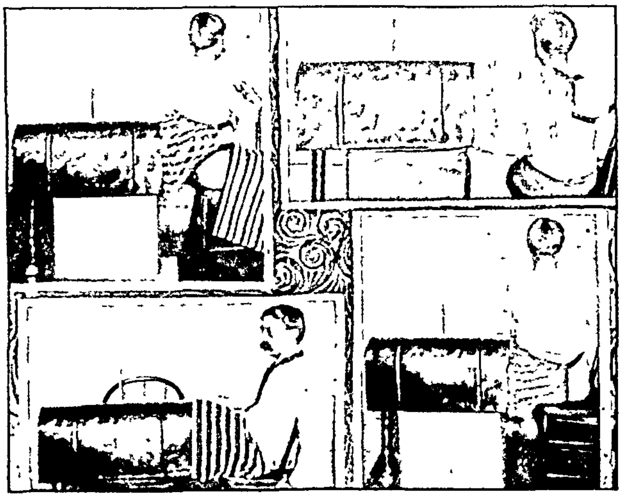
I shall not copy all those rules and regulations as laid down in text-books, but will come to the point. *Hygienic* treatment is desirable wherever such can be carried out. If we know that a certain occupation, a damp domicile, bad surroundings of the patient predispose if not actually cause rheumatism, what is more desirable than a complete change. Dietetic treatment should be encouraged wherever there is a so-called rheumatic or gouty diathesis present.

Internal treatment is practically useless. Salicylates, potassium iodid, arsenic, iron, colchicin and a host of other remedies have been tried but with what success everybody knows. A friend of mine asserted enthusiastically that he could cure every case of rheumatism, provided the patient takes unusually large doses of natrium salicylicum, but I never tried it more than once. The untoward effects this drug caused were more than my patient, a robust fellow, could stand.

External applications are quite popular, and rheumatic liniment manufacturers reap a [illegible] harves (financially, of course). Occasionally [illegible] ore much pain and tenderness I presc [illegible] solution of menthol, but expect a tem [illegible] o

Electricity, both the faradic and galvanic current, are of little avail. Several years ago I treated a good many patients with this method. I had them come to my office daily for months and then they went away dissatisfied, claiming that while they felt somewhat better from such a prolonged treatment they expected permanent cures. From the strong faradic current I saw no benefit at all

When I contracted this affection which, by the way, located itself in my elbow and wrist joints of both hands, as well as in the form of a pleurodynia (making me at first believe I had some heart trouble), I thought of going to our nearest watering place—Mount Clemens. For various reasons, and on account of some cases demanding my personal attention I could not do this, so I decided to try the dry-hot air treatment which was recently so highly praised in French literature. I purchased from Messrs. Frank S. Betz & Co. of Chicago, their arm and leg bath, took four baths and was relieved. It occurred to me then that I was mistaken in my diagnosis. I then called on six parties, all of whom are my patients afflicted with one or the other form of chronic rheumatism, with which affection they went around considering it of no avail to take further treatment. Relief followed immediately after the first bath in each of the six cases. Of course they would feel the symptoms return the next day. Then other baths were taken.



The following is a list of the baths administered:

Mr. A. F., aged 36. Had rheumatism two years. May 11, duration 18 minutes; May 12, duration 19 minutes; May 13, duration 21 minutes; May 14, duration 24 minutes; May 15, duration 26 minutes; May 16, duration 21 minutes; May 19, duration 30 minutes.

Mrs. A. F., aged 36. Had rheumatism five years. May 13, duration 18 minutes; May 14, duration 20 minutes; May 15, duration 22 minutes; May 16, duration 24 minutes; May 17, duration 26 minutes; May 19, duration 29 minutes; May 21, duration 22 minutes.

Mr. E. C., aged 29. Polyarthritis chronica, 2½ years. May 12, duration 15 minutes; May 13, duration 17 minutes; May 14, duration 22 minutes; May 16, duration 29 minutes; May 18, duration 30 minutes.

Mr. N. B., chronic muscular rheumatism, 3½ years. May 12, duration 10 minutes; May 13, duration 12 minutes; May 15, duration 15 minutes; May 16, duration 18 minutes; May 21, duration 22 minutes; May 22, duration 29 minutes; May 23, duration 30 minutes.

Miss E. T. My assistant, aged 24. Chronic rheumatism of muscles of arms, 1½ years. May 11, duration 18 minutes, temperature 205° F; May 12, duration 19 minutes, temperature 206° F; May 13, duration 20 minutes, temperature 211° F; May 14, duration 22 minutes, temperature 215° F; May 17, duration 30 minutes, temerature 220° F.

Mrs. F. D. Polyarthritis chronica 6 years, aged 38. May 10, duration 15 minutes, temperature 201° F; May 11, duration 20 minutes, temperature 202° F; May 12, duration 19 minutes, temperature 205° F; May 14, duration 21 minutes, temperature 209° F; May 19, duration 24 minutes, temperature 212° F; May 21, duration 26 minutes, temperature 217° F.

Dr. G. B. Writer, polyarthritis subacuta; pleurodynia a few weeks. May 2, duration 20 minutes, temperature 205° F; May 3, duration 22 minutes, temperature 208° F; May 4, duration 25 minutes, temperature 204° F; May 6, duration 30 minutes, temperature 221° F.

In every instance the apparatus was first heated about eight minutes, before treatment was begun.

In every one of the instances complete relief from all symptoms was experienced, and now within two months no recurrence, although we had here the most changeable and undesirable weather, and although all of the patients took neither any medicines whatever, nor did they change their mode of life, occupation and surroundings. One patient goes to his damp rag-shop daily; the other patients continued their usual lives. No massage was practiced after the baths save that I anointed the hands or legs with a little vaselin.

Of the value of dry-hot air in chronic rheumatism there can be no question. Shoemaker, Bartholow and other eminent authorities speak of it highly in their text-books on materia medica.

I have no doubt but what such treatment may prove of great utility in ankylosis, rheumatoid arthritis, similar affections and Bright's disease, but am unfortunate enough not to have had as yet any practical experience with such cases, but undoubtedly will use my bath again should any such cases come under my observation.

The hot air bath I use is a very neat looking piece of office furniture. It is an oxidized metal cylinder thirty inches long, fourteen inches high; a funnel and and pipe of same material carries hot air from a nickel plated heater to a hot air distributer. There is no smoke or smell. By means of several valves the heat can be regulated. A thermometer registers the amount of heat. The cylinder is lined with asbestos, arm or leg rested in a Turkish hammock. There are attachments for arms, legs, and other regions.

I am indebted to the manufacturers for the accompanying cuts which show the instrument plainer than any description could do.

115 Miami Avenue.

REST.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY C. F. ULRICH, A.M., M.D.

WHEELING, W. VA.

Rest is the restorer of lost power. Motion is the result of force exerted upon matter, and so long as the force continues to be applied and there are no impediments, the motion will continue. But to the motion of terrestrial bodies impediments always exist, and however much the motion may be stimulated by the renewed application of force, it will be retarded, and will ultimately cease. As an illustration, let us consider an engine run by water power, steam or electricity. As long as the power is applied, the engine runs, for a while, smoothly and with ease. Soon interruptions occur; there is a jar, and a hitch in the action. If this is not looked into and remedied, the machinery begins to run irregularly and something gives way. It either stops altogether, or its action becomes inefficient and the product of its labor useless. One of the most prolific sources of impediment in such machines is friction. This is obviated, as far as possible, by lubrication. But the oil may be carelessly applied or may be of inferior quality, charged with impurities of a gritty nature, thus failing to prevent friction. Parts of the machinery become oxidized, corroded by acids or ground by foreign bodies that find their way into it. Parts are loosened by the violence of the motion, and this condition communicates itself to other parts, until the whole machine is out of order. Now the engine has to be stopped for repairs; the parts worn out or broken replaced by new ones, others cleaned, smoothed and otherwise made fit for use again. Most engines work all day and rest at night, during which period the "master of repairs" examines it and remedies any defect he may discover, in order that it may be able to resume work in the morning. When the works have to run day and night, and no period of rest can be allowed, they usually have duplicate engines, one of which can rest for repairs while the other is in action.

The human body is a wonderfully complicated machine, yet exhibiting an admirable simplicity in its arrangement and working. It has a "master of repairs" whose name is "Vis Medicatrix Naturæ." This repairing power dwells within and exercises its function all the time. If the body is properly nourished, the materials for repair are always present. By the process of assimilation the nutritive material is appropriated by each organ or tissue in quantities sufficient to supply the loss, while at the same time a depuratory process is going on to rid the system of the waste material resulting from activity or disease. The latter is accomplished by the emunctories or outlets: the bowels, the kidneys, the skin, the lungs. This double process, assimilation and depuration, need not be discussed here. In childhood nutrition must exceed waste, in order that the child may grow. In age the waste usually exceeds nutrition, as the body is wearing out; although this is not always apparent, on account of the deposit of fat. In the middle period of life, there should be a fair balance between waste and repair, which will be the case in a healthy body, provided no excessive or too long continued labor is imposed on any part of the organization. The system requires a certain amount and a particular kind of nutritive material to keep the animal machine in motion. If this were always systematically administered, the proper balance would be maintained and the body would continue healthy, barring external influences. But, owing to circumstances producing variation in the activity of some of the functions, thus increasing or diminishing the waste, the quantity of the required nutrition varies very materially. Besides, the ignorance of the individual as to what constitutes suitable nutriment, the unrestrained indulgence of the appetite, on special convivial occasions perhaps too frequently repeated, cause many to take too much food, or of an improper kind, along with undue quantities of intoxicating beverages. The food on these festal occasions is frequently of a richer and less digestible character than can be easily disposed of by the gastro-intestinal tract. Hence ensue various ailments, by which the whole machinery is disabled; such as gastritis, enteritis, gastro-intestinal catarrh, followed by dyspepsia and its accompanying horrors. The average man or woman now begins to take medicine: pepsin, peptonoids, stomach tonics, aperients, purgatives, etc. This may relieve temporarily in some instances, but generally leaves the digestive apparatus in a worse condition than before. These helps to digestion cause the stomach to depend upon them, instead of doing the work itself. As regards the purgatives which are so universally taken, and so frequently recommended by physicians, it is not known to the laity, and not always thought of by the medical practitioner, that they are detrimental to digestion, since they induce excessive peristalsis in the upper intestines, thereby driving off much of the partially digested nutritive material, together with the intestinal fluids that are essential for completing the process of digestion and preparing the product for assimilation. My favorite remedy, and doubtless the one to be preferred, is rest. When the headache and the acid eructations give evidence of the failure of the stomach to do its work, and of the consequent fermentation of the ingesta, I advise my patients to drink a quantity of warm water and give the stomach a rest. This will give the "master of repairs" dwelling in the body, time to correct the congestion which prevents the development of the gastric fluid and the resulting digestion of the food. After the expiration of the period of rest, I put them upon a suitable diet, both as respects quantity and quality, at the same time prescribing some simple innocuous medicine that will in some degree assist nature without interfering with any function. The homeopaths give medicine in infinitesimally small doses, endlessly diluted, and impress it on their patients that the slightest violation of their rules of diet and hygiene will render the remedy inert or even injurious. The rest which the stomach enjoys during its fast, the subsequent moderation in eating, with judicious selection of food, is what accomplishes the cure, unless actual destruction or perversion of tissue had taken place before the case came under the observation of the physician.

Let us now consider the muscular system. We know that every movement made by a muscle results in the destruction of a certain amount of its tissue. If the muscles are too severely taxed by unusual exertions, or by too long continued exercise, the waste is greater than the repair. A portion of the waste, not being entirely removed by the emunctories, remains as an irritant. The result is an unhealthy contraction of the muscles, in the form of cramps or twitchings, and the final wasting away, with the loss of power. Here again the best remedy is rest. By rest I do not mean the absolute cessation from labor, but moderate exercise, or such a change of movement as will bring another set of muscles into play, giving those that have been overworked less to do, which is often better than absolute quietude. The repairing force that exists and exercises its function in every department of the human organization, immediately goes to work to replace the wasted tissue and restore the lost power. While the organs are in full activity, the waste exceeds the repair and there arises an absolute necessity for rest. For this purpose nature has provided sleep, during which all the voluntary forces are held in abeyance, giving the nutritive apparatus a better opporunity for its work of restoring the lost power. The involuntary or automatic part of the system goes on all the time, but much slower during sleep, which is also equivalent to rest; for during the night's repose so much of the external disturbance is removed that the vital processes, viz., the circulation of the blood, the result of the heart's action, the act of respiration, the silent process of digestion and assimila[illegible]av-ing less to do, can afford to work more at their ease than during the active employments of the day. The *vis medicatrix naturæ* not only supplies new material to replace the worn out and damaged portions of the organic tissue, but also provides "garbage carts" to remove that which has become useless and would clog up the works, thereby causing disease and often deranging the entire machine. I refer to the emunctories mentioned before. We will discuss one of these, the kidneys.

These constitute one of the most important organs of the body, since they separate from the blood the worn out material and the product of diseased or unhealthy action. This double organ is frequently overworked by the consumption of beer and other alcoholic beverages. It then loses its power of selecting and removing the superfluous and deleterious substances which must be carried off in order to preserve the health. In consequence of this the kidneys become diseased, so that their work is either not done at all, or their action is perverted, removing what is necessary to health and life, while allowing noxious substances to remain for the destruction of vitality. Now, if the kidneys were permitted to rest, *i. e.*, their labor modified and reduced, as I have explained, this diseased condition might be avoided. Abstemiousness from vinous and malt liquors, and the substitution therefor of innocuous beverages necessary to maintain the liquid condition of the blood and the proper consistency of the tissues, would so regulate the work of the kidneys that they would remain healthy and retain their normal powers. If more rest than this is required, the skin may be called in to do vicarious work, which can be done by diaphoretic treatment, hot vapor bath, etc. Overwork of the kidneys may also be prevented by a proper regulation of the bowels; for there is no greater enemy to the kidneys than habitual constipation, since that condition imposes upon them the labor of removing unappropriated material which can only with safety be done by the bowels.

Let us now speak of the most important organ of the body, the *primum mobile*, the great dynamo that moves and gives life to the beautiful and complicated human machine—the cerebrum. This is subject to the same physical laws as the rest of the organism. Every effort of the brain to induce motion of the muscles, through its electric wires, the nerves: every thought; every emotion, every strain on the mind, wears out a certain portion of it. If the brain is engaged in continuous action by day, and does not take the necessary rest at night, an unhealthy condition will ensue, resulting in lassitude, inability to perform its functions, perversion of its powers, and finally insanity or imbecility. Before the final catastrophe is reached, all sorts of irregularities in the general health occur, on account of the great influence of the brain on all the functions of the body. Now, if the brain enjoys its regular periods of rest, by relaxation from labor during certain hours of the day and undisturbed sleep at night: an extended rest during parts of the year, by change of occupation from the ordinary routine of business to something engaged in for pleasure, it will remain strong and healthy: more and better work will be done in the limited period than could be accomplished in a much longer time without the much needed rest. Excessive labor imposed on the brain by day prevents it from the needful repose at night, for there will be either no sleep at all, or at least unpleasant dreams; the brain working without the restraints that hold it in check during the waking hours. Then, when morning dawns, the poor brain is not rested at all, but is as tired as if it had worked hard all night. The waste thus caused is so great that it will be very difficult to make it up. When the brain is well treated, by systematic labor and a reasonable rest at proper times, it will last much longer than when it is abused by excessive, irregular and spasmodic work. We have examples of men who reached eighty, ninety, and even a greater number of years, whose minds remained clear and bright to the last. I shall mention Humboldt, Moltke, Bismarck and Gladstone, the last two of whom are living yet. But why should I cross the ocean, or go out of our own profession to find examples? Behold the great autocrat of the breakfast-table, the poet physician, Oliver Wendell Holmes! and in our midst, our noble and venerable founder, Dr. N. S. Davis, who has completed his eightieth year, who was the first to suggest the organization of the now famous American Medical Association, the fiftieth anniversary of which we are celebrating. For fifty years he has upheld and labored for the Association. Today his mind is as clear and his zeal as untiring as it was half a century ago. Had he committed excesses of any kind during that long period, we would not now rejoice at his encouraging presence and co-operation on this auspicious occasion. May he live many years yet to hold up the hands of the noble band of men whose pleasing duty it is to guard the health and the lives of our American citizens, and to rejoice in the success and prosperity of the American Medical Association!

All teaching is best enforced by example. If we desire to be heard and obeyed by our clients we must set them a good example in our own conduct. Let us be moderate, taking a reasonable rest in eating, in drinking, in physical exercise, but especially in the labor of the brain, which is the organ most extensively used, and often most abused, by the highly educated and constantly employed physicians. Let us exercise our powers systematically and cautiously, looking to the advantage and benefit of our patients, but at the same time not forgetting ourselves. The physician should take a short rest every day. If he is engaged during the night, let him enjoy a siesta in the daytime. A little recreation at moderate intervals during the year would be of great benefit. Rural excursions, away from the noise, dust and turmoil of the city, would recuperate his tired body and exhausted mind so that he could return to his work fresh, rejuvenated and full of vigor. But of all things, let him not fail to take a lengthy vacation once a year. If in winter; he can rest himself in the orange groves of Florida; or, should his means allow it, he might repose in the classic shades of beautiful Italy. In the summer the magnificent lakes of the north, or the delightful resorts on the seacoast will afford the coveted rest and recuperation. But under no circumstances should he fail to attend the meetings of the American Medical Association, where he will meet his colleagues from the North, South, East and West, enjoy an interchange of views and cultivate the social side of his otherwise hard life, of which he sees but little while toiling to improve health and save life. Pursuing this course, the physician will be happier, healthier, stronger, both in body and mind, will live much longer, and will enjoy his intellectual faculties to a ripe old age. Then, when his allotted time is completed, he will enter upon his everlasting rest, respected, loved and honored by his contemporaries, while his memory will be cherished by a grateful posterity.

TWO CASES OF TRISMUS NASCENTIUM SUCCESSFULLY TREATED BY TETANUS ANTITOXIN.

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Within the past five weeks I have had an opportunity of experimenting with tetanus antitoxin in the treatment of two cases of trismus nascentium. This disease of infancy has been almost uniformly fatal and, notwithstanding the fact that all kinds of treatment have been used, has thus far resisted every measure.

On learning of the successful treatment of tetanus in the adult by the serum treatment, I determined to try the same remedy for the infantile disease. By reason of the extreme youth of the patient one has no guide as to the quantity of the serum to be used. As will be seen in the first case, knowing that the child would die under the ordinary plan of treatment, a large dose was used in the beginning, considering the weight of the child as compared with that of the adult, in which a full bottle is usually administered.

In both instances the serum used was of Gibier's make, the product of the New York Biological Institute. The manufacturers give directions to the effect that the entire contents of one bottle should be used every six hours until improvement sets in. In both cases two bottles were used, and all the serum was absorbed within six hours. There were no rise of temperature, no abscess and no eruption of any character. Immediate improvement resulted after each injection, and this was made more noticeable by the fact that the children were at the worst in the morning. The convulsions therefore appeared in the morning, since the children had received no injection during the night. During the day both children rested well. Their convulsive movements, or convulsions, were the first symptoms that yielded. In addition to the serum, both children were given from ½ to 1 grain of chloral every three hours.

Case 1.—Girl ten days old, parents poor, and consequently their surroundings were not of the cleanest. Umbilicus slightly suppurating, jaws thoroughly locked, inability to nurse, fever, convulsions, etc. On seeing case, one-third of a bottle of serum was immediately used, and this was repeated in six hours. As the last injection was given at 6:30 P.M., the child had no serum until 9 o'clock the next morning, when a further injection was given, and as the improvement seemed marked, only one-sixth of a bottle was given at the next injection. As before stated, two bottles were used. Patient has entirely recovered.

Case 2.—Boy fourteen days old, conditions and symptoms similar to first case. I proceeded exactly as in the first case and obtained the same results. Both patients are nursing again, and were able to begin nursing after three days' treatment.

I have during my practice seen a large number of these cases, which have come both from dispensary practice and a large charity practice among the poor Russian emigrants which I did in my early professional life. Heretofore, I have seen only one case recover. The successful issue of the two cases reported is very gratifying, and certainly will lead me to adopt the same method in the treatment of similar cases.

2834 Clark Avenue.

THE OPHTHALMOSCOPE AS AN AID IN GENERAL MEDICAL DIAGNOSIS.

Read before the Indiana State Medical Society, May, 1897.

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Every man, in the general practice of medicine, is continually meeting with patients whose symptoms are obscure and the question of diagnosis is long unsolved. A careful ophthalmoscopic examination in these cases may at once detect hidden eye lesions that not only serve to identify the general disorder but also furnish us a correct prognosis. Perhaps the relation of a few cases at the outset will make the subject more interesting and impress you with the importance of giving this matter your close attention.

Joseph G., aged 27 years was referred to me by Dr. Edwin Walker. He complains of seeing very poorly, and of headache in the back and sides of the head. The left leg is often numb and there is a pricking sensation to the feet as if his shoes contained pins. The patella reflex is present and the urine negative. The pupils react to light, while the general external eye appearances are normal. With the ophthalmoscope both optic discs are clearly defined but of pale color, indicative of primary atrophy. The blood vessels are normal in size and without discoverable pathologic lesion. Field of vision is contracted peripherally and there is a central scotoma in either eye. He counts fingers at five feet. Diagnosis: Multiple sclerosis.

H. G., a German 38 years old and married, comes with a history of double vision during the past twelve months. He admits having had syphilis nineteen years ago. Patella reflex present. Both pupils strongly contracted and without reaction to light. The left external rectus muscle is paralyzed and both optic nerves are atrophied. With the right eye he sees 15 cc and with the left eye 15 xx. The field of vision shows peripheral contraction with islets of color scotoma for green and red. Diagnosis: Locomotor ataxia.

Mr. L. H., unmarried, 21 years old, was sent to me by Dr. H. T. Dixon, May 23, 1891, because of poor eyesight. He had been at work up to within a few days and was not aware he had any serious trouble other than that of sight. Vision in the right eye was reduced to recognizing hand movements, and in the left eye to counting fingers at eight feet. Ophthalmoscopic examination detected retinitis in both eyes with radiating whitish patches around the macular regions and numerous retinal hemorrhages. Both optic discs were swollen and their outlines obliterated. The urine was highly albuminous with many granular tube casts. Diagnosis: Bright's disease of the kidney. Patient was unable to come to my office again but was attended by his regular physician, death ensuing within three weeks from the time he first consulted me.

F. K., a farmer, was sent to me Aug. 24, 1895, with the history that several months before his eyesight became so bad that he could scarcely read. The vision then slowly improved again but now had relapsed so that patient was advised to consult an oculist. With the right eye he counted fingers at ten feet and with the left eye he saw 15-c. The ophthalmoscope showed both optic nerves swollen, very indistinctly outlined, many small retinal hemorrhages and whitish star-shaped patches around the central zones of vision. The urine was highly albuminous and with a specific gravity of 1010. His physician was advised that the patient had albuminuric retinitis and that in all probability he would die within twelve months. He did not accept our prognosis, but informed the man, who looked in the best of health, that he would treat his case himself and that he might expect to recover his sight. In less than six months the patient died.

C. B., 44 years old, came to see me the first time in 1893, saying he had trouble with his eyes. His general health was not good although he continued attending to his law practice. He has steadily lost flesh during the past two years, notwithstanding his appetite was good. Vision in the right eye 15 xv, in the left eye 15 xl. He was slightly hyperopic and with the correcting lens for this and his presbyopia read Snellen 1 1-11 both eyes. The ophthalmoscopic examination disclosed in both retina, retinitis with whitish patches in the region between the disc and macula. No hemorrhages were discovered, and the outlines of the optic nerves were clearly defined. The urine showed a trace of sugar. Diagnosis: Retinitis diabetica. In 1894 he made a visit to Hot Springs and returned with his vision greatly improved, the whitish patches however had not disappeared. Patient died a year later.

H. H. B., 40 years old, consulted me Jan. 12, 1892, because of disturbed vision in the left eye. With the right eye he saw 15-xxx and with +2.5 correcting his hyperopia he saw 15-xv. Sight in the left eye was reduced to counting fingers at twelve feet. The ophthalmoscope revealed retinal hemorrhages in both eyes with disease of the retinal blood vessels. Patient denied ever having had syphilis, nor has he ever been addicted to the use of alcohol. The urine was free from sugar and albumin. Diagnosis: Retinitis hemorrhagica, due to disease of the retinal blood vessels. Patient was cautioned to give up much of his business and take a prolonged vacation in the early future. Internally, iodid of potash was prescribed. The advice however was not heeded and the vision in the left eye rose with +2,5 lens to 15-lxx. Within a year he had a slight cerebral hemorrhage, followed in another twelve months by a second that terminated his existence.

In our ophthalmoscopic examinations of the optic nerve we recognize two kinds of atrophy. Such as have been occasioned without inflammatory neuritis and hence termed primary or genuine atrophy; and such as have been preceded by swelling of the nerve fibers and other evidences of inflammation and termed consecutive atrophy. The causes of primary atrophy of the optic nerve are to be sought for in disease of the brain or spinal cord, or in disease located in the course of the optic nerve itself, which through injury or pressure has its conducting function interfered with. In general paralysis of the insane, primary atrophy of the optic nerve may occur at a very early period and its significance is then of great diagnostic and prognostic importance. The general nerve appearances are very like those seen in locomotor ataxia. One difference though may at times be found in a slight preliminary cloudiness of the papilla and adjacent retina.[1] Gowers says he has observed this a few times but that much oftener it has been wanting. Reflex rigidity of the pupil may long continue as a prodromal symptom of the disorder. Other eye muscles may very early and in seeming perfect health be paralyzed singly or in groups, which paralysis is often temporary but subject to relapses. The visional field, unlike that in tabes, is apt to show concentric narrowing, with central interference in color conduction. Eye symptoms in multiple sclerosis are often quite characteristic and of the greatest value in establishing a diagnosis. Nystagmus and tremor when fixing an object must be looked for and are occasioned through insufficient innervation of the nuclei of the ocular muscles. Disturbance is found in the peripheral visional field in an irregular narrowing and may be concentric, with central color scotoma that seldom becomes absolute.[2] The impairment of sight may appear at the beginning of the disease and may even remain the sole manifestation of the disorder for a long time. The characteristic is frequent improvement and relapse in keeping with improvement or a growing worse of the patient's general condition. The scotoma may be one-sided, again peripheral, then disappear and reoccur central. The optic disc is changed to a grayish white color, and later becomes excavated so that the lamina cribosa is seen. The disc outlines however remain clearly defined while the blood vessels of the fundus are in general little altered in caliber or course.

The frequency of optic nerve atrophy in locomotor ataxia is variously estimated. Gowers mentions 13 per cent.; Galezowski says about two-thirds of all primary optic nerve atrophies are due to tabes, while Charcot places it still higher and says that in nearly every case, even if spinal symptoms are at first absent, they will appear at a future period. Prof. Uhlhoff, now of Breslau, who perhaps has done more original investigating in this line than any other oculist. says not more than one-half of the cases of primary atrophy are associated with disease of the spinal cord. Ophthalmoscopically we see a gray discoloration of the optic papilla beginning, as a rule, in the outer half; it extends slowly over the entire nerve, which later becomes excavated, so that the meshes of the lamina cribrosa may be seen. The field of vision shows peripheral contraction perhaps in islets or sectors but we especially look for contraction in the outer and upper part of the field. Central positive scotoma hardly ever occur and should make us doubtful of our diagnosis. Disturbance in the color field is important and has a bearing on the prognosis. Where the color narrowing is relatively very much greater than for white, the the disease may be expected to progress rapidly. Conversely, contraction of the color boundaries in keeping with the rest of the field denotes a slowly progressive or stationary disease. There is great disproportion between the visible atrophy of the optic disc and the disturbance of vision.[2] As a rule, however, when the discoloration of the disc is much greater than we might expect from the amount of disturbance of vision, the case is apt to be slowly progressing. The ophthalmoscope may reveal total gray discoloration of the disc although there is hardly any disturbance of vision. Muscular disorders of all kinds occur with great frequency in tabes, and are nuclear or peripheral in nature. In fact every paralysis of an eye muscle, occurring suddenly in a person in health and without an injury, should arouse a suspicion of a beginning tabes, the more so if it recovers in a comparatively short time or subsequently relapses. According to Kahler of Vienna, abducens palsy is the most frequent, ptosis next. Pupillary symptoms are very frequent and of great diagnostic value. Absence of light reaction, followed by loss of reaction to accommodation and convergence, is one of the most characteristic signs of beginning posterior spinal sclerosis. Consecutive atrophy of the optic nerve is the final stage of a papillitis or retinitis and is due to the newly formed connective tissue in and between the nerve fibers, interfering with their nutrition. During the active stage of the disease the nerve head is swollen, its margins obliterated or very indistinct, and the color reddish, approaching that of the fundus. Through mechanical congestion the veins become distended and tortuous, while the arteries are either unchanged or smaller. As the inflammatory symptoms decline the outlines of the disc are again seen, and may grow irregular or even smaller than in health. The color changes to white but the lamina cribrosa remains invisible. The blood vessels now grow smaller and many are enclosed by whitish lines. Intracranial disease, such as tumors, menigitis, brain abscess and cerebral softening from vascular obstruction, is by far the most common cause of consecutive atrophy of the optic nerve. Systemic disease associated with the retention of morbific or toxic material in the blood may likewise occasion optic neuritis. Local lesion in the orbit may cause a unilateral form. Retinitis is in most cases a symptom, the proper interpretation of which will lead to the detection of its cause in some constitutional disorder. To such causative disorders we first place albuminuria, then diabetes, syphilis, blood diseases like leucocythemia and disease of the blood vessels. Retinitis albuminurica is characterized, in addition to the common symptoms of retinal inflammation, such as diffuse retinal cloudiness, veiling of the disc outlines and blood vessels with frequent congestion and tortuosity of the same, by white spots or patches of fatty degeneration of the retinal elements and cellular exudate. These white spots are found characteristic in two places, in circles around the optic nerve, or radiating star-like around the macula. Especially typical is the latter stellar-like arrangement of the white spots. Hemorrhages may be found in all parts of the retina, coming chiefly from the retinal veins and capillaries, as shown by the striated appearance of the extravasated blood. Every form of nephritis may give rise to retinal trouble; however it is found oftenest with the cirrhotic or interstitial kidney disease. The relation between the eye lesion and the kidney disease is that the retention of waste matter in the blood sets up a disease of the blood vessels of the eye and as a sequence inflammation and degeneration of the retina. The intensity of the eye lesion bears no fixed relation to the severity of the nephritis nor to the amount of albumin in the urine. On the contrary the eye lesion may improve while the kidney disease is growing worse or the kidney disease improve and the eye lesion grow worse. Nevertheless, retinitis renders the prognosis very grave in albuminuria, and it is a fact that most patients die within one year after the eye lesion has been recognized by the ophthalmoscope. Uremic transitory blindness is a different trouble than the one we have just considered and is accompanied by vomiting, convulsions and the general symptoms usually present in uremic poisoning. Retinitis diabetica is, following Hirschberg,[3] best depicted under two principal types. Where we find whitish spots in the retina lying between the upper and lower temporal branches of the central artery and to the temporal and nasal side of the optic nerve. As the patches enlarge they become striated or crescent shaped. The star like patches as seen in albuminuric retinitis are never present without the urine contains albumin as well as sugar. Likewise in and around the white spots do we note the absence of pigment degeneration which is so common in syphilitic retinal trouble. Small hemorrhagic points, lines or spots may be found in all parts of the retina and even a hemorrhagic spot may rest upon one of the whitish exudates. The fact that the hemorrhages do not overstep a certain degree of severity is characteristic. The hemorrhages may undergo reabsorption, but Hirschberg says he has never seen the whitish patches wholly disappear, notwithstanding improvement in vision and the general symptoms. The absence of diffuse retinal cloudiness and the non-involvement of the optic disc with veiling of its outlines, are of great value in differentiating this trouble from albuminuric retinitis.[3] The second type of the disease is the purely hemorrhagic, spontaneous hemorrhages occur and are due to sclerosis of the blood vessels, not only in the retina but in the brain and other parts of the body, Subconjunctival hemorrhage in an apparently healthy person may have a connection with diabetes; likewise a chronic and persistent inflammation of the eyelids. Hemorrhage into the vitreous may happen with or without hemorrhagic glaucoma diabetic in origin. Cataract is a frequent accompaniment of diabetes in both the young and the old. In addition, diabetics have trouble in accommodation and require frequent changing of their reading lenses and a strength out of all proportion to their presbyopia. A very rapidly developing myopia without lens opacity is sometimes found in persons long past middle life. While our purely hemorrhagic type is less characteristic of diabetes than is our exudative, its prognostic value, so far as the preservation of sight and even life is concerned, is more grave. Hemorrhagic retinitis independent of diabetes and albuminuria or alteration of the qualtity of the blood, but associated with vascular derangement such as general arterial sclerosis or endarteritis need interest us here only for the unfavorable prognostic value it has upon the patient's life expectancy.

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[1] Medical Ophthalmoscopy.

[2] Knies: The Eye in General Diseases.

REMARKS ON OTITIS MEDIA AND OTITIC SYPHILIS, WITH REPORT OF A RHINOLITH AND AN ACCESSORY TOOTH IN THE NOSE.

Read before the South Carolina Medical Association at Union, S. C., April 26, 1897.

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CHARLESTON, S. C.

The etiology, symptoms and pathologic changes of an ordinary case of acute suppurative inflammation of the middle ear are more or less familiar to us all. The formation of pus in the tympanic cavity is usually followed by rupture of the drumhead and the discharge heralds an approaching sure and speedy recovery if drainage is free enough to permit the early exit of the pus. Such a case, free from complications, pursues a regular course and tends under careful hygienic and rational treatment, to spontaneous cure. Often, however, we meet with cases when for some reason the tympanic membrane does not yield to the pressure and the pus after invading the mastoid antrum and cells, may have to seek another outlet. The Eustachian tube, the natural ventilator of the middle ear, rarely serves as a drainage tube on account of the closure of its small lumen from inflammatory swelling, originating usually in the naso-pharynx. In such cases the bony tissues are necrosed and the pus seeks an outlet in the cranial cavity or some of the venous sinuses or arteries passing in close proximity to the attic. Again, after rupture of the drumhead the opening may not be large enough to permit free drainage and the tympanic mucous membrane being constantly bathed in a septic purulent fluid becomes subject to polypoid degeneration; and for this or other reasons the discharge becomes chronic. It is to two of these complications that I invite your attention with illustrative cases.

W. E. N., aged 24, of Dock, S. C., consulted me by advice of Dr. Steele, on March 11, 1897, for deafness in and a chronic discharge from the right ear. Two months previously he suffered from an attack of grippe with violent pains in both ears. The right began to discharge ten days after and had not stopped since. In the interval he had recurrent attacks of severe mastoiditis. On examination the skin over the mastoid was found swollen, boggy and painful on pressure. Hearing was reduced to two thirty-sixths in the right ear and the external canal was closed by a soft fluctuating tumor with a fistulous tract opening on its surface. The drumhead, not at first observable, was subsequently found intact. The fistula communicated with the mastoid cells and the bony canal was considerably necrosed. *A free incision was made through the tissues of* the external auditory canal and the [illegible] t and [illegible]acent diseased bone thoroughly curetted [illegible] iodoform gauze. Free drainage was thus [illegible] weeks after, the patient reported hi[illegible] ormal in every respect.

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[3] Deutsche medicinische Wochenschrift, No. 51, 1890.

This case illustrates the necessity of an early paracentesis of the drumhead in cases of acute purulent otitis media when the usual local antiphlogistic measures fail to give rapid relief from the pain, or to cause a disappearance of the other symptoms. In such cases as the above, the early establishment of free drainage by myringotomy will prevent mastoid and other complications of a serious and often fatal and intractable nature.

As illustrative of another common complication of suppurative otitis media we have those cases in which the drum membrane is perforated and a train of symptoms is set up, the most prominent and annoying of which is an offensive and irritating discharge caused by the opening being too small to permit the exit of the purulent secretion collecting in the middle ear.

F. A. B., aged 25, of Sumter, S. C., consulted me by advice of Dr. Archie China, in November, 1896, in regard to a chronic fetid discharge from the right ear, which had existed for about twenty years, in fact as long as he could remember. During this time he had been subjected to a great variety of treatments at different hands, among them being the galvano cautery. His hearing was reduced 0.36 and bone conduction was considerably impaired. On examination, a small opening was found in the postero-inferior segment of the drumhead and closing it, was what seemed to be a polypus or granulation. The membrane looked very tense and the discharge was free and offensive. Suspecting a polypus of too large dimensions to protrude through the perforation, the latter was enlarged and a tumor of unusual size presented. This was extracted with an aural snare, under a 20 per cent. solution of cocain. The patient returned home and was directed to use only a peroxid of hydrogen solution, to inflate the ear with Politzer's air bag, and after thoroughly drying the canal to insufflate dry boric acid. In three days he reported the discharge cured and there has been no return since; the same treatment, however, was continued for some time.

In all cases of chronic discharge from the ear, when thorough cleanliness and appropriate local and general treatment fail to stop it, a very careful examination should be made for some exciting cause. Such causes are polypi, necrosis of the ossicles or bony walls of the attic, cholesteatomatous masses, foreign bodies or diseased conditions of the nasopharynx producing sepsis through Eustachian tube. In children, the most common cause is adenoid growths and their removal generally suffices to cure the disease.

The following history describes a variety of otitic syphilis which is no doubt very commonly overlooked and of which very little has been written:

M. C., aged about 22, consulted me on Jan. 27, 1897, at the request of Dr. Dawson. With no previous history of ear disease he had suddenly become perfectly deaf in both ears. The left one subsequently discharging a fetid purulent secretion. A short time before I saw him he began to have ringing noises in the head and at the same time had marked attacks of vertigo, while his gait was so staggering that he was unable to walk out of the house unassisted. Complete facial and partial paralysis of other portions of the body occurred simultaneously. Both drum membranes were congested and the left perforated by a small opening. Double vision was occasionally present. Both air and bone conduction were almost completely abolished. He gave an obscure history of syphilis, which was subsequently confirmed by other clinical evidences of the disease, as well as by the report of his physician. Under heroic antisyphilitic treatment, including subcutaneous injections of mercury in large doses and iodid of potash internally, as well as local treatment of the ears. he is now able to hear loud conversation in the left ear at one foot, and the loudest in the right, with difficulty.

Dr. E. A. Crockett, in the Boston *Medical and Surgical Journal* of Feb. 11, 1897, under the title, "An Acute Syphilitic Affection of the Ear," details the history of several similar cases in which he found the injection of pilocarpin in the acute stage, in conjunction with antisyphilitic treatment, of great and even specific value. He concludes from a study of some fifteen or twenty cases that effusion into the labyrinth is the cause of this particular group of symptoms we are considering, and that very sudden and severe deafness, marked vertigo and violent tinnitus in persons free from ear trouble should always suggest otitic syphilis.

Your attention is also invited to two somewhat rare and unique growths occasionally found in the nasal fossæ, only a limited number of which have so far been reported in rhinologic literature. The first is an accessory tooth which I extracted from the left nasal passage of an adult, aged 29, who consulted me for a chronic discharge from the nose. The tooth, evidently a canine, was firmly imbedded about midway between the anterior and posterior openings, in the mucous membrane covering the bony floor formed by the hard palate. Its presence was a great surprise to the patient and its removal was followed by a rapid amelioration of the symptom complained of.

The second is a rhinolith or nasal stone removed from the left nostril of Mrs. H. C. R., aged about 45, who consulted me for deafness. She mentioned incidentally that she had suffered for upward of twenty years from a fetid discharge from the left side of the nose and from a chronic stricture of the lacrymal duct, both of which she considered incurable. In the course of a routine inspection of the nose as a part of the aural examination I detected a large rough irregular stone firmly lodged in an old suppurating ulcer just at the lower end of the tear duct. These rhinoliths are usually formed by the deposition of calcium phosphate around some forgotten foreign body as a nucleus. From the history of this case, as well as the shape of the stone, I judge that the exciting cause was a piece of necrosed bone from a diseased tooth extracted years ago. The annoying discharge ceased shortly after the removal of the foreign substance. As a predisposing cause of the chronic otitis its effect is somewhat doubtful but there is no doubt that it was the original source of the dacryo-cystitis and lacrymal obstruction.

THE TRAUMATIC FEVERS.

Read in the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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One of the earlier theories of disease was that it came from without, as a direct visitation from God; later, that it originated in the humors of the blood; in modern times the cell doctrine has had its sway, to be supplanted as the microscope increased in power by the bacterial origin of disease, rapidly supplemented by the hypothesis that the products of the bacteria, the ptomains and leucomains, are in many cases the active media, while the more recent investigations of serum therapy seem to foreshadow a partial return to the humoralistic theories. It was only in 1851 that Meigs declared that puerperal fever was a fatality of God's providence; so that whatever the actual truth of our modern speculations may be, there is no pathologic process upon which they have had a greater effect in modifying our methods of treatment, in teaching us how to avoid their transmission, and in one of them (pyemia) in practically stamping it out, at least in its most virulent epidemic form, than in the class of diseases which we have the honor of discussing before you.

It is not so many years ago since we were taught by the too enthusiastic imitators of Lister, that any rise of temperature following an operation indicated infection. The most careful preventive measures with assiduous microscopic investigation has tended to dissipate this view; at the present time a moderate rise of temperature is not regarded as a reflection upon the surgical cleanliness of the operator, and it has been found by experiments upon the lower animals, that under the most careful asepsis, "*a something*" from a sterile wound, injected into a healthy animal, will bring about a rise of temperature, which "something" for the want of more definite knowledge, is called an "aseptic fibrin ferment" and therefore is supposed to be the element which being absorbed from an uninfected wound in the human animal, produces the increased heat. We would classify our traumatic fevers as *primary fevers* and *secondary fevers*.

PRIMARY FEVER.

Primary or aseptic fibrin ferment fever appears usually within forty-eight hours after a traumatism of any magnitude, being due to the absorption of an aseptic fibrin ferment substance from the seat of injury. It follows conditions in which the aseptic precautions or unbroken skin preclude infection, such as contusion, fracture, effusions into synovial sacs or membranes and in carefully cleansed open wounds, and is due to the absorption of pyretogenetic substances formed from the products of the aseptic necrobiosis.

It lasts from four to five days; with moderate rise of temperature (102), increase in the rate of pulse and of the respiratory rhythm, the urine more highly colored than normal, some tendency to constipation, but with little or no sense of discomfort to the patient. It is to be treated by absolute rest, limited diet, a purgative on the second day, an alkaline febrifuge, or moderate dose of quinin. It is not a condition that need give the operator any anxiety.

SECONDARY FEVER.

Secondary fever which comes on after the fifth day, though in virulent cases it may appear even sooner, is due to the absorption of pathogenic germs, either the pyogenic, the saprophytic, or their products, so that we may classify their varieties as follows. 1. Suppurative fever, acute or chronic. 2. True septicemia. 3. Sapremia. 4. Pyemia.

Acute suppurative fever.—Acute suppurative fever follows infection with the products of pyogenic micro-organisms and is manifested by a chill, fever and sweat usually coincident with the formation of pus. Although the appearance of such symptoms is a most valuable indication of the presence of a purulent collection which will usually promptly disappear when the pus is thoroughly evacuated and the cavity kept well drained, they may not occur though the pus may have accumulated in considerable quantities and for a considerable length of time, *until the cavity is opened.* It was formerly thought this was due to the admission of air. This is not so. The apparent paradox depends upon the conditions favorable or unfavorable to the absorption of the pus products.

In a paper entitled "Intermittence in Disease," I endeavored, some years ago, to show that the regular rhythmic appearance of phenomena in health or disease were due to impressions upon the nerve centers, pus absorption at times having the intermittent type of an ague, and being often mistaken therefor. When the pus collects rapidly and is not too large in quantity, the absorbent lymph or venous channels being active, the symptoms will appear quickly. Where however, the pus collects slowly and there is marked infiltration and pressure upon the surrounding tissue, thus interfering with the absorption, no symptoms will be evident excepting perhaps the initial chill, fever and sweat, which is often forgotten, but as soon as the cavity is evacuated and pressure relieved the absorbants regain activity, take up the infiltrated products which can not be readily drained out and we at once have the familiar symptomatology. The apparent paradox is thus made clear and there is no inconsistency.

Acute suppurative fever is believed to be due to the products of the pus and not to the actual presence of the pus-organism themselves, because the actual presence of the pus germs has not been demonstrated in the blood, and because the symptoms disappear so quickly after thorough cleansing and drainage.

The chronic form of suppurative fever with characteristic rhythmic temperature chart, "up at night and down in the morning," with flush of cheek and wasting of flesh, is called *hectic*.

Septicemia.—Septicemia (true septicemia, septic infection) is due to the absorption of the saprophytic or micro-organisms of putrefaction with their actual presence in the blood in enormous quantities.

The symptoms are, an initial chill (one only), a continued fever, rapid pulse and respirations, coma, sordes on the lips, a dry cracked tongue, mental hebetude, muttering delirium, with enlargement of the spleen and of the superficial lymph glands. The wound, if upon the surface, will often appear gangrenous and emit a foul odor.

The treatment consists in rigid local asepsis (although the disease when fully developed has already gone far beyond the point of infection), with most vigorous supporting measures, with liquid concentrated food, quinin, whisky, ammonia, digitalis, and strychnin, the amount of stimulus in the way of brandy or champagne without intoxication being somewhat surprising. Fortunately, true septicemia is much more rare than we might suppose. as the term is misapplied to a variety of conditions often including our next sub-division.

Sapremia.—Sapremia (toxemia, septic intoxication, ptomain poisoning) is the absorption of *the products* of the micro-organisms (ptomains) from the site of infection. It predicates, therefore, a primary local invasion with saprophytic germs and an absorption of their products. It is evident that while true septicemia emphasizes the actual presence of bacteria in the blood itself, sapremia depends largely upon the limitation to the point of introduction and the destruction of tissue there, while this disease is due to the absorption of the products from the original point of infection. An infection sufficiently virulent to introduce the bacteria directly into the blood would cause true septicemia, but if the tissues had sufficient resiliency to prevent this the infective agency might still remain *in loco*, producing by its action on the tissues ptomains which, being absorbed, produce sapremia.

Sapremia is often ushered in with a single chill followed by fever and sweat, tenderness and pain at the infected spot, or if the wound be under observation it will appear swollen with inflamed edges by unhealthy granulations. The severity of the symptoms largely depends upon the degree of toxicity and activity of absorption in and about the affected area. The skin is hot, the pulse and respiration rapid, tongue dry and thickly coated, urine scanty and highly colored, patient restless with a mild delirium. This will last for four or five days and the symptoms gradually subside.

The older authors were glad in such conditions to see the surface of the wound covered with what they called "laudable pus" and to find healthy granulations. We now know that this betokens a power of resistance of the tissues, a throwing off of the bacterial products and consequent lessened absorption.

It is in obstetric practice that this form of disease is too often found. The odor of the lochia, the tenderness over the uterus, with the general symptoms appearing about the fourth day after delivery, give us warning of infection. The lesion being in great part local, a thorough cleansing with frequent douching will at once ameliorate the symptoms and shortly, if taken in time, the constitutional involvement will also rapidly lessen. In fact, the whole course of sapremia emphasizes the local element, and to local treatment we must look for its removal.

In certain lamentable cases the disease is not recognized in time but is allowed to go on until the patient is overwhelmed by the ptomain poisoning, death occurring from the profound typhoidal depression. We can not too strongly emphasize that the localizing symptoms point to radical local antiseptic treatment. In the obstetric practice referred to, a good douche of bichlorid of mercury will often evert a most threatening condition, but if this is not sufficient a thorough curetting of the uterus, afterward swabbing with tinct. iodin, may be necessary.

Especially after miscarriage the patient may be in ill health for months, with subinvolution of the uterus; apparantly caused by minute shreds of decomposed membranes or clots readily removed by the means indicated, and we believe some of the cases of tubal disease might be prevented by a recognition of the pathology of the ptomain poisoning of which we are now speaking.

The constitutional condition requires a stimulating and supporting therapeusis and regimen.

Pyemia.—There are very few terms in surgery so confusing as the name pyemia. It has been used by different authors to include all the varieties of traumatic fevers referred to, while it is recognized that some of the symptoms were only seen in rare cases. It seems to me we can safely restrict the terms to a distinct disease characterized by a state of depression common to all typhoidal conditions but distinguished by the formation of pus cavities in different and widely separated parts of the body. No tissue may be exempt. Abscesses have been found in the lungs, liver, kidney, joints, muscles, bones, brain, lymphatic glands; coagulability of the blood is diminished, and there is leucocytosis with purulent effusions into the serous cavities. The disease is contagious, being communicable by instruments or sponges in the hands of the surgeon or other attendant and passes along the vascular or lymphatic channels.

It is evident that there is here something different from what we have denominated true septicemia; the constitutional involvement being even more grave and the metastatic abscesses being added thereto.

There is here surely a double infection, the micro-organisms of putrefaction and of pus both being introduced directly into the blood, and the latter proliferating wherever they happen to lodge. It is this double infection which induces the grave constitutional conditions while the local presence of the pyogenic germs causes the abscesses. Fortunately such a combination is rare under the existing antiseptic methods.

The symptoms appear about the second week after an injury. The are, repeated chills and colliquative sweats, the temperature rising synchronously with the chill, the pulse and respiration rapid and weak, with skin icteroid, anorexia, more or less diarrhea, great prostration, and great pain at the immediate seat of the abscess, with hyperesthesia of the cutaneous surface, and erythematous rashes and ecchymoses; the mind being clear unless metastatic masses lodge in the brain.

We can differentiate it from true septicemia by the mental clearness, the hyperesthesia, the repeated chill (half a dozen a day) and excessive exhausting sweat, and the localized abscess.

From intermittent fever we may separate it by the limitation of the paroxysms in the intermittent to a certain day or even hour, by their singularity as a rule, and by the regular succession of the three stages of chill, fever and sweat; compared with the many paroxysms without definite rule throughout the day in pyemia and the fever stage coinciding with the chill and quickly followed by the exhausting sweats. It is thus seen that pyemia, though accompanied by high temperature has no distinct fever stage, the rise of temperature coinciding with the chill. The sweat rapidly follows.

The treatment is supporting and stimulant with early evacuation of abscesses where accessible. Antisepsis and asepsis has almost abolished this dreadful disease, which in former times was indeed "the opprobrium of surgery."

Arterial pyemia, so-called, is an entirely different condition, being non-infective, depending upon the lodgement of an embolus detached from a fibrinous white thrombus in the left ventricle, in some distant organ. The term should be abandoned.

1626 Mount Vernon Street.

DISCUSSION.

Dr. George M. Sternberg of Washington—It seems to me that if pyemia is the result of septicemia you must have your septicemia in the circulation generally distributed in advance of your multiple abscesses and when the abscesses are formed you then have a suppurative fever. I know that pyemia is recognized as a distinct disease, but to me it seems to be a sequela of septicemia.

Dr. E. W. Holmes—That question involves a very large question which the pathologist must settle. It depends upon the question as to which germ produces pus. It is quite possible that the germs that produce sapremia may be the same germs that produce the pus condition, but on the other hand I do not think that Dr. Sternberg is prepared to say that every condition in which pus is produced in the body produces pyemia. So far as we now know if such a condition exists it is simply because we are not yet straightened out as to the exact condition in which pyogenesis may be produced.

A Cause of Myopia.—The prevalent doctrine that myopia, astigmatism and kindred disorders depend upon the physical fatigue of the eye leads us to the consideration of the size of the type used in reading, rather than the intensity of the illumination of the printed page. No type less than 1.5 millimeters in height should leave the case. Ordinary daylight, white rather than yellow for artificial illumination, and white rather than tinted paper round up the advice.

LIGATION OF THE DORSAL VEIN OF THE PENIS FOR FUNCTIONAL IMPOTENCE, WITH A REPORT OF FIVE CASES.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY J. A. MURRAY, M.D.
CLEARFIELD, PA.

In reporting these few cases to the ASSOCIATION I am not presumptuous enough to claim priority of discovery for the operation. Surgery has advanced so far that, apparently, there are few operations that some one has not done in the recent or remote past. So with this, it may have been done by many surgeons and abandoned. I have seen no literature on the subject, pro or con. If there should prove to be any virtue in the operation I desire to say that I got the idea from the Materia Medica of Dr. Bartholow, in which these words are used: "It has lately been asserted that deficient erections and loss of the capacity for coitus are not infrequently due to enlargement of the dorsal vein of the penis and consequent too rapid emptying of the veins of the erectile tissue. Acting upon this plausible suggestion, the author has practiced the hypodermic injection of ergotin about the dorsal vein of the penis and has had apparently excellent results."

I have operated on only five cases, four of which were followed by a permanent cure, the other being a complete failure because it was unsuitable for the operation.

From this small experience I am encouraged to believe that when functional impotence is due to an enlarged dorsal vein in men with strong sexual desire, who fail in sexual intercourse on account of imperfect erections due "to too rapid emptying of the veins of the erectile tissue," ligation offers good prospects for a permanent cure.

In neurasthenic cases when the genital organs are small, pale, flabby and relaxed from excessive masturbation, with no sexual desire, the operation would be unavailing, and therefore contraindicated.

I submit a brief history of my five cases, hoping those with larger opportunities in this direction will try the operation on suitable cases and report their success or failure through the columns of the JOURNAL OF THE ASSOCIATION.

Case 1.—A merchant 63 years of age, well preserved, hearty and robust; strong sexuality, during his whole life indulged a great deal in sexual intercourse, some times excessively; father of several children. One year ago married his second and present wife, a strong, healthy, active young woman, 22 years of age. On the first attempt at coitus he met with his usual former success, but the night following this when he attempted intercourse the erection was feeble and lacked intromittent power. Each succeeding attempt for a period of three or four weeks was also a failure; then his condition began to prey upon his mind. Ashamed to consult a home physician he flew to the different "lost manhood restored" advertisements and tried some of the most glaring and reassuring, and was swindled alternately. Then he went to some distant sanitarium and was treated some time with no better results. He was next worked by some medical company who sold him some sort of a suction apparatus for "restoring weak and flabby erections in men with waning power and resultant impotence."

But after all his treatment and instrumental manipulations his condition was worse than in the beginning. At this stage he drifted into my care, impatient and despondent, having given up all hope of regaining his former virility.

I made a thorough examination and found well-developed genital organs; never had gonorrhea nor masturbated to any extent; no stricture; no sensitiveness in the prostatic urethra nor at the neck of the bladder. The only abnormal condition was a very large and tortuous dorsal vein. I advised the injection of ergotin, to which he readily consented. I continued this for three or four weeks and his condition improved somewhat, but his erections were still feeble and unsatisfactory and the organ was swollen, discolored and tender from the injections and I abandoned them.

It was at this juncture it occurred to me that if the constringing influence of ergotin was beneficial why not get an immediate and permanent result by ligature. I examined a long line of text-books but found no enlightenment on the subject; nevertheless I concluded to attempt it, as the patient was anxious to try any measure that held out some hope of cure.

The penis and surrounding parts were thoroughly disinfected and the operation done aseptically under the anesthetic influence of a hypodermic injection of cocain. A short longitudinal incision was made through the skin and subcutaneous tissue, down to the dorsal vein, which was then picked up and ligated in two places, and then cut between the ligatures. The first ligature was scarcely tied till the penis began to fill up and before I had completed the operation he had a powerful erection, which alarmed both him and myself. The organ was so distended and engorged that it was cyanotic in appearance and apparently the smallest capillaries in the glans stood up prominently. Crushed ice was applied constantly; bromids and other depressant remedies were administered. Notwithstanding this, during a period of three days and nights he experienced a constant, powerful and painful erection. Subsequently it partially subsided, but on the slightest manipulation it would become strongly erect, this latter condition existing until the ligatures came away on the fifth and sixth days. In a few days the wound closed. He was so self-confident and enthusiastic that he begged me to allow him to have intercourse with his wife on the tenth day after the operation. I positively refused to consent until two weeks more, but the strain was too great for him and on the fourteenth day he cast my advice to the winds and had coitus with his wife twice and once on the succeeding day. Since that time, which is almost three years from date of operation, coitus has never been attended by failure. He has one child by his young wife and to this day is one of the happiest of men.

Case 2.—A clerk, 27 years of age, had practiced masturbation from his fifteenth to nineteeth year. Following this he very frequently toyed with one young woman for a period of more than two years, without any gratification of his sexual desires. At the age of 22 he attempted intercourse but failed because the erection was imperfect. He made several subsequent attempts with a like result, because the intromittent power was always wanting. He then consulted me and I found a stricture, caliber No. 19 French, four inches from the meatus, in addition to an extremely tender urethra, especially in the prostatic portion. He denied ever having had gonorrhea. I treated the stricture by gradual dilatation, sedative medication and cold douches to the perineum, and later by iron and bitter tonics. I forbade libidinous thoughts, lascivious associations or any attempt at sexual intercourse during my treatment. After three months I gave him permission to have connection, with instructions not to dally or toy with women but to select one with whom he could have coitus on first appearance of an erection. Like all previous attempts this one failed also. The desire was there but the glans penis would not entirely fill up, remaining soft and unelastic. He came back disheartened and despondent and I suggested ligating the dorsal vein, which appeared rather larger than normal. He readily agreed and under cocain anesthesia by hypodermic injection I ligated the vein as in the foregoing case. The first ligature was no sooner tied than the glans penis began to distend and it was only a few seconds until he had a powerful erection and I feared a repetition of the symptoms of the first case. The patient was immensely pleased with the result and the mental effect on him was self evident.

The penis was loosely bandaged and the patient put on large doses of potassium bromid. In the course of a hour the erection partially subsided and he suffered no more pain. In dressing or upon the least manipulation the organ would become powerfully erected. Upon the sixth day the ligatures came away and the wound soon closed, and it was only a few days until the young man was very anxious to try his powers, feeling yery confident he would not again fail.

He was so certain of success that I gave him permission on the fifteenth day to have intercourse but once. He came back in two days the most elated young man I have seen, stating that he had had coitus with a young woman five times in two days. He is married now and he lately told me his erections have always been satisfactory since the operation, which is more than two years ago.

Case 3.—A tanner, [illegible]ed. [illegible] onanism from his seventeenth to his twenty-first year, but not excessively. Has strong sexual desires. Fondled with the object of his affections for more than two years before marriage without any gratification of his passions. Has never had sexual intercourse but frequently experienced nocturnal emissions. Married ten days ago and has not been able to consummate the marriage rite because the erections were feeble and lacked in intromittent power. By careful examination no stricture was detected but there existed a very hyperesthetic condition of the urethra, especially sensitive in the prostatic portion. A steel sound was passed twice a week for a period of twenty-one days, and he was instructed not to fondle his wife nor occupy the same apartment with her.

At the end of three weeks, the hyperesthesia of the urethra had been very much improved; I ligated the dorsal vein, although it was not enlarged. He was strictly enjoined not to attempt coitus for another month. At the expiration of this time intercourse was performed successfully and he has never experienced any difficulty since that time, now more than a year ago, in commanding an erection.

Case 4.—A bookkeeper, 31 years of age, who had masturbated for 7 years, on an average of twelve times in a week. Three years ago he abandoned masturbation and has since suffered from frequent nocturnal emissions, although he had not experienced an erection for many months and had no desire for sexual intercourse. His genital organs were small, pale and flabby. He was anemic, weak and neurasthenic. He had read "lost manhood restored" literature until he believed he could never be cured. I was convinced of that, but did not express it. He was a typical sexual hypochondriac.

On examination I found a stricture, caliber 18 French, four and one-half inches from the meatus, in addition to an extremely sensitive urethra, especially about the neck of the bladder. Under gradual dilatation the stricture and sensitive urethra were cured. With tonic treatment, cold douches to the perineum and good hygiene, his nightly emissions ceased in number and his confidence was somewhat restored. Although he was not a proper case for operation, I ligated the dorsal vein, more for the mental effect I hoped it would have than any hope of permanent cure. His condition did not improve. The bad habits of his past life so preyed upon his mind that he became more gloomy, disheartened and despondent. He drifted out of my care and left the community, therefore his subsequent history was lost, but I feel satisfied the operation did him no good.

Case 5.—School teacher, 25 years of age, unmarried; had practiced masturbation from his fifteenth to his nineteenth year; suffered some from nocturnal emissions; has well-developed genital organs. No stricture, no hyperesthesia of urethra. He had attempted coitus on frequent occasions but they were all attended by failure on account of feeble erections. He was in robust health and had strong sexual passions. Was engaged to be married in a few months but his impotent condition so preyed upon his mind that he was on the eve of breaking the engagement when he consulted me. The dorsal vein being large and prominent I suggested ligating it and explained the theory. He readily consented and the operation was performed. I warned him against dallying or toying with women and advised him to marry his betrothed at once. He did so and all attempts since then at sexual intercourse have been crowned with success.

In conclusion I wish to state that under proper treatment, long continued, Case No. 3 would, I believe, have recovered without the operation. In the foregoing cases, excepting No. 4, the mental effect of the operation was simply wonderful. They felt positive they were cured and wanted to try their powers at once. Two of them were restrained with difficulty. We see so many cases of impotence due only to a fear of sexual incapacity. If we can restore confidence in this class of patients there is very little trouble experienced in establishing a cure, and I am inclined to believe a great many cases of psychic impotence can be cured by ligating the dorsal vein of the penis.

London's Growth.—Returns show that over 1,200 houses are erected monthly and from August 1896 to August 1897, 14,531 houses were built. Alterations and additions are not noted.

GANGRENE OF THE FOOT DUE TO UTERINE MYOMA.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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The case which I am about to report is so unique in my experience, that I deem it worthy of publication.

Mrs. M. came to the Maine General Hospital with the following history: During the fall of 1895 and the early part of the winter of 1896 the patient suffered from severe cramps below the knee. It was mostly after sitting for a long time or after sleeping at night. In March, 1896, a slight cold was taken and she suffered much pain, which seemed like the pain of rheumatism. She soon became lame and suffered more pain in the limb, which could be relieved for a time by the application of dry heat. In the early part of June, the limb was so painful and lame that she was obliged to lie in bed. The limb became badly swollen and in the middle of June the weight of the body could not be borne upon it. The sharp pain had changed to a burning sensation and the limb had a heavy "blocky" feeling. The limb was very cold, but when heat was applied she could not feel it. At this time the pain was so severe that sleep was an impossibility. The 3d of July she had what her daughter called a shock. There was complete prostration for several hours. It was three or four days before the feeling of numbness passed away.

At this time the foot was badly swollen, purple spots appeared, as if the foot was cold; these spots would disappear by rubbing and the natural color would return. By the middle of July the top of the foot was discolored and water-blisters appeared. The burning sensation was very severe, the blisters increased in size and number while the toes were very cold and seemed dead.

This condition continued to increase until two thirds of the foot became gangrenous. In the latter part of July, 1896, I saw the patient in consultation with the attending physician. She was a woman 47 years of age, fleshy, and had had one child, daughter, about 20 years old. She had enjoyed good health up to the time of this sickness. There was no disease of the kidneys, and no evidence of arterial degeneration.

On examination I found, what her physician had discovered some time before, a fibroid tumor of the uterus, rapidly growing, with thick and rigid abdominal walls pressing the tumor firmly against the iliac vessels. It was the right foot that was gangrenous, and the history showed that she was most comfortable when lying on the right side, and this was the position which she had occupied the most of the time while in bed. The case seemed well nigh hopeless. The woman was weak and almost helpless from her long sufferings, the tumor of the uterus was large and rapidly growing, the gangrene, while not rapidly extending, had destroyed nearly the whole foot. In this condition she was brought to the Maine General Hospital, Aug. 3, 1896, as my private patient. She was kept in the hospital one week before the operation for rest and preparatory treatment. At this time two-thirds of the foot were dry and mummified and the line of demarkation was well-formed.

August 10, one week after her admission to the hospital, I removed the tumor including the uterus and its appendages. The patient made a rapid and uninterrupted recovery from the hysterectomy, and in two weeks from the first operation, I amputated the leg at the junction of the middle with the lower third by Teale's method. This wound healed promptly by first intention without a drop of pus or a blush of redness. She left the hospital in five weeks from the time she entered, with the wounds entirely healed and rapidly gaining in strength. In about three months after she went home she was fitted with an artificial limb, and at this time, nine months after the operation, is entirely well.

As this was the first case of the kind I had ever seen I was anxious to know what had been the experience of other surgeons, consequently I wrote to the National Bureau of Medical Bibliography at Washington, and received the following reply:

WASHINGTON, D. C., Feb. 26, 1897.

Dear Sir:—In response to your letter of the 18th inst., we send you herewith reports of all the cases of gangrene of the lower extremities resulting from uterine fibroids that we have been able to find. We made an exhaustive search through all the literature of gangrene, cases of, and tumors, uterine, complications of, without finding any additional cases."

Pott's Gangrene from Ovarian Tumor.—Dr. Henry Fitzgibbon. (*Brit. Med. Jour.*, Lond., 1876, I, 116.) Dr. Fitzgibbon gave the history of a case of Pott's senile gangrene which had run to an unusual course; and exhibited the specimens. A female, upward of 70 years of age, was admitted into hospital in March, 1875, with gangrene of the fourth toe of the left fort. The case presented the usual symptoms of the disease as described by Pott. Her bowels were constipated, and there was a tumor in the left iliac region, which was believed to be due to an accumulation of feces. Treatment based upon this diagnosis produced a marked diminution in the size of the tumor. The disease extended in the foot (which, however, preserved a higher temperature than the unaffected one) to the ankle-joint, when suddenly the pain ceased, and the foot recovered, the toes alone becoming mummified, and consequently separating. It was ascertained that the abdominal tumor, which was still perceptible, had an old history; and the patient informed Dr. F. that she had been under treatment some years previously for an "uterine tumor." She was discharged in good health after being six months in the hospital. Five months subsequently she was readmitted. Her whole foot then looked gangrenous; the disease extended rapidly up the limb; she had black vomit, great abdominal pain, and died. A large densely fibrous tumor of the left ovary was found lying on, and pressing upon, the common iliac artery. The heart and vessels down to the line of demarkation, which had formed midway between the ankle and the knee, were healthy. Below this there were some plates of atheroma in the posterior tibial artery. Dr. F. believed that the circulation in the left lower extremity had been interfered with by the pressure of the tumor on the iliac artery, which was increased by the accumulation of feces also exerting pressure in the same direction. The removal of the latter factor by treatment allowed the partial recovery in the first instance; and a recurrence of pressure from a reaccumulation of feces, occasioned, he considered, a recurrence of the disease.

Gangrene of Leg; Polypus Uteri and Removal; Amputation.—J. Cooper Forster, M.D. Guy's *Hosp. Rep.*, London, 1875, 3, S, XX, 79.) Mary B., aged 45, widow, was admitted into charity ward on Dec. 31, 1873. Family history good, always had good health. Fourteen days ago, in the night, her foot got cold and ached; next morning all the toes of that foot were quite white and cold; she used a liniment and wrapped the foot up in warm flannels. In eight or ten days the toes began to get black; this spread along the foot and up the leg. She has not been exposed to great cold, but generally loses a large quantity of blood when menstruating.

On admission.—Is delicate looking; the toes, dorsum of foot, and front of lower half of right leg, are quite black and cold, and she has very little feeling in those parts; femoral artery normal. She has also a large growth occupying the region. Leg dressed with carbolic acid and wrapped in cotton wool.

January 8. Chloroform given. Dr. Phillips removed a polypus which was attached to uterus near os. It was very nearly as large as the head of a fetus, and was cut away by scissors; no bleeding.

January 19. There is a well-marked line of demarkation on leg; the gangrene has not spread since she came in, but there is some discharge from it.

January 20. I amputated through the knee-joint; anterior and posterior flaps made; Esmarch's bandage used; scarcely any bleeding.

January 23. Stump dressed under spray; then wrapped in gauze soaked in carbolic oil and a back splint applied; there is rather a free discharge.

January 28. Dressed as before. Stump has begun to slough. She suffers from cough and expectorates a good deal of thick mucus.

February 6. Now has a bed-sore on right buttock, about 4 inches by 3 in size, and filled with slough; lies on a water bed. Discharge less and of a healthy kind.

March 3. Stump nearly healed, bed-sore looking better, sits up a little daily.

March 9. Two other bed-sores appeared. No albumin in urine, appetite bad, looks anemic.

April 6. Confined to bed again and takes very little food.

April 20. Suffers from diarrhea. Sores looking more unhealthy, and increasing in size. Takes no meat now.

May 12. Lives almost entirely on brandy and milk. Bed-sores continue to look very unhealthy.

May 21. Died this morning.

Gangrene of the Right Leg.—Amputation. Death fifty-one hours afterward. Large fibrous tumor of the uterus compressing the iliac vessels, (old disintegrating clot in left auricle, (embolic) obstruction of abdominal aorta and iliac arteries with coagulum. Case under care of Mr. Hulke. (*Med. Times and Gazette*, London, 1863, II, 142.) A sallow, dark complexioned woman, aged 55, was admitted into Middlesex Hospital, Bird Ward, April 1, 1863, with moist gangrene of the right leg, which terminated abruptly by a distinct line at the knee. For a short distance above this, particularly in the ham, the tissues were edematous, and the skin had a slight dusky, purplish tint, from stagnation of the capillary circulation. Severe pain in toes. Lower part of abdomen contained a solid oval tumor lying across the middle line, and reaching nearly as high as the umbilicus. Both in front of it, and in the flanks, percussion elicited a clear sound. The liver was not enlarged. The urine was free from albumin. There was no edema of the left thigh or labia. The heart acted very irregularly, four or five beats, then an intermission, then a double beat—so that the pulse could not be accurately counted; it was estimated at 120; no bruit indicating valvular disease was noted. Her general condition was one of great depression.

She stated that since childhood, when her left leg was amputated for white swelling, she had never had any grave illness till last Christmas, when, not feeling well, and discovering the tumor in her abdomen, she underwent a course of treatment for a supposed abdominal dropsy. After pursuing this for a fortnight, in the middle of January a bleb appeared on the instep, which was followed shortly by a discoloration that gradually crept up the leg.

Her temperate habits, apparent freedom from organic heart-disease, and from disease of the kidneys, made it improbable that the gangrene had a constitutional origin; while the suddenness of its occurrence strongly pointed to a local origin, and this Mr. Hulke thought might be the compression of the right common iliac vessels by the uterine tumor, and their consequent obstruction with coagula.

On the following day after admission amputation was done in the lower third of the thigh. There was little bleeding, the main vessels being plugged with coagula. At 10 o'clock, same evening the operation did not seem to have added to the patient's depression. Pulse 100; sleeping; had taken beef tea and tablespoonful of brandy every hour. Next day stump had shrunken much. There had been free oozing of serum from it and there was a want of action, but no appearance of an extension of the gangrene. Continued to take nourishment. Toward evening restlessness and sickness came on, pulse rose to 120 and she died on the evening of the second day.

At the examination of the body a large fibroid tumor of the uterus was found, consisting of several lesser and two principal masses. Of these larger masses, one was connected with the back of the uterus and filled the pelvis, flattening the rectum and bladder. The other sprang from the fundus uteri. It measured more than 7 inches in diameter and lay upon the promontory of the sacrum and lower lumbar vertebræ, over the aorta and vena cava. The aorta, for over two inches above its bifurcation, the common, the internal, and the external iliac arteries for half their lengths, were plugged with solid coagula, which were prolonged in a tapering form into the distal halves of the last named vessels, nearly as far as Poupart's ligament. The oldest coagula were those in the internal and common iliac arteries and in the aorta. The distal halves of the external iliac arteries, which were incompletely filled with coagulum, were fully one third smaller in diameter than the proximal halves, which were completely plugged. The superficial femoral artery, for two inches above where it had been divided in amputation, was plugged with a fibrinous clot, above which this and the common femoral artery were pervious, containing only scattered linear clots. Their caliber was diminished. The vein was plugged for the same distance from the face of the stump as the artery. Above the clot it was distended with black, treacly, fluid blood. The external, internal and common iliac veins, and the vena cava inferior were empty and collapsed. Many of the tissues of the thigh were edematous. Small vessels were plugged, and examination of the limb showed that the popliteal artery and vein were plugged as far as their division, beyond which the disorganized state of the tissues prevented their being traced. The ureters and pelves of the kidneys were dilated, evidently from the uterine tumor damming back the urine. The lungs were edematous, their anterior and lower borders were emphysematous, and their apices bore puckered scars. The heart was large and flaccid; its right side and left ventricle contained yellow jelly-like fibrinous clots, but the appendix of the auricle enclosed an old clot which adhered firmly to its walls. The exposed surface of his clot was cheesy, friable and rough, whil [illegible] interior [illegible] roken down and pulpy. Although di [illegible] as w [illegible] no distinct and separate emboli were distinguishable in the coagula contained in the aorta and iliac arteries, it is likely that the infarction of these arteries began by the interception of portions detached from the disintegrating clot in the heart, at those points where the arteries were narrowed by the pressure of the uterine tumor.

The method of hysterectomy which I have employed for many years and which is entirely satisfactory is as follows: The patient is prepared for the operation in the usual way. Just before the operation, immediately preceding the administration of ether, a pint of warm water with four ounces of wine is injected into the rectum. This is absorbed during the operation and supplies, in part at least, the blood lost during the operation and prevents shock, which is liable to occur when much blood is lost. I consider this a great safeguard against exhaustion following any prolonged operation where there is likely to be a considerable loss of blood. I always use the catgut for ligatures and sutures, and much prefer it to all others. The catgut which I use is Am Ende's No. 8. The morning of the operation the catgut which is to be used is sterilized by putting it into 95 per cent. alcohol in a wide-mouthed bottle, the stopper being loosely put in, the bottle is put into an Arnold sterilizer, where it remains about ten minutes—the bottle must be full of alcohol and not allowed to boil down and expose the catgut. If necessary, alcohol must be added, in order to keep the catgut covered, otherwise it will be spoiled by the heat.

Am Ende's catgut, prepared in this way, I consider perfectly sterile and feel safe in using it in all abdominal operations. To my mind the absorbable ligature is immensely superior to the silk which is generally used. I have used it for twenty years in all my abdominal work and I have never regretted it. It does not slip if properly used, it is not absorbed too soon and to me it is a great satisfaction to feel that the ligature will be absorbed in two or three weeks and no foreign body is left in the cavity or wound.

All things being ready, an incision is made in the usual way large enough for the removal of the tumor without too much stretching of the tissues. I think a mistake is often made in trying to work in the abdominal cavity through an opening altogether too small. Much more harm is done in this way than would result from a slight increase in the length of the incision. After the tumor is exposed a large curved needle armed with a strong silk ligature is thrust through the fundus of the fibroid and the ligature drawn through and formed into a loop, and this is used for making traction. By the aid of this loop the tumor is slowly and carefully drawn out through the opening and gradually pulled up so as to stretch the broad ligaments and vagina and thus secure as much tissue for the pedicle as possible.

Sterilized gauze is now packed around the tumor to prevent the intestines from protruding and to protect them from injury. This step having been taken I am now ready to commence the removal of the tumor, including the uterus and its appendages.

A pair of large curved Spencer Wells forceps grasp the broad ligament below the ovary. Instead of the forceps a strong silk ligature may be used. After the ovarian artery has been secured in this way, a curved needle armed with No 8 catgut prepared as above directed is passed through the outer edge of the broad ligament one inch or more below the Wells clamp or silk ligature, taking in as much tissue as can be securely tied and no more. If too much tissue is included in the first stitch the ligature is liable to slip when the tissues are divided and troublesome hemorrhage will occur.

I consider this precaution very important. The ligature is drawn through, leaving eight or ten inches of the distal end of the ligature to use in tying as the operation goes on. The ligature is tied very firmly and a second stitch is taken and before it is tighened the tissues are divided far enough above the catgut suture so that there shall be no danger of the tissues slipping through the loop of suture; and the cut extending up to but not beyond what is included in the second stitch, then the second looped stitch is tightened and made fast by tying to the distal end, which has been left long for this purpose. This process is carried on step by step, transfixing and tying and cutting, but always keeping the stitching a little in advance of the cutting so that the blood vessels are included in the suture before they are cut. This process is carried on until the uterine artery is included in the stitch and divided. At every step or two the ligature is fastened by tying to the distal end. If this rule is observed there is no possibility of the suture becoming loosened. When one side is secured in this way the operator changes sides with his assistant and the opposite side is tied and cut in the same way. When both broad ligaments are severed down to and including the uterine arteries the cervix is divided in the form of a wedge with the apex downward. Before dividing the cervix as indicated above, a flap of peritoneal membrane is turned down from the anterior and posterior surface of the uterus long enough to cover the stump of the cervix after its division and stitching. This wedge-shaped cavity is closed by bringing the cervical tissue together with the same catgut that has been used for stitching off the broad ligaments. Then a curved needle armed with a smaller catgut, No. 2, is used to bring together the flaps of serous membrame over the stump. When this is completed the divided cervix is entirely covered with peritoneum, leaving but very little raw surface within the peritoneal cavity. The abdominal cavity is now washed out with sterilized water, the abdominal incision closed, dressings applied and the operation is completed. I firmly believe that this is the ideal method of making hysterectomy. I much prefer it to the vaginal route, even for the removal of small growths requiring the removal of the uterus. The abdominal route gives one an opportunity of inspecting the uterus and its appendages and enables the surgeon to better decide what should be done, whether a myomectomy or hysterectomy. If there is malignant disease of the cervix and a hysterectomy is decided upon the vaginal route is to be preferred, as it enables the surgeon to remove the surrounding mucous membrane if it is involved in the disease.

In view of the fact that very many of these tumors are so rapid in their growth as to entail serious risks to life from the compression of other organs, from their interference with the normal functions of life, from the pains and disabilities they entail or from the profound anemia caused by persistent and profuse hemorrhage, it becomes evident that something more than an expectant plan of treatment must be instituted.

While it is true that many women with uterine fibromata go through many years suffering but little inconvenience, there is always more or less danger to the life and well-being of the patient. There is danger of cystic degeneration, which takes away the hope of total disappearance by involution. There is also danger of the occurrence of septic infection with suppurative and gangrenous processes threatening the life of the patient. Growths springing from the cervical portion and extending between the layers of the broad ligaments occasion early and severe symptoms from pressure upon adjacent pelvic viscera. Submucous growths have a special danger from the hemorrhages which they induce. Sarcomatous degeneration of fibromyomata has been reported in a number of instances. It must be acknowledged that the prognosis of a growing fibroid is always a serious one. Such a growth is liable to cause death through the exhaustion consequent upon renal, cardiac or digestive disturbances; through the prolonged anemia or finally through septic or malignant changes in the tumor itself. In a large proportion of cases in which life is not destroyed the presence of these growths very greatly restricts the usefulness of the patient, prevents her from gaining a livelihood and entails upon her a prolonged condition of invalidism.

In view of these facts as stated above and in view of the less mortality which follows hysterectomy in the hands of competent operators, I believe the operation should be performed much more frequently than has been recommended by many surgeons. At the last International Medical Congress, Martin of Berlin affirmed that the total extirpation of the uterus would soon be accepted as one of the principal operations for the surgical treatment of uterine fibromata. Martin's series of twenty-six cases presented only one death—a mortality of 3.8 per cent.; Ott, twenty-four cases with one death; Bantock, twenty-three cases with one death; Carle, twenty cases with one death; Zweifel, ninety-three cases with three deaths; Leopold reports twenty cases with no death, and mentions Brennecke's report of nineteen cases with no death, making in all 225 cases with six deaths—a mortality of 2.6 per cent In Europe, five years ago, the mortality shown by the same class of operators was 25 per cent., while now they show a mortality of less than 8 per cent. In the United States, where the tendency is toward the operation of complete hysterectomy, in 281 united cases, three years ugo, there were but 22 deaths—a mortality of but 7.8 per cent. I have no doubt that the mortality is considerably less at the present time than it was three years ago. If this paper shall be the means of calling out a free discussion of this important subject, and shall cause to be put on record other cases of a similar nature I shall feel amply repaid for the labor in preparing it.

GYNECOLOGY IN BERLIN.

A. MACKENRODT.

BY JOSEPH RILUS EASTMAN, M.D.
INDIANAPOLIS, IND.

A. Mackenrodt is especially notable for his originalness. As a younger member of the Berlin Gynecological Society, he shies his castor with unaccustomed aggression before his seniors in age and rank, and is therefore unpopular. It was Mackenrodt (Dührsen to the contrary notwithstanding) who introduced the ill-fated vaginal fixation for uterine retrodisplacements. He is the only continental exponent of igni-extirpation for carcinoma uteri and of bloodless enucleation of the uterus for intractable postclimacteric inflammations and smaller fibromata. Under the impulse of the condemning reports of Paul Strassmann and others who had confined women with vaginally fixed uteri, "Mackenrodt's operation," after a short life, was relegated, as is well known, to comparative obscurity. Dührrsen still defends it qualifiedly, and the writer has seen A. Martin make the operation repeatedly and recently, but Martin places the uppermost of the three sutures not higher than a point four and one-half centimeters below the vertex of the fundus uteri. Mackenrodt himself having been driven to sectio Cæsaria after vaginal fixation in plural instances, forsook the method, convinced of its unfitness by the testimony of his own experience.

In its stead he is developing a new operation, a vesico-fixatio, by which it is sought to fix the fundus of the uterus over the fundus of the bladder by means of a flap of the latter's peritoneum. He shows by charts and frozen sections that the proversio-flexio so secured and maintained corresponds closely to the normal anatomic position. Two women operated on by this method have borne sound children at term. The technique is as follows: With the patient in the back posture, the anterior lip of the portio is seized with a double tenaculum and drawn forward and downward as for anterior colporrhaphy. A split is then made through the anterior vaginal mucosa, extending in the median sagittal line, from the anterior utero-vaginal junction forward, half way toward the meatus urethræ. The septum vesico-uterinum and the vesico-uterine reflection of peritoneum are successively exposed and divided transversely. The tenaculum in the anterior lip is then replaced by a guy ligature, and the portio is pushed upward and backward to force the vagina conversely forward and downward. To bring the fundus into the vaginal incision double tenaculæ are used. With these one "climbs" upward along the anterior uterine surface, applying each higher than the last, until the vesical peritoneum, which has been peeled loose as high up as possible, may be laid flap-like over the fundus uteri and stitched fast. The peritoneum is drawn as a curtain between the operator and the fundus, the stitches being applied into the latter "through the curtain." The fundus is now released and the anterior vesical flap of the septum vesico-uterinum is sutured into the muscular uterus as high up as the internal os, a centimeter higher than its anatomic attachment, to the end that the fundus may be held more securely forward. An adhesive peritonitis is expected to provide permanent fixation.

In a communication to the *Centralblatt für Gynecologie*, 1895, No. 6, Mackenrodt took the position that adequate use of the glowing cautery offers the only hope for improvement in the statistics of lasting results after extirpation for carcinoma uteri. He recommended that the entire operation be made with the cautery, that the entire wound surface be charred, the goal sought being prevention of inoculation infection. He maintained that even in that instant when the tissues are divided, the wound surface must be protected against the invasion of cancer germs, and that such protection is only possible when all dissecting is done with the Paquelin. "Methods in which the cautery supplements the knife, ligature or clamp are illusory." In an experience of thirty igni-extirpations, Mackenrodt claims not to have had a single recurrence, the post operationem period of observation varying between one and two years; nor was any patient lost from shock.

Having found by experiment and observation[1] that even the largest blood vessels may be safely sealed by the Paquelin in that instant when they are severed by the same. Mackenrodt went a step farther and said "all hemorrhage must be checked by the charring cautery," and that clamps used during the operation to protect the surrounding tissue may be removed directly the operation is finished. The possibility of closing the uterina and spermatica he adds, however, is only present after a provisory application of suitable clamps (wing-jawed like the Langenbeck hemorrhoid clamp, shovel-shaped and curved on the flat), with which the stump to be treated may be emptied of blood and charred, without injury to the urethra, rectum or bladder.

The vaginal igni-extirpation after Mackenrodt is made as follows: After thorough cleansing of the vagina, curettement and cauterization of the exposed carcinomatous foci, the field of operation is disinfected with alcohol and sublimate. If the vulva is small a lateral incision is made with the cautery into the perineum. The portio is then seized with strong double tenacula, drawn downward and forward, and with the Paquelin the posterior vaginal wall is separated from the collum, and the cavum Douglasii opened. The vaginal wall is next burned off laterally, and lastly anteriorly from the uterus.

The connective tissue between the bladder and the uterus and ligamenta lata is now put upon the stretch by the thumb of the left hand pressing against the anterior vaginal wall, In dividing these connections the Paquelin is drawn from left to right in repeated strokes, the tissues giving way in the direction of least resistance, exposing the anterior aspect of the uterus and broad ligaments. The shovel-shaped clamps are now applied to the broad ligaments, their concavity toward the uterus. The stumps on each side are successively burned through and charred to the surface of the clamps. The clamps are removed and the remaining connections between the bladder and uterus are divided in the manner described above. The peritoneal cavity having been opened anteriorly, the left index finger is passed through the opening, over the crest of the right broad ligament, and a clamp is reintroduced and made to embrace the remaining peritoneal portion of the stump. The latter is then divided with the cautery. Lastly, the clamp is applied to the left ligamentum latum, the stump divided and the uterus removed. Iodoform gauze is placed in the peritoneal opening to prevent the decensus of intestines and the perineal incision is sutured up.

Mackenrodt is a warm advocate of Battey's colpotomia posterior. He practices the operation himself and has done much to bring it into new favor. He prefers the posterior to the anterior vaginal section, because of the former's simplicity and safety of principle.

During the last few months he has removed all uteri demanding radical operation for other conditions than malignant neoplasms and large fibroids by enucleation. In the majority of cases he is able to accomplish this without the use of a single ligature. Occasionally, however, he ligates the ovarian artery. The technique is the simplest possible. He seizes the portio with a double tenaculum, and with a pair of short curved scissors makes an annular incision through the vaginal vault at the utero-vaginal junction. He proceeds upward, clipping with the scissors in the endopelvic fascia, until the uterus is freed.

Delaware and Vermont Streets.

LEPROSY OVERCOME BY ISOLATION IN THE MIDDLE AGES.

BY ALBERT S. ASHMEAD, M.D.

NEW YORK.

In the Middle Ages leprosy spread in every country of Europe and continued to spread until strenuous efforts were made to bring the diseased parts out of contact with the healthy community. In this no charitable regard was had to the victims of the scourge; the weal of the sane majority alone was considered. It is from this point of view that it behooves us also to judge the conduct of the church. The Order of Lazarus was founded and lazarettoes built in great numbers. The work and purpose of the order were to segregate and govern the afflicted and dangerous part of humanity. The thing was necessary, was an unavoidable consequence of the resolve of healthy mankind to remain so, and it was not so much charity as one might believe. The community wanted this work to be done, and who could do it but the church?

But, according to Dr. Ehlers, Secretary-General of the Berlin Lepra Conference, the church might have been spared these worries and these dangers, for isolation is not necessary, as these Middle Age people believed, who, through isolation, were fortunate enough finally to overcome the disease.

It is not certain that the growth of civilization since the Middle Ages has rendered the spread of leprosy impossible. We cheerfully admit that it can not overwhelm people who are clean in their habits, well separated in their families, careful of their bedding, living in sufficient remoteness from the inferior animals, etc., as it did our ancestors of the Middle Ages, whose life was so very different. Yet some danger still exists, and the spread of leprosy in various parts of Europe, and in parts which I venture to say are cleaner than the leprosy centers of Norway and Iceland, proves that the disease has not lost, under any circumstances, its vital stamina; it seems to stir itself with remarkable vigor, and to be able to take advantage of any elbow room left to it.

If enforced isolation and a permanent committee of official delegates do not come out of the Congress of Berlin—and Dr. Ehlers does not want them to—that Congress will have been held for nothing, or at least only *ad majorem Ehlerii gloriam.*

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

(Continued from page 631.)

XIII.—GERMAN MEDICINE.

Albert von Haller (1708–1777) shone above all others. Born for science, at the age of 8 years he applied himself to Greek and Hebrew dictionaries, outlined a Chaldean grammar and collected the biographies of several thousand celebrated men. While a gay youth he wrote Latin and German satires upon his teachers. At 15 he went to Tübingen to study medicine and in the following year wrote an anatomic polemic against a professor. After a two years' sojourn there he is said to have been expelled because he, with some other students, had made a shepherd so drunk with brandy that he died of the effects. He went to Leyden, where he became the friend of Boerhaave and of the young anatomist, Albin. After his graduation he went to England and France, to Douglas, Cheselden, Jussieu, J. L. Petit and Winslow. In Paris he lived with le Dran for the study of surgery and anatomy. Then he went to Basel expressly to hear Bernouilli's lectures on higher mathematics, which later charmed him so much, that upon his wedding day he employed himself diligently with differential calculus. In 1729 he was a practicing physician in his native city of Berne. The city had an anatomic amphitheater built for him, appointed him director of the hospital and overseer of the city library, where he pursued historic and bibliographic studies, arranged several thousand old coins and at the same time showed great fondness for botany. In 1736 he was called to Göttingen as professor of anatomy, botany and surgery. His fame increased from year to year; the academies endeavored to welcome him among their members; there came calls to Oxford and Utrecht and as president of the Berlin Academy. Although George II. loaded him with favors and obtained for him a patent of nobility from the emperor, after a residence of seventeen years he left Gottingen, chiefly on account of his health, as in his house, which was built on a marsh, he had for a long time suffered from intermittent fever, and had had a severe nervous fever. He had also buried two wives there. The story that he left Göttingen rather out of chagrin, is very improbable; it could not but happen that as a great mind he would be publicly and privately maligned. He went back to Berne in 1753 and accepted a place in the great council and as inspector. There he had to do with agriculture, salt works, sanitary regulations and institutions of learning, and he made many journeys in the interests of the state. Göttingen tried to secure him again, the Empress of Russia to draw him to St. Petersburg, but in vain; he remained in Berne. In the last two years of his life he suffered much from insomnia, but, nevertheless, he worked with ease and lived almost entirely in his library, where he slept and spent long months. He died on Dec. 12, 1777.

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[1] After castration of stallions, hemorrhage from the spermatic artery may be checked without ligature, by the application of a red hot iron.

Haller was one of the greatest scholars of his century, and one of the last polyhistors, highly renowned as a physiologist, anatomist, botanist, author, poet and statesman. He carried with him an Alpine load of erudition (Herder). He had as good command of the languages of antiquity as of those of all civilized nations, and was at home even in Tartar and Chinese. It is difficult to say whether one should admire more the variety of subjects treated by him, the thoroughness of his researches, or the power of his judgment to draw conclusions from the mass of facts. Although wife and children, pupils and friends had to help him in his work and he hurried through over 12,000 reviews a day in this way, he has written works of colossal scope, each one of which would require a lifetime, and was without its equal. Among them are his great classic works on botany and anatomy, and the literary history of these subjects and of surgery and medicine. He worked for years on the publication of Boerhaave's lectures, which he supplied with notes, and over which he came into conflict with van Swieten, with whom he was never very friendly. His most important work was his physiology ("Primæ Lineæ Physiologiæ," 1747; the great work "Elementa Physiologiæ," 1757), with which a new epoch begins. In this he laid down his doctrine of irritability, which within a short time superseded all other physiologic and pathologic questions. Hitherto æther had been taken with the principle of the soul to explain the movements of the body, and the doctrine of Glisson (born 1597), that each fiber has capacity to be moved by means of an irritant, seems to have been forgotten. Beginning here, Haller first turned to irritability as an independent power of the muscles, which was the cause of movement and vivified the hitherto dead machine of the mechanics. At first he attributed three kinds of force to the muscles: The dead so-called elasticity; the implanted so-called irritability, which remains only a short time after death; thirdly, the nervous force, which is conveyed to the muscles from without through the nerves. Since irritability remains in an animal that has been killed, and in a heart entirely separated from the body, it can be derived neither from the brain nor from the soul, and the control of the will over it is not to be considered. In this Haller opposed the doctrine of Stahl. In 1752 he laid before the Gottingen society 190 experiments in which in various parts of the body he had demonstrated irritability and nervous force. The periosteum, peritoneum, pleura, ligaments, cornea, callosities, cerebral membrane and tendons he considered entirely insensible; the nerves, on the contrary, sensitive but not irritable, because they do not move at all. Irritability is found only in parts supplied with muscles (and in the uterus); this power is contained in the gelatin which with the earthy component forms the muscle-fiber. It remains a long time in the severed muscle, and those muscles are the most irritable which retain this property longest after death—first the heart, then the intestines, the diaphragm, and lastly the voluntary muscles. With these different degrees of irritability he would also explain the differences of temperament; a high degree of irritability with strength of fibers, was said to constitute the choleric temperament; with weakness of fibers, the sanguine; a low degree, with weakness of muscles, the phlegmatic. The doctrine of irritability forced its way into physiology. When Haller first introduced into this science exact research with experiments, he became the founder of special physiology. He took up all the organs of the body in turn, showed them first anatomically, then experimentally, and finally explained their functions. This method of research, by which he made a mass of discoveries and widened considerably the limits of anatomy and physiology, was at that time entirely new and an extraordinary advance. Haller soon found his followers and opponents. Chief among the latter was Whytt, who considered experiments upon tortured animals questionable; de Haën, who as the most violent of his German opponents, in the end accomplished little; and le Cat, who was decorated by the Berlin Academy, which had announced a prize essay on muscle action. All of the candidates for the prize had expressed themselves against Haller. His principal advocates were Winter, Fontana, Zinn, Zimmermann in Hanover, and Tissot in Lausanne. The doctrine of irritability gradually penetrated into all pathologic discussions, although it was usually misstated, and hence brought about much confusion in the second half of the century.

Haller, the poet, should not be left without mention, since he was one of the first to give a new impetus to the sadly decaying literature. The imposing nature of Switzerland gave him new impressions (his most celebrated poem is "Die Alpen," 1729) and he led poetry out of the study into the open air. At the hand of the British poets he sought an impressive presentation, and his poems, which possessed an unaffected sentiment and deep comprehensive ideas, were considered, throughout a generation, as the correct model. In later years he wrote a romance in which he sought to characterize the forms of government.

A short time before Haller began to teach in Göttingen, *Gaub* (1705–1780) had gone to Leyden as professor of medicine. He was Boerhaave's favorite pupil and for twenty years only made commentations on the Institutions of his teacher, and then for the first time published his own Institutions (1758). For a long time these have been regarded as models, and until the revolution in pathology of the most recent times, they formed the basis of most German Pathologies (Wunderlich). A selector, of the purest water, he wrote with great clearness, although he was not free from inconsistencies, in that often proceeding from a correct principle he would later abandon it.

About this time Boerhaave's doctrines were carried to Vienna by his pupil *Gerhard van Swieten* (1700–1772), and through him the Vienna School was founded. This soon set the fashion in Germany. Van Swieten, born in Leyden, developed such extraordinary industry during his studies that he grew ill and fell into melancholy. Under Boerhaave's tenderest friendship and personal care he recovered and showed his gratitude by refusing a splendid offer from London; with unassuming modesty Van Swieten remained a pupil of Boerhaave until his thirty-eighth year and did not leave him till the latter's death. Since, as a Catholic, he could not hold a professorship in Holland, he accepted, in 1745, a call of Maria Theresa to Vienna. Upon his entrance into the imperial service, the reformation of the medical sciences fastened itself upon the Austrian monarchy. As Perpetual President of the Vienna Medical Faculty, which he found in a lamentable condition, he gave an entirely new form to that body and drew thither various teachers (De Haën, Jacquin, Laugier, Collin, Pallucci). One of his greatest services was the introduction of clinical instruction into medicine in Austria. As chief of the military medical department, he organized the entire instruction in medicine and natural science. Van Swieten had written down Boerhaave's lectures almost verbatim by means of Ramsay's stenography; he then began to publish a commentary on the Aphorisms of his teacher, which were an oracle to him, according to his own statement. He first explained almost every word with exaggerated conscientiousness, and later proceded independently. These commentaries, a work of thirty years' study, won a European reputation in the second half of the century, and were in the hands of all physicians. They were distinguished less for great ideas and new points of view than for therapeutics excellent for that time. In this work lay a peculiarity of the time which arose in the character of the eighteenth century, and is in sharp contrast to our views. It was, among other things, the subordination to authority, the high esteem for it. It is hardly conceivable to us how so highly gifted, original and learned a man as Van Swieten could find his highest honor, for twenty years, in being called the pupil of Boerhaave, as Haller, one of the first scholars of the century, who later did go his own way, did not disdain to publish Boerhaave's lectures. This mania for authority worked the immense detriment of putting brass chains upon free research, against which the advantage of allowing no self-conceit to flourish in the great mass of mediocre heads, went far toward balancing.

When in 1754 the professorship of the medical clinic in Vienna was founded, Van Swieten obtained it for his previous companion in study, *Anton de Haën* (1704–1786), who had sat with him in Boerhaave's lecture room. De Haën became the first clinical teacher of Vienna and of Germany. A captivating eloquence and an ardent enthusiasm for science were united with a rare energy through which nothing was too much for him in spite of his many-sided activity. With these he possessed, unfortunately, a boundless ambition and a high degree of sensibility, and felt himself injured by the praise of other men. He could not bear even the recognition which was given to Van Swieten; only one man he honored devotedly until his death, his teacher Boerhaave. His intolerance made him many opponents. In his fifteen volume work, "Ratio Medendi" (1757), he showed himself chiefly as an empiricist and an enemy of the systems, and endeavored to demolish all newly arisen theories upon empiric grounds. He vigorously opposed vaccination, the general acceptance of which in Austria was impeded many years by his authority, and he was weak enough to defend belief in witchcraft. He esteemed pathologic anatomy very highly, and confessed it openly when dissections disproved his diagnoses. In therapeutics, bleeding and electricity played a large part. His careful researches have brought to light many important observations, whose value, however, he did not always perceive, so that, gradually forgotten by physicians, they had to be discovered anew in more recent times. Among these belong especially his measurements of temperature in the inherent heat of the body.

It is of interest to see what part the previous century has in a method of investigation which has become established in medicine only during the last decade. After Sanctorius (died 1638) first took the temperature of the human body with a thermometer made by himself, a hundred years passed before Boerhaave did the same thing with improved instruments. Van Swieten considered the estimation of the heat by the hand uncertain and measured it according to Fahrenheit, a citizen of Danzig, who had constructed his thermometer in 1731. De Haën took up this method with great energy, applied it to healthy patients. He left the thermometer in the armpit seven and one-half minutes and then added to the degree marked, 1 to 2 degrees, because he had ascertained that the quicksilver afterward rose that distance. He found the temperature higher in the aged, observed the morning remission and evening exacerbation in fever cases and an increased temperature during a chill, which his contemporaries declared the greatest paradox; further, he noted the incongruity of pulse and temperature in many cases, and the frequent contrast between the subjective feeling of warmth and the objective increase of temperature. He adapted his therapeutics according to these variations of warmth and regarded a return to the normal temperature as an evidence of recovery. De Haën remained isolated; the other German physicians did not trouble themselves at all about his measurements. Previously, in England (1740), accurate measurements were made on healthy men and animals, and the Swede, Martin, devoted almost two years to such observations, which he made known in 1764. He found 36 to 37 degrees Cels. as the highest degree of temperature of a healthy person, and stated accurately the variations in baths, food, drink, poisons, bleeding, etc. Blagden ascertained that the temperature of a healthy body remained the same in a room heated to the boiling point of water. Then John Hunter published, in the "Philosophic Transactions (1775–78), his thermometric experiments, which were begun in 1766. He showed that animals, to which he had applied a thermometer so small that it could be introduced into the urethra, could bear the external cold because they produced heat enough within themselves to counterbalance it. The proposition that in fever the temperature of the body increased about 12 degrees F., led him to investigate as to whether the increased heat could also have its origin locally in parts of the body. Thus he was the first who marked the rising of temperature in inflammation. After the operation for hydrocele he found the temperature of the tunica vaginalis 33.3 degrees Cels. (Hunter measured according to Fahrenheit.) The cavity was filled with lint, which was covered with salve, and on the following day, when inflammation had developed, the thermometer showed 37.08 degrees Cels., a considerable rise. But this is apparently not the case of the temperature of the blood, for he considered that the blood in a healthy condition had a maximum heat and thought that nothing, not even local inflammation, could raise its temperature beyond this degree, excepting a general affection. Although the inflamed parts of the body have a higher temperature than in the normal condition, yet the differences are too small to account for the febrile rise of temperature of the whole mass of blood. Natural heat, he thought, did not arise from the movement of the blood, but he considered it very probable that it depended upon a principle which was intimately connected with life and independent of circulation, sensation and will, and that the chief source of animal heat lay apparently in the stomach. Hunter considered the determination of the degree of temperature of a patient by feeling as inadmissible in the extreme, because the personal temperature of the physician never stood at a fixed point. Through measurement one comes nearer to the truth than is absolutely necessary for pathology. Soon afterward there appeared in France the celebrated work "sur la chaleur" in the Mém. de l'acad. 1780, by Lavoisier, the discoverer of oxygen. He thought, with Laplace, that the cause of natural heat lay in the chemic combination of oxygen with hydrogen and carbonic acid in breathing, and placed the seat of the formation of heat in the lungs. The English military surgeon, Hamilton, declared in 1789 that a good, accurate thermometer for determining heat in fevers was very necessary to surgeons. In 1797 James Currie published his valuable "Medical reports on the effects of water, cold and warm, as a remedy in fever and other diseases," in which, for the first time since de Haën, measurements of temperature, which always were appended to histories of cases, were again made valuable for purposes of therapeutics. This method pervaded Currie's entire practice. In the variations of natural heat he examined the effects of cold and warm water, of digitalis, of opium, etc. In spite of many editions and translations his work had no real influence on his contemporaries; the practitioners of all countries did not in the least consider the heat of the patient. In 1821 Hufeland drew Currie's work from oblivion for a short time when he issued a prize essay on the examination of these experiments. (Wunderlich.)

The preponderatingly practical direction which de Haën had taken was followed after his death by his Vienna colleagues. They did not concern themselves with theoretic researches and were indifferent to all new ideas. Störck and Stoll exerted the most influence, the former principally in Austria, the latter in all Germany. *Störck* (1749–1803) became chief of the department of medical instruction in Austria, after van Swieten's death, in which position he issued a far-reaching regulation that students and teachers must be brought under discipline. They prescribed the books which must be taught and studied and introduced the censorship. These chains placed upon Austrian medicine necessarily made a free development impossible, and the immediate consequence was that, in spite of the enormous mass of material for observation, which was created by the founding of the general hospital, the Vienna school fell into decay. Störck made many pharmacologic investigations, especially concerning hemlock, which he recommended for scirrhous indurations and malignant ulcers, and on stramonium, hyoscyamus, aconite, colchicum, etc. His colleague, *Stoll*, educated by the Jesuits, entered their order and afterward withdrew from it. He had studied medicine under de Haën. Through his marrirge he received the clinical professorship in Vienna, and soon his lectures became world renowned, so that pupils flocked to him from all sides. Nevertheless, he had to suffer neglect, in that not he but his personal opponent, Quarin, was appointed director of the newly founded hospital of Vienna and they placed only twelve beds at his disposal. Careful observations and accurate dissections distinguished him. His most important idea was that retained gall is frequently the cause of acidity, and the most varied diseases are generated by the introduction of gall into the blood. Thus ophthalmia arises if gall is lodged in the eye. Apoplexy, if it flows to the head; similarly, angina, cholera, pneumonia, petechiæ, asthma, etc. In dissections he very frequently observed a bilious pleurisy and considered a bilious character very prevalent in epidemic fevers. In consequence of this opinion, emetics which would remove the gall were the principal remedies and there was a time in Germany when, through the general acceptance of Stoll's doctrine, purgatives and emetics were universally used. When later this system of therapeutics did not fulfil his expectations he asserted that this came about from a kind of epidemic, changing at certain times, which, from 1776 to 1780, in Vienna had become thoroughly bilious and inflammatory, and added somewhat of pleurisy to all diseases. In regard to the emetic of de Haën, both he and his colleague, Störck, changed their views and both also desisted from frequent bleedings, which de Haën had recommended.

We stand in the midst of the second half of the century, where, in the continual strife between the two systems of Hoffmann and Stahl and the doctrines of Haller, the chief principle of these theories was lost. Hoffmann's nerve fluid was not generally satisfactory, since it was not to be demonstrated, and instead of this theory, brain and nerves were thought to be the only organs which exercised control over the whole body. From them all diseases were said to spring, through them all medicines to work. Hence arose the nerve pathology, which was introduced into Germany by *Unzer* (1771). He already knew the distinction of transmission from the brain to the separate parts and conversely from the periphery to the brain through different nerve fibers. As a system, the nerve pathology of the Englishman Cullen became incorporated into medical practice. As the nerve fluid failed, so the soul; it was no longer thought to be a part of the organism, although they admitted a psychic influence upon the operations of the body. Now, in order to understand the connection between the soul and the body, a middle term was necessary and, as such, fancy created a life principle, a power different from the soul, which without any clear conception was called vital force (Lebenskraft). To this confusion was added Haller's theory of irritability, distorted in every direction.

While the theorists turned their attention almost entirely to the solid parts of the body, although less in their anatomic bearing than as regards irritability and sensibility, the practitioners chiefly took up the fluids and acidity. Thus the gulf between the pathology of the solids and the pathology of the fluids grew wider. As an adherent of the latter, *Christian L. Hofmann*, who derived all diseases from an acid or putrid condition of the fluids of the body, acquired great influence, as also did *Kämpf* of Zweybrücken, through his work on constipation. Besides Stahl's fundamental ideas on the obstruction of the portal vein he considered coagulation, *i. e.*, the thickening of the fluids in the intestines and vessels of the abdomen as the most prolific source of many abdominal affections; for this he devised his visceral clyster, which has become celebrated (1784). At the same time attempts were made to classify diseases according to the ideas of the botanists. Sauvages of Montpellier made the first move in this direction, and in his system, in which diseases were classified according to symptoms, there were contained 295 genera morborum with about 2,400 species, which were still further divided into classes and orders. Linnæus' celebrated name gave to this movement a higher significance, as Buffon's did to geology and Werner's to mineralogy, insomuch that it became very popular with physicians, and soon new and ill-fated classifications were daily put forward from all sides.

In the contradictory waves of abstract definitions and empty works, in the constant theoretic discussions of the highest questions of life, which were indeed conducted with eminent ability and intellectual penetration in the eighteenth century, there was attained at least one advantage; the mind was exercised in free thought. In contrast with the intellectual torpor of the past this was certainly to be viewed as a step in advance. But one melancholy result was that many inferior minds produced an enormous and unfruitful literature. There developed a general confusion in the thought and language of German physicians continuing through two generations; not only this but all faculty for simple observation was lost. This lethargy might have been dispelled by a study of the ancients, but the men who were identified with the movement in the course of the century (Hebenstreit in Leipzig, G. G. Richter in Göttingen, Triller in Wittenberg, and later Gruner, Baldinger and others) displayed nothing but medical pedantry, which they paraded in their writings.

No time could be more fitting for a revolution than this, when every higher impulse and all fresh vitality was lacking in medicine. Accordingly the system of *John Brown* at the end of the century passed through Germany like a flash of lightning. From a poor but gifted Scottish family, he was at first a linen weaver and afterward became a tutor. Brown had given up theology on translating a medical dissertation into Latin for an acquaintance. He now devoted himself to the study of medicine and, unfortunately, also to brandy, to which he adhered during his whole life. His unbridled excess undermined his health and led him to bankruptcy. Then Cullen took an interest in him and made him a "privatissima" instructor for his students. But the love which Brown at first cherished for his teacher was soon changed to hatred when a professorship was denied him. In opposing Cullen he published a new system ("Elementa Medicinae," 1780) and thereby fomented a strife in the Edinburgh Faculty. They attacked and persecuted him in every way they could; and on the other hand he in his lectures did not scruple to heap gross abuse and detraction upon the hitherto prevailing system of medicine. The students divided themselves into two parties and seem to have taken up the quarrel of their teachers with their fists. Brown, on account of his extravagance, was again thrown into the debtor's prison but was liberated through money furnished by his students. He went to London, but his success there was only slight in spite of the fact that he sought to attract students to himself by means of a Free Mason's lodge. A call to Berlin was frustrated by his sudden death (1788); being drunk, as usual, he took an overdose of opium and died of apoplexy. He regarded the source of life as consisting in excitability, *i. e.*, the capacity which exists in every part of the body, and through which an external stimulus is able to excite a certain activity. He admitted that he did not know what this excitability is, but he assumed that it has its seat in the nerve medulla and the muscle substance. The effects of the stimulus to the sensibility he called *excitations*, and regarded life as a chain consisting of these effects. He considered that health rests on a moderate excitation and diseases arise when the stimulus is too high or too weak; in the former case there results a sthenic condition and in the latter case an asthenic condition. The difference between health and disease consists simply in a different degree of excitation. "The simplicity to which the medical science is reduced is so great that a physician when he approaches the sick bed need only understand three things clearly: 1. Whether the disease is general or local. 2. If general, whether it is sthenic or asthenic. 3. Of what degree the ailment is." These are Brown's indications in the therapeutics of general diseases. He did not concern himself with the seat and the course of them. In sthenic diseases the excitation was diminished by means of the weakening *remedy antiphlogose: in asthenic cases, and these were* not frequent, it was increased by the use of stimulating remedies, spirits and especially opium. Brown himself had fully experienced the stimulating effect of opium, for before and during his lectures, in order to stimulate his mind he repeatedly drank a glass of brandy containing fifty drops of laudanum. "Opium mehercle non sedat" was his motto. What a vicious influence his excesses had on his therapeutics was shown among other things, in his treatment of typhoid, in which he administered from ten to twelve drops of laudanum every quarter hour, gradually increasing the dose. By the end of the century opium had become almost a household remedy among the English and was misused to an almost incredible extent. In Germany some favorite syrup was added to every compound, while in England such and such an amount of tinct. thebaica was admixed.

While the English with their tendency to empiricism remained rather indifferent to the system of their countryman, it found an enthusiastic reception in Germany on the part of the rank and file of unripe academic teachers and thoughtless practitioners. It was dazzling in its simplicity; there was no system by which diagnoses could be so easily made and indications so readily determined. It was responsible for a scandal when Girtanner in 1790 published the Brown system in a French journal as his own. The strife soon waxed violent and painful, and the system was proclaimed in Germany with unheard of arrogance. All the journals swarmed with articles for and against it; indeed, German medical literature for a few years consisted of nothing but stimulus and excitation and direct and indirect infirmity. Hufeland early asserted himself against the system, although he recognized Brown's mental penetration and sought to discover a few useful doctrines in the mass of false propositions. The most enthusiastic adherent was Röschlaub, who indeed founded his own magazine as an organ of the excitation theory, and therein his polemics soon degenerated into common ridicule. His fanaticism went so far that he, a German professor, did not scruple for the sake of the system to fabricate entirely and to publish the history of a case involving A. von Kotzebue, whom he believed to be in Siberia. The latter exposed the whole fraud, whereupon Röschlaub confessed the lie. They raged and quarreled on both sides. Those German physicians who were at the same time good surgeons, opposed the system. J. P. Frank, at first a moderate advocate of the Briton, afterward withdrew; and when Stieglitz, with his sharp critique, had given the system a telling blow, the excitation theory waned. It was Schelling's natural philosophy that at the beginning of this century ushered in a new epoch. The history of Brownism strikingly illustrates the transient character of medical theories. Within the short space of ten years it had been promulgated with fire and sword, and in most of the universities was dispensed to the young physicians as the only saving doctrine, and was within that time borne to its grave.

At the turning point of the century a very marked step was accomplished in the application of chemistry and physics to the theory of medicine. After the discovery of oxygen, which brought about the fall of Stahl's hypothetic phlogiston, Girtanner asserted that oxygen was the life principle of all organic nature. Thereupon developed an antiphlogiston school, which in most diseases assumed the presence of too much oxygen, and in a few diseases too small a quantity of oxygen. Irritability and sensibility had previously been the battle-cry; now they dreamed of oxygen, hydrogen and carbon. In physics Galvani had made the discovery of animal electricity, and Volta had discovered the Voltaic pile. These things were eagerly seized upon and forcibly adapted to a theory of medicine. They considered electricity as the living force, believing irritability to be concentrated at the positive pole and sensibility at the negative, and other similar fancies; in short, the processes of life were regarded as an involved galvanic operation (Reil). A. von Humboldt was identified with this movement, and in 1797 published his experiments with vivified muscle and nerve filaments.

We will here close our review of the theoretic investigations in German medicine. In spite of the great partiality for this kind of work, yet special pathology was by no means neglected in the eighteenth century, and in Germany was represented by a small but eminent company of practicing physicians. These often instinctively hit upon the right method, applying themselves to the description of diseases, and in their therapeutics observing great simplicity and avoiding all extremes. Of course the details of pathology could be pointed out only in the most general outlines. Here above all shone the systematist, Friedrich Hoffmann, who first furnished an accurate description of chlorosis, diseases of the liver and esophagus, and first asserted that apoplexy consisted of the bleeding of a ruptured blood vessel of the brain. He also wrote good works on hysterics and scurvy. His colleague Stahl, treated the subject of hemorrhoids. The Vienna school followed an essentially practical tendency and employed itself especially with diseases of the respiratory organs. Here the most important discovery was that of percussion by Auenbrugger ("Inventum novum ope percussionis occultos pectoris morbos cognoscendi," Vindob. 1760), which however was not at all appreciated by his contemporaries. Van Swieten first asserted that epilepsy was a disease of the brain, and in the treatment of syphilis he introduced a solution of sublimate in brandy, and did some very careful work in tuberculosis of the lungs. Like Boerhaave he recommended in this affection thorough inhalations of steam from warm water and vinegar in order to induce expectoration. A. G. Richter was also convinced that the local treatment of the tuberculous sores in the lungs by means of inhalations was of the utmost importance, and that it was often neglected with disastrous results while everything was expected from the use of internal remedies. The Prussian regimental surgeon, Ollenroth (1798), after paracentesis of the breast used inhalations of warm steam from his inhalation machine and achieved the best success. Later Hufeland recommended for consumptives and asthmatics the construction of a pneumatic cabinet, *i. e.*, a room filled with carbonic acid gas in which the patients should inhale for the space of half an hour or an hour. The inhalation system was not neglected abroad, and in the seventies balsam steam was celebrated for tuberculosis. The Englishmen, Bennet and Mead, used *frankincense, storax and benzoin*; the Frenchman, Billard, used the steam of pitch, turpentine and Peruvian balsam.

At the end of the century there came into use inhalations of ether which Currie recommended in cases of asthma and Pinel in membranous croup. The English military surgeon Hamilton, for inflammation of the throat and tonsils, employed an inhalation apparatus which consisted of a funnel with a bent tube two feet long. The funnel fitted directly on the opening of a teakettle, in **which** warm steam had been generated by the boiling of herbs, and the patients inhaled through the small opening of the pipe (1789). Whooping cough, pleurisy, lead diseases, etc., were treated by de Haën; Plenk supplied the first classification of skin diseases (1776). Certain epidemics of the time gave a special character to practical medicine. In 1708 and 1709, in consequence of the war, the plague raged in Prussia, and in Danzig alone 24,500 men died; a few years afterward it spread to Austria, Bavaria and Holstein. Epidemic catarrh and exanthematic typhus appeared frequently, and abdominal typhus was first described in 1762 by Röderer and Wagler. Friedrich Hoffmann, van Swieten, de Haën, Werlhof supplied important contributions on intermittent fever, and gastric fever gave the Vienna physician, Stoll, occasion to develop his fundamental propositions on the bilious character of this disease. Poisoning by lead, and especially by ergot, was accurately observed and chronicled (Wichmann and Zimmermann). Trustworthy observations on scarlet fever were first made in the eighteenth century by the body physician Storch in Gotha (1742). Among the most important contagious diseases was smallpox, concerning which the principal point of interest lay in inoculation, by which its ravages might be checked. This was in general use in Constantinople in the eighteenth century among the Greeks. The wife of the English ambassador at the Turkish court, Lady Montague, had her child inoculated by her surgeon, Maitland, and after her return to England did everything in her power to introduce inoculation. Maitland, at the request of the Princess of Wales, inoculated six criminals in London, in August, 1721; since that time the new method has been transplanted to all civilized nations. In Germany, as it appears, J. E. Wreden, for the first time in Hanover, inoculated several children (Feb. 2, 1722). The second most important epoch begins with Jenner's introduction of vaccination, for which he deserves the greatest gratitude from mankind. The first vaccination in Germany was performed in Hanover in May, 1799, by Ballhorn, who had translated Jenner's first famous work ("Inquiry Into the Causes and Effects of the Variolæ Vaccinæ," 1798), and by Friedrich Stromeyer, with lymph sent them from London. From this point the introduction of vaccination spread to the whole kingdom. The two colleagues sent lymph to Vienna and other cities, and after about one year had accomplished, together with other Hanoverian physicians, over seven hundred vaccinations, probably the most extensive experiment which had been made in Germany up to that time.

With the perfecting of chemistry, materia medica took a new impetus. So long as the former remained in its infancy, the latter was not much more than a trade in spices. The plants were brought to the apothecaries by the herb-gatherers and were often mistaken by both. Now chemistry produced the most powerful medicines from all the riches of nature. Botanic gardens were cultivated. A. von Haller established the garden in Göttingen and in 1739 had the first plants sown. Greifswald obtained such a garden in 1763. Phosphorus was used as a medicine and hemlock was introduced chiefly through Störck's efforts. Various narcotics, belladonna,[1] hydrocyanic acid, digitalis, arsenic, quicksilver, bismuth preparations, lime water, etc., found many applications. Baths and springs came into use especially through Friedrich Hoffmann; and Driburg, Wildbad-Gastein, Nenndorf, Saidschütz, Seidlitz, Selters and others appear among the newly discovered springs. Even electricity was turned into a remedy and first used by Professor Kratzenstein in Copenhagen (1745). They treated long standing paralysis with it, but went to extremes, as with all new remedies. They recommended it for every possible ailment (toothache, amaurosis, deafness, intermittent fever and for the killing of tapeworms), so that a reaction necessarily followed and such men as Haller opposed it strenuously. The mysterious forces of the magnet attracted Mesmer in Vienna. He believed he had discovered a still more effective power in his own hands and called it animal magnetism. In 1774 he made it public and magnetized, at first with the magnet, later, in numberless cases, simply by contact. His labors found little recognition from the various academies in Germany and Paris; the latter declared, at the instance of the king of France, that magnetism could do nothing without the help of the imagination. On the contrary, physicians and laymen, especially in France, took up magnetism with great enthusiasm. It invaded all the periodicals and much nonsense was compiled.

Aside from the Vienna school the Hanoverian court physicians were especially conspicuous as practicing physicians. The oldest among them was *Werlhof* (1767), who attached his name to the morbus maculosus first desribed by him. *R. A. Vogel's* (†1774) chief service was the founding of the first and also one of the best medical journals in Germany; aside from this he did considerable work in chemistry and mineralogy. *Zimmermann* (†1795), at first a physician in Switzerland, was an advocate of Haller's theory of irritability, and later, a warm friend of Kämpf's ideas. He wrote on dysentery and became especially celebrated through his two-volume work, "Von der Erfahrung in der Arzneikunst" (1763-64), which is still read with the greatest interest. The sketches concerning experience, scholarship, the spirit of observation and genius reveal the fine mind, penetration, and the many-sided culture of the author. *Wichmann* (†1802) published chiefly "Ideen zur Diagnostik" (2 parts, 1794-97), in which he pointed out, with great fidelity, the failings of medicine and sought to remedy them through the perfection of diagnosis. He deserves the credit of being the first to trace with certainty (1786) the etiology of the itch to the itch-mite, of which Bonomo had furnished the first exact description (1786). He first showed that in order to perceive the mite the black speck must be extracted and the parasite placed upon a green cloth where its movements can be observed. It was a long time before this etiology was accepted without question; even in the year 1834 Blazius asserted that the mites were by no means always present and were less the cause than the product of the itch. *Lentin* (†1804) wrote various contributions and notes, chiefly on croup and raphania. Aside from these Hanoverians, *Johann Peter Frank* was conspicuous as one of the most celebrated practical writers of the eighteenth century (†1821). He was clinical professor in Göttingen and then in Pavia; in the latter place he organized the medical faculty and in 1795 became director of the general hospital in Vienna, where he founded the pathologic-anatomic museum. After a short stay in Wilna he went in 1805 to St. Petersburg as court physician. He had a clear and critical mind and did much toward introducing order nto special pathology and great simplicity into therapeutics. In his masterpiece, "System der Medicinschen Polizei" (6 Parts, 2d Ed., 1784-1819), he became the author of a new discipline and wrought incalculable benefit through his opposition to the monasteries and to celibacy, witchcraft and exorcism, and through his demands for freer education of youth. Among the eminent practitioners belong also the court physicians *Selle* of Berlin and *Samuel Gottlieb Vogel* of Rostock, who deserve credit for the general introduction of sea bathing and the opening of Doberan (1794).

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[1] Just a hundred years have passed since the property of dilating the pupil of the eye was discovered in belladonna. When Darles ("de Atropa Belladonna," disp., Leipzig, 1776) got a drop of the fresh liquid in his eye and in consequence of this could not see well for three weeks, Dr. Reimarus found the pupil very much dilated. He thereupon decided to use this poison to paralyze the iris for extraction of cataract. Experiments on cats established the dilation of the pupil and in dissection the iris was found to be much relaxed and drawn back. Himly first applied this discovery to ophthalmology.

As we leave German medicine with the beginning of the nineteenth century, we must accord full recognition to the actual investigations of certain men, and also admit that the scientific status of medicine has been unquestionably advanced by the correction of conceptions and a more logical order. But alongside of the relatively small number of men of high merit who monopolized and dominated science, there went a great crowd of the crudest practitioners without knowledge and with a tendency to superstition, who showed the greatest partiality for speculations and catch-words, and on the other hand despised experiment and everything practical. Educated in the adherence to systems, they could contribute nothing to the advancement of medicine because they considered it scarcely capable of improvement. They treated the patient according to fixed rules and if he died they were content with the thought that they had done everything that was possible in their art. One single modest fact is worth more than ten hypotheses, but now they *subordinated experience to theories*, were conscienceless enough to fabricate accounts of cases and successful cures, and discarded the most decisive experiments as soon as they contradicted the prevailing opinion. This was carried so far that one otherwise worthy scholar contended against the truth, proved by a thousand years of experience, that cold locally applied would stop bleeding, because it did not accord with his system. Great thinkers were observed to give orders of which the most miserable field surgeon ought to have been ashamed. Few men could be convinced that all efforts to establish a durable system were in vain and that the path of experience trodden by Hippocrates and Sydenham could alone lead to the goal. Thus the faculty for observing nature was suppressed in most young physicians in their earliest education, and the most prolific source of all progress was cut off.

"If the sons of Æsculapius, they, to whom the muses were never very partial, have always made themselves contemptible by a fruitless conformity to the schools of philosophy of their time, yet one does not find this useless effort in the history of surgery. If the physicians have always sought to cover their want of clear insight with a foolish display of new and pompous, foreign and unintelligible words, yet simplicity and clearness, harmony and true worth made their appearance much earlier in the writings of the great surgeons." (Kurt Sprengel.)

(*To be continued.*)

SOCIETY PROCEEDINGS.

International Medical Congress.

Twelfth Triennial Meeting Held at Moscow, Russia, Aug. 17-20, 1897.

(*Concluded from page 698.*)

"The organic complexity of the cell is the simple and significant principle we bequeathe to the twentieth century," were the concluding words of Prof. S. M. Loukianow's address at the third general session of the Moscow Congress. The biologic autonomy of the cellular nucleus is especially evident in the phenomena of inanition. The cell becomes smaller in inanition, also the nucleus and the nucleolus, but the nucleus does not shrink in proportion to the body of the cell but independently of it, and the nucleolus independently of both. It becomes evident that the body, the nucleus and the nucleolus live a unified life but not one and the same life, a common but not an identical life. He measured 18,000 nuclei, each two diameters, taken from the hepatic cells of white mice (20), subjected to absolute fast or special diet. He found that the nuclei show less loss of volume on a diet of cooked bacon, namely, 6.45 per cent.; on a diet of albumin, 22.04 per cent.; of peptone, 26.48 per cent.; of sugar, 39.19 per cent., and in absolute inanition, 44.56 per cent. He concludes therefore that the hepatic cells are nourished especially at the expense of the fats and albuminoids, while carbohydrates play a secondary part. Thirty-five thousand hepatic cells examined to find the proportions of double nuclei, showed: with normal regimen, 10.49 per cent. binuclear cells; absolute inanition, 13.53 per cent.; sugar, 17.18 per cent.; bacon, 25.01 per cent.; peptone, 27.11 per cent.; albumin, 28.67 per cent. He believes that there is no direct connection between ample nourishment of the entire organism and the multiplication of the neuclei; also that in the nucleus the factors which assure the preservation of its volume in inanition do not fully coincide with the factors which most predispose it to division. He referred to the facts established by Mad. Downarowitsch in regard to the cells of the anterior cornua in complete inanition, when the body had lost 39.8 per cent. in weight, the nuclei had diminished in volume an average of 25.4 per cent. and the nucleoli 42.5 per cent.

PRESENT STATUS OF THE NEW TREATMENT OF POTT'S DISEASE, FORCIBLE REDUCTION WITH TRACTION.

The sensation caused by young Calot's success with his *brusque redressement* has obscured the merits of A. Chipault's less startling method, the first proposed. He straightens the curved spine by traction in narcosis and presented patients thus cured in October, 1895. He restricts the operation to easily reduced cases and aims to secure permanent correction by lacing the apophyses together with wire, including the sound vertebræ above and below (*vide* Journal, pages 505, 607). His success has been constant and permanent to date. Calot reported 204 patients operated (narcosis, traction and direct pressure on the hump) with two deaths within a few days and three in three to four months afterward. He now cures the abscess before operating and if necessary resects some of the posterior processes. Paralysis is an indication for operating, he states, adding that six were cured of the paralysis in these cases of the kind operated on. The result was null in the other two. Twenty of his patients are now walking straight, but most of them still wear the corset. He only allows them to walk when a radiograph shows the reparation of the osseous lesions. T. Jonescu described a mechanical contrivance for traction with which he regulates the force applied. He also replaces the cotton in the corset with a Sayre flannel vest. He has been successful with his modified Calot method, which is illustrated in his *Revista de Chir.*, Bucharest, No. 5. P. Redard reported thirty-two cases successfully treated with another traction device and lever apparatus, that reduces the curvature without direct pressure on the hump, afterward applying a very large plaster cast, illustrated in the *Presse Méd.* of September 4. Bilhaut suspends the child by the feet to apply the corset. Professor Lorenz found paraplegia follow his only attempt, still persisting two. months after the *redressement*, as he states in the *Deutsche Med. Woch.* of August 26. All are surprised at the facility with which the spine can be straightened, and many are attempting it, but the medical world at large is waiting to see if nature will repair the loss of substance sufficiently to maintain the spine permanently in the corrected position.

CHRONIC NEPHRITIS.

In the addresses and discussions of chronic nephritis it was stated nephritis is apparently becoming more frequent (Gerhardt) and is often overlooked. Arteriosclercsis produces renal troubles sometimes at a very early age. Primary contracted kidney is the effect of intoxication, alcohol, uric acid, etc. Scarlet fever and pregnancy only lead to it when there are concomitant causes. It has in turn a toxic effect, uremia. Pressure can not be the cause, as he practiced lumbar puncture once without results. Ewald called attention to the cyclic appearance of albumin in the urine of children otherwise apparently in perfect health, with the exception of slight evidences of dyspepsia. He has had no opportunity to observe whether nephritis follows later. Brault signaled the hypertrophy of the heart which accompanies every nephritis of any duration and dominates the entire pathology of nephritis. It is irreparable and the kidneys only act as long as there is certain compensation of the heart. Crocq considers the desquamation of the epithelial elements the indispensable starting point for the albuminuria. Consequently there can not be physiologic albuminuria, but the cause producing it may be transitory; it may, for instance, be merely hyperemia, active or passive, such as renal congestion from cardiac valvular insufficiency. But generally the cause of the albuminuria is a parenchymatous renal inflammation. Interstitial nephritis is quite different; this is inflammation of the connective tissue of the kidneys. If the epithelium is not involved there is no albuminuria until it is. In the clinical sense, therefore, there are two kinds of nephritis, with and without albuminuria, and these correspond to the anatomic forms, parenchymatous and interstitial. Different causes may produce one or the other; cantharidin, for instance, produces parenchymatous inflammation, also beer; while distilled beverages, lead and uric acid induce the interstitial form. Senator ascribes to arteriosclerosis the origin of many cases of chronic nephritis, and senile chronic cases to insufficient irrigation of the kidneys.

TETANUS IN CHILDREN.

Escherich stated the invariable coincidence in his experience of slight rachitic alterations with idiopathic tetanus, also its restriction to the spring months, and the age from three months to the end of the third year. He does not consider them related, but ascribes both to intoxication from vitiated room air. Some of the fatal cases had hydrocephalus. Laryngospasmus may therefore be a symptom of fresh hydrocephalus, as Golis maintains. In other cases there was thymus hyperplasia, bronchitis or lobular pneumonia, and three had edema of the glottis.

An effective test of the efficacy of serum treatment of diphtheria was reported by Fibiger, who stated that the one thousand patients admitted for diphtheria at the Copenhagen Hospital during the year were treated with serum or not according as they were received on alternate days and nights. Five hundred had the true Löffler bacillus. The value of the treatment was unquestionable.

A. Esquerdo advocated bandages for fractures of the inferior member (made of plaster, flannel, cotton or mull, with the first the preference), allowing the patient to walk from the first.

Bertran of Barcelona attributes the soothing effect of the heteronymous application of the hand of the operator in certain neuralgias, etc., to the "odic effluvia."

America was well represented, with numerous important addresses and communications, some of which have already appeared in these columns.

The medico-legal significance of the glycogenic function of the liver is much greater than usually realized, as the presence of glycogen in the liver after death shows that the fetus or individual was in normal health at the moment of death, which must have been due to traumatism of some kind. The absence of glycogen is an evidence of diseased conditions. Lacassagne and Martin base this assertion on an examination of 200 subjects, the only qualification to the statement being in case of death from mechanical obstruction in the course of some disease, like tuberculosis. They used Claude Bernard's test, and did not include diabetics in their research, as this test is not reliable with them.

J. F. Sutherland remarked *in regard to the alcoholic before the law*, that punishment for a crime committed during drunkenness is, in this nineteenth century, a monstrosity. The punishment should be for the drunkenness, which should be considered a misdemeanor. The alcoholic should be regarded by the law in the same light as an insane person. He should be deprived of his civil rights and incarcerated until cured in some special institution.

W. A. Muratow announced as the result of the necropsy in 123 cases of progressive paralysis at Moscow: 1. Foci of infection in the form of hemorrhage or softening are rare (5 in 123). 2. The local symptoms that appear in the form of epileptic or apoplectic ictus are not due to any new complication, but merely to the invasion of the central convolutions by the inflammation. 3. Clonic convulsions should be considered compulsory movements of ordinary cortical origin. 4. Likewise, the disturbances in the muscle sense and hemianesthesia. 5. The pathogenesis of the appearance of the foci has a certain analogy with the focus infections in encephalus, due in both cases to the direct or indirect action of the focus (excitation, degeneration).

Sir Dyce Duckworth reported several cases of abscesses of the cerebum or cerebellum consecutive to otitis of the middle ear, in which the patient ceased absolutely to breathe from three to five hours before the heart stopped beating. This phenomenon has been previously observed in cerebral injuries from gunshot wounds.

Linnggren reported that he had succeeded in transplanting pieces of epidermis on fresh and granulous wounds, which adhered and grew as desired in nearly every case, although they had been kept in sterile liquid-serum from a day to six months.

The parasite of malaria was declared single and unique by Coronado of Cuba, but Thayer of Baltimore, Saharow of Tiflis and Gautier of Moscow asserted the existence of three varieties.

SELECTIONS.

Congenital Absence of Uterus and Vagina.—Plastic Operation for Artificial Vagina, Taking Flaps from Nymphæ and Perineum.—M. A., aged 19 years and single, a native of Gloucester, Mass., was sent to me by Dr. G. N. Jones of that city and gave the following history:

Her father was born in Sweden, her mother in Nova Scotia, the latter having died of cancer of the uterus six years before. With this exception the family history was negative. Of her three sisters, one was married and had a child; another, 16 years old, had menstruated regularly for four years, and the third, then 14 years old, had not at that time had her catamenia established, but since has menstruated regularly.

The patient had never been in rugged health, had suffered with a purulent discharge from the left ear since 1 year of age, and had had measles and chickenpox at 7 to 8 years of age. She had been under medical treatment for the preceding four years for general weakness, headache, weak eyes (for which she had been wearing glasses with benefit), temporal headaches, sore throat, loss of appetite and shortness of breath. While under treatment she had improved; at the time of my first consultation had a fair appetite and digestion, and her chief complaints were a weak back and the fact that she did not menstruate. There had been no menstrual molimen whatever.

Physical examination showed a well developed, rather poorly nourished woman above the average in height, of light complexion, the hair of the head long and thick, voice feminine, breasts each having a well-developed gland with a few follicles showing in the areolæ about the inverted nipples, hips large and pelvis of female type.

Genital organs.—An abundant growth of hair on the mons and the outer surface of the labia majora. Labia majora, labia minora, vestibule and clitoris well developed; meatus urinarius and urethra of large caliber, taking a sound fourteen *millimeters in diameter without much stretching*; natural diameter about eleven millimeters. Hymen absent. Where the introitus vaginæ is normally situated the mucous membrane was redundant and wrinkled, and in the center was the opening of a small pocket four millimeters in diameter. This pocket had a depth of one and one-half centimeters, its long axis corresponding with the axis of the normal vagina, and it was apparently lined with mucous membrane. A small amount of milky white secretion could be expressed from it. Orifices of vulvovaginal glands large and normally placed. In other words, with the single exception *that the introitus* vaginæ and hymen were absent, the external genitals were normal.

As a bimanual examination with a finger in the rectum failed to reveal the presence of the uterus or other internal organs of generation the patient was sent to St. Elizabeth's Hospital, where an ether examination was made on the following day. Two of my colleagues on the gynecologic staff of the hospital kindly saw the case with me. We all examined bimanually with the forefinger in the rectum, also with the little finger in the bladder; then with a sound in the bladder and a hand on the abdomen. The abdominal walls where thin and lax, the intestines undistended and, the rectum and bladder being empty, all the conditions for practicing the touch were favorable. No uterus, ovaries or tubes or any thickened tissues that might represent any of those organs, or the occluded vagina, were to be felt in the pelvis. The bladder and rectum seemed to be of normal size, shape and situation. The septum between the bladder and rectum was thin.

The condition of her genital organs were explained to her and she was told that possibly a serviceable vagina could be made and decided to have the operation performed.

Operation, March 28, 1894.—The object of the operation was to separate the bladder from the rectum by incising the cellular tissue between these organs and then to cover the raw surfaces forming the walls of the cavity so made with mucous membrane or skin, utilizing three flaps; one taken from the fourchette and perineum and one from each of the labia minora. The vulvar hair was shaved and the rectum thoroughly irrigated with corrosive, and the orifice of the rudimentary vagina prolonged at each end so that it measured about three centimeters in length, splitting the rudimentary vagina into halves. With a finger in the rectum and a sound in the urethra for guides, the recto urethral septum was split by dissecting with the scissors and finger for a distance of five centimeters. At that point the finger in the wound was apparently separated from the intestines by a sheet of peritoneum only and, practicing the bimanual touch again, it was impossible to discover the presence of any tissue that might represent the uterus, ovaries or tubes.

In order to cover the raw surfaces formed by the dissection, flaps were formed as follows: the nymphæ were cut off and then incisions through the mucous membrane made. The two lateral flaps formed in this way were dissected free and by so doing the nymphæ were split from their posterior aspect and unfolded, as it were.

The posterior flap was formed by dissecting deeply the tissues of the fourchette and perineum, so that this flap could be dragged upward and inward to cover the posterior surface of the new vagina. The strip of mucous membrane on this posterior wall that had been half of the rudimentary vagina was dissected away and the posterior flap anchored by suturing its tip at the uppermost part of the new vagina with a catgut stitch. In the same manner the two lateral flaps were disposed of by stitching their tips at the apex of the vagina. The little strip of mucous membrane on the anterior wall from the rudimentary vagina was utilized by stitching the lateral flaps to its edges. The operation was completed by sewing the edges of the mucous membrane at the stumps of the nymphæ and at the places where the three flaps came into apposition with fine interrupted sutures of catgut. At the close of the operation there was a small raw surface, about one centimeter in diameter, at the highest part of the wound, that it was impossible to cover. The vagina was packed lightly with iodoform gauze and the patient put to bed. The after-treatment consisted in keeping the vagina packed with iodoform gauze. The left flap broke loose on the third day, but by carefully applied pressure it glued on again. The house surgeon manufactured a dilator out of a rubber finger cot stuffed with cotton. This was worn constantly, being kept in place by a T-bandage. On May 1 the vagina measured two and one half centimeters in diameter and four and one-half in depth. The patient left the hospital on May 2, was not seen again until two years later, when she appeared at my office with her husband. She reported that she had gained very much in health and had been perfectly well, with the exception of weakness of the back after exertion and of a recent attack of indigestion; that she had then been married two months and a half; that she had had sexual intercourse regularly since marriage and that the intercourse was attended by sexual feelings and gratification. Her husband also said that, for his part, coition had been entirely satisfactory.

She now called my attention to a bunch in the right side of her abdomen, which she had first noticed before the operation; but as it had never given her any discomfort she had not spoken of it. It had moved lower down in the abdomen since the operation and since her marriage had increased in size. Examination showed a tumor the size and shape of a large kidney situated in the false pelvis on the right side, the hilum being toward the vertebral column. Its upper border, with the patient on her back, was on a line drawn from the umbilicus to the right anterior superior spine of the ilium. It slipped from under the hand in the manner characteristic of movable kidney, its mobility being limited above just beyond the level of the umbilicus, on the left at the median line and below at Poupart's ligament. Pressure on the tumor caused "a sickening sensation." Palpation in the right flank failed to detect the presence of the kidney in its normal situation. The urine was normal. It had been increased in amount, of late, she said. There had been no pain or dragging sensation in the region of the tumor.

The tumor was surely not in its present situation at the time of the ether examination two years before or it would have been felt at once by the examining hand on the abdomen. Bimanual examination with a finger in the vagina and with a finger in the rectum showed that the tumor had no pelvic connections that could be felt and confirmed the previous diagnosis of absence of the uterus.

Following the foregoing report the author commented briefly on the various operations that have been performed for the formation of an artificial vagina. The first of these was done by Fletcher in 1831 and Amussat in 1832, for the purpose of allowing escape to the retained menses. These operations were but blunt dissections in the recto vesical system. In 1883, Credé formed a new vagina by using one large skin-flap from one of the labia majora, while Picqué took flaps from the anterior wall of the vestibule and from the perineum. Kustner, Mackenrodt, Schwartz and others modified these. Other cases of plastic operation for artificial vagina have been published by Rosciszewski in 1894, Fenger in 1886 and Roux in 1891.

The advantages of a plastic operation for artificial vagina over the plug operation are obvious both in cases of congenital and acquired absence of the vagina. Where the labia minora are of sufficient size they seem to me to offer the most available means of covering the walls of a new vagina, as entailing less mutilation than would be the case with flaps taken from the labia majora or vestibule, and I should agree with Fenger that a bilateral operation is preferable to a unilateral one.

Complete absence of the uterus has been demonstrated by anatomic proof only in cases of acephalic monsters or fetuses with spina bifida or other malformations incompatible with prolonged life. In all other cases a small bit of connective tissue, a knot of muscle or band of connective tissue, if nothing more, as representing rudiments of the uterus, has been shown to exist on the cadaver.

A small piece of muscle without the shape of a uterus, or a band of connective tissue across the pelvis, can not be called a uterus either in an anatomic or physiologic sense, and such a state of affairs is of interest only from the standpoint of embryology; therefore, we are justified in speaking of women possessing such rudimentary structures as cases of absence of the uterus. The case just reported is an example of a not very rare class, *i. e.*, normal feminine habitus, well-formed hips, breasts and external genitals, hair of the head long, normal pubic and axillary hair, and feminine voice, with absence of uterus and more or less atresia of the vagina. These individuals are usually healthy unless the ovaries are present and functionally active, in which case they suffer from menstrual pain, sometimes so severe as to necessitate oöphorectomy.

Without aiming at absolute completeness, owing to the inaccessibility of some of the sources of information, I have been able to collect the references to 360 cases of absence of the uterus reported by 239 authors from earliest times up to the present. Roughly we may say about 300 cases in the last century. Cases occur in the literature of all civilized countries. I have examined a majority of the 239 references, and have found among them the records of only thirty five autopsies where this condition was present. Of these, twenty-four were on the bodies of adults and two on girls 10 and 12 years old respectively, the rest being on monstrosities and fetuses with absence of other organs, making prolonged life impossible. In all of the autopsies on the bodies of adults and girls there were noted in every case rudimentary tissues representing the uterus, generally one or two little knobs of tissue the size of hazelnuts or a thin band between the bladder and rectum. The ovaries were found to be present in all the cases but six, and five of these were reported in general terms only. The tubes were present in all cases but six, though often without any canal. A very large proportion of the reports I have examned are of cases similar to mine, *i. e.*, adult women, feminine habitus, normal external genitals and breasts. A very few cases having abnormal external genitals and the male type of breast, with absence of pubic hair, are reported. The vagina was generally present as a short pouch, though often entirely wanting. Absence of the vagina alone, the uterus being present, is a much more common anomaly than absence of the uterus.

In a considerable number of cases of absent uterus and vagina the urethra has been found to be of large caliber and in several cases coitus has been practiced through it without the knowledge of the patient that anything was wrong in this respect. Most writers hold that the large caliber in these cases is due to attempts at coitus, but in view of the fact that there are on record many cases of absence of the vagina in unmarried women of good character where the urethra has been found large, *e. g.*, my case above reported, it seems that the explanation is to be sought rather in some developmental defect.

The anomaly of absence of the uterus is due to a lack of fusion and subsequent atrophy of the ducts of Müller, a process which ordinarily takes place at the end of the third month of fetal life. It is well established that these ducts, under normal conditions, fuse in their middle and lower course, the process proceeding from above downward to form the uterus and vagina, whereas above the separate non fused ducts form the Fallopian tubes. The external genitals, the lower part of the vagina, as well as the urethra and vesical trigone, on the other hand, are formed from the urogenital sinus and the genital tubercle, furrow and fold. A partial coalescence of the Müllerian ducts accounts for the reported cases of double vagina and double and bicorned uterus. The derivation of the hymen is still in dispute. It is known that the hymen develops late in fetal life, the nineteenth week, and there seems every reason to believe that it is formed from the same embryonic structure as the vestibular vagina, *i. e.*, the urogenital sinus. Therefore, we should not expect to determine whether it would be likely to be present in any given case of absence of the vagina. As a matter of fact, it is reported as present in a majority of cases, as is also some sort of a vaginal canal. This canal must be thought of as a persistent urogenital sinus rather than a Müllerian vagina, because in the process of development the Müllerian ducts coalesce from above downward. The urogenital sinus develops from below—the urethra and rectum being set off from the vagina—and it is not difficult to understand how, in one case, the lower vagina fails to develop, giving rise to hematocolpus if the uterus is function-lly active, or, in another case, the uterus and Müllerian vagina ng absent, that the urogenital sinus forms an urethra of rge caliber and a hymen.

It would seem as if inheritance had something to do with absence of the uterus. Squarey reported the cases of three sisters who had never menstruated, three of whose aunts were sterile. Phillips speaks of two sisters, both married, with congenital absence of the uterus. Nelson reported absence of the uterus in three of a family of five sisters. All three had sexual desires. Of the two sisters with uteri, one had a family of four children, the other was 17 and unmarried. Sexual appetite was present in most of the cases reported. Menstrual molimina sometimes and sometimes not, but generally present where the ovaries could be distinguished.

It is seldom that a proper diagnosis can be made without an anesthetic. The thinness and condition of laxity of the abdominal walls are important factors in determining the accuracy of the examination. In some of the reported cases the diagnosis was confirmed by operation, as in several where oöphorectomy was practiced for severe menstrual pains.—*An abstract of a paper by* Dr. W. L. Burrage *in American Journal of Medical Sciences.*

The Organization and Support of Public Medical Libraries.—Dr. George M. Gould recently read before the American Association of Medicine of Philadelphia the following:

Every year many private medical libraries, innumerable medical books and journals, the gatherings of physicians during a lifetime, are destroyed, scattered and wasted. At the same time thousands of cities and villages are without public medical libraries, or the few that exist are not made the depositories of these valuable books. In the city and village centers the physicians are individually and singly spending large sums of money for medical literature, and much of this money, if spent in a systematic and organized manner, could be saved, would accomplish more good for the participating individuals, and would become a growing power for professional progress and benefit.

All that is wanting is the unitizing spirit to bring about common action. No argument is needed to convince us of the great value of a reference-library of medical books. Why then should this literature and money be longer wasted? Every member of the Academy should constitute himself a committee of one to arouse public spirit, to encourage the formation and support of public or society medical libraries. It is, indeed, a function peculiarly appropriate for the Academy as a whole to undertake. Moreover, every established medical library is constantly receiving, and with increased vigor would receive still larger numbers of duplicates, which by an easily devised system of exchanges and gifts, might be utilized to complete the files and fill the shelves of other libraries. To illustrate the effectiveness and success possible in the direction suggested, I may refer to an attempt I have made. With true professional spirit the editor of the Journal of the American Medical Association courteously placed his columns at my disposal, and I published therein lists of duplicates, gifts, exchanges, etc., of books and periodicals that were sent me by individuals and by librarians. Within the past year, as a result, I have been able to help a number of libraries to fill their shelves. With some good will and a very small expense for postage and typewriting, 3,934 journals and pamphlets, and 1,921 bound volumes, most of them of great value, have been rescued, preserved, and for all time, placed at professional disposal. It is, however, a work requiring more than individual effort, and should become the function of some corporate organization. The unexpected success of my individual labor only shows what wonderful results might follow common professional action. If anything good were to be hoped from American politics, the existing organization of the Surgeon-General's Office might be made a sort of clearing-house for gathering medical literature, and for founding and filling public medical libraries all over the United States. In pure science the Smithsonian Institution already exercises some such function, and it is one of inestimable value to the nation and to science. In other countries the medical literature we sadly need is to be had almost or entirely for the asking, just as with us it is also going to waste. To make the plan effective international organization is needed, and can hardly be brought about except by governmental agencies. Scarcely a complete set of the French *Theses* exists in this country, and yet I have seen such sets offered for sale for a few dollars. Two or three years ago, at a well advertised public auction-sale in the city of Philadelphia, I bought a complete set of Virchow's *Archiv* for $3.50. Another set was advertised by a Boston dealer the same week as a remarkable bargain for $185. Publishers' remainders of old editions are constantly being ground up into paper pulp, and the *Transactions* of hundreds of medical societies are rotting in store-rooms and cellars in Europe and America, while all the time the public medical libraries of each country are suffering because they can not secure the unutilized literature of the other. I allude to these instances merely in proof of the fact that from lack of organization we are neglecting unique opportunities of professional education and progress.—*Bulletin American Academy of Medicine.*

Toxin and Antitoxin of Tetanus of the New York City Health Department Laboratory.—Dr. Alexander Lambert, a bacteriologist having a special detail in the direction of the immunization against tetanus, has written for the *New York Medical Journal* June 5, the fullest American account of this procedure that we have yet seen. His article closes with a bibliography that includes no less than eighty-one titles, a large proportion of which is in the German and French tongues. Dr. Lambert has collected 114 cases, whose mortality under antitoxin has been 10.3 per cent. The tetanus antitoxin is prepared in the same manner as the diphtheria antitoxin, by inoculating the tetanus toxin in increasing doses into horses. The toxin is grown in bouillon under hydrogen, and after ten or fifteen days filtered through porcelain, and the germ free filtrate is used for the inoculations. The horses receive half a cubic centimeter as the initial dose of toxin, and this dose is increased as rapidly as the horses can stand it until they support seven to eight hundred cubic centimeters or more at a single dose. After some months of this treatment the blood of the horse contains the antitoxin in sufficient amount for therapeutic use. When the animals' temperatures are normal and they have recovered from the dose of toxin last given, they are bled into sterile flasks and the serum collected. The serum contains the antitoxin and is tested on white mice or guinea pigs.

The New York Health Department has at present two horses well immunized against tetanus, and furnishes serum of the strength of one to four hundred million, that is, one cubic centimeter will protect four hundred million grams of white mice against a three-to-four-day fatal dose of tetanus toxin. Reckoning in antitoxic units, twenty cubic centimeters of serum will contain eight thousand antitoxin units, an antitoxin unit in tetanus being the amount of serum necessary to protect one million grams of test animal. The serum is supplied in 20 cubic centimeter bottles and should be injected in 10 to 20 cubic centimeter doses. In severe cases the patient should receive 50 cubic centimeters in the first twenty-four or thirty-six hours, and these 10 to 20 cubic centimeter doses repeated once or twice each day during the following four or five days or longer, according to the course of the disease. The circular accompanying the bottles explains more fully the proper method of procedure.

As has been shown by Roux and Calmette, the antitoxic serum has no direct destructive action on the toxin itself, but through some unknown action on the body cells the serum prevents the toxin from exerting its destructive action. Behring's first idea that there was a direct destructive action between the antitoxin and toxin or some neutralizing effect, such as occurs between an acid and an alkali, has been shown to be incorrect. As Buchner also shows there is no destructive action of the antitoxic serum on the toxin either outside or within the body, the action seeming to be one which, by producing certain changes within the cells, renders the action of the toxin inert. Tizzoni concludes that the blood serum of inoculated animals does not act as a remedy which neutralizes in the organism a certain active principle of disease and directly counteracts certain functional changes, but it acts, in all probability, in curing tetanus by immunizing the parts of the body not already tetanized and so limits the tetanus to local form. The New York Board of Health supplies its antitoxin to charitable institutions free of charge, but to others the cost is $3.00 per vial containing 20 cubic centimeters. The serum should be injected as early as possible, as the dose required to neutralize tetanus toxin absorbed increases with great rapidity with each hour's delay.

The initial dose in every case in an adult should be at least one vial or 20 c.c. When the treatment is begun at the first appearance of tetanic symptoms and these do not point to a very severe infection, and especially when the incubation period has been long, say two weeks, the same quantity or one-half the quantity, according to the results, should be repeated at intervals of form six to twelve hours during the four following days.

London Experience in the Antitoxin Treatment of Diphtheria.—The report of the medical superintendents upon the use of antitoxin in the treatment of diphtheria in the Hospitals of the Metropolitan Asylums Board during the year 1896, which has just been issued, constitutes the most exhaustive and elaborate statistic study of the antitoxin treatment of diphtheria which has yet appeared.

The medical superintendents thus sum up the results of their clinic and statistic observations. They find that the improved results in the diphtheria cases treated during the year 1896 are: 1, a great reduction in the mortality of cases brought under treatment on the first three days of illness; 2, the lowering of the combined general mortality to a point below that of any former year; 3, the still more remarkable reduction in the mortality of the laryngeal cases; 4, the uniform improvement in the results of tracheotomy at each separate hospital; 5, the beneficial effect produced on the clinical course of the disease. "We have had, in fact, somewhat better results to record for 1896 than we had for 1895; and in view of the extended experience gained during the past year, together with the additional facts concerning the post-scarlatinal cases for 1896, we feel that we are fully justified in the favorable opinion we expressed last year on the value of antitoxin in the treatment of diphtheria."

The reporters further emphasize the importance of early administration and the trivial character of the secondary effects, maintaining their opinion that "in the antitoxic serum we possess a remedy of distinctly, we would now say, much greater value in the treatment of diphtheria than any other with which we are acquainted."—*The London Therapist.*

Purulent Contamination of Milk.—Dr. W. R. Stokes, bacteriologist of the health department of Baltimore, and Dr. A. Wegefurth of the same city, call attention to the use of the microscope for detecting the contamination of milk by pus. The presence of this objectionable product indicates an inflammatory disease of the udder of the cow supplying the milk, a condition sometimes spoken of as "garget." The writers believe that they can trace to this condition a series of cases of mild gastro-intestinal irritation. Inflammation of the udder is a not infrequent condition among dairies that supply milk to our cities and institutions. The milk yielded by such diseased cows has often been found to contain many pus cells and the allied organisms of suppuration. The study of the epidemic of gastro intestinal disease of these writers and of other testimony in the same line, lead us to the belief that garget milk is a source of danger to infants and children. Whenever suspicious circumstances lead to the use of the microscope and an examination is made of the centrifugalized sediment of the milk that reveals the presence of an excessive amount of pus, there should be instituted a careful examination of the herd whence the milk has been obtained. The chances of infection by the milk of a herd can be minimized by a microscopic examination of the centrifugalized specimens of each cow's milk and the exclusion of any and all cows that are found to have pus-producing udders. The writers suggest that, in the absence of a better guide, the exclusion of a cow be based upon the presence of an average of more than five pus cells to the field of a twelfth-inch oil immersion lens. The writers point to the high mortality in their city by cholera infantum, a disease that is especially prevalent among children that are fed upon cows' milk, and their experience points to the necessity of a closer examination of the herds of dairies that send their product to our cities, if we are to expect a reduction in the summer mortality by intestinal derangements. It is not their contention that untested milk is of necessity dangerous, but the use of the test is prompted by the almost universal desire that exists to raise the standard of that important food substance of the young, especially in the summer season.—*Medical News.*

NEW INSTRUMENTS.

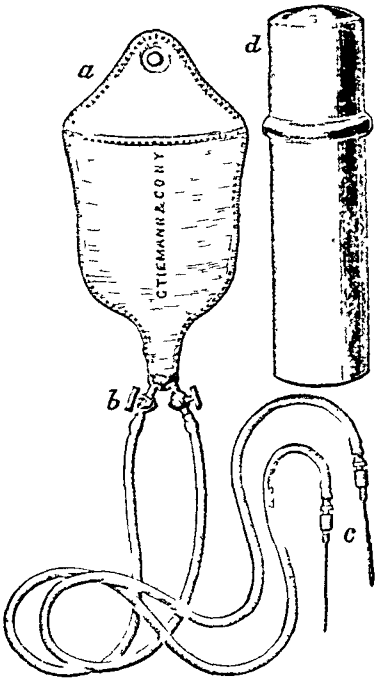
A SUBCUTANEOUS SALINE SYPHON SYRINGE.

BY HORACE FOX, M.D.

BATH, MAINE.

This simple instrument is brought to the notice of the profession for the following reasons, to-wit: It is compact, therefore it can be readily carried in an ordinary physician's bag and constitute a part of the physician's armamentarium. It is simple in construction, therefore there is practically nothing to hinder it from being in good working order at any and all times. Its parts can be quickly, thoroughly and easily adjusted, therefore it can be made ready for use at a moment's notice. When its parts are properly adjusted it is impervious to air. It can be made thoroughly aseptic by boiling or immersing in an antiseptic solution without injury to any of its component parts. The fluid can be injected simultaneously into different portions of the body with great ease. One quart of the normal saline solution can be subcutaneously injected in about fifteen minutes, provided its distribution and absorption is assisted by constant and gentle manipulations. The pressure and flow of the fluid can be controlled either by the stop-cocks or by raising the reservoir to the desired height, or by both.

To describe the instrument: The reservoir (*a*) is made of soft catheter rubber and will hold just one pint. Its upper portion contains a small perforated flap by which the instrument may be suspended. Into the lower portion of the reservoir is snugly fitted a hard-rubber tube (*b*) which is forked at its lower end and each prong of the fork contains a stop cock. Upon each prong of the fork is adj [illegible] cat [illegible] ubber tube three feet long. There are [illegible] the upper of which are fitted into the lower ends of the soft catheter rubber tubes, while the lower ends of the metal fittings are threaded and upon which are screwed two large size hypodermic needles (*c*). The reservoir and hard-rubber fork, the soft catheter rubber tubes and metal fittings need not be separated unless so desired: they can then be rolled up and placed in the hard rubber case, while the hypodermic needles may be secured safe and firm by being screwed into two tubes in the top part of the box or case (*d*). The hard-rubber box is round and is about seven inches long and two inches in diameter, therefore it takes up but little space and yet permits of ample room for the instrument.



The instrument was made for me by Messrs. George Tiemann & Co., of New York City and they have carried out my plans accurately and thoroughly.

A NEW OBSTETRIC FORCEPS AND AN AXIS-TRACTION FORCEPS.

BY A. B. SPACH, A.M., M.D

CHICAGO.

In the Journal of December 1896, I published a description of a "New Obstetric Forceps." In response to numerous requests for a detailed account of the axis-traction features of my forceps and under this stimulus, I have added to and recast what has already been published, making the description entirely a new one. A glance at Fig. 1 reveals the forceps with two circles described around it, having a common center, which is at the lock. A sector of the larger circle is formed by the blades and an arc of the same circle. Another is formed, by the handles and an arc of the smaller circle, or an equal one by the blades and an arc of the same circle passing through the blades, where they are farthest apart. Thus, as the blades are separated, the distances between them are accurately read off on the handle of the lower blade, which is marked off in centimeters and inches. At a glance the obstetrician can measure the diameter of the child's head. The forceps serves here as an accurate cephalometer.

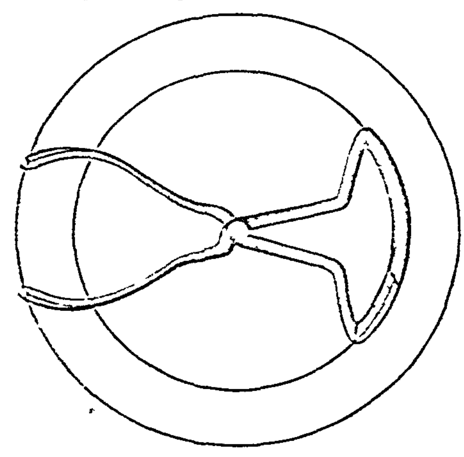


Figure 1.

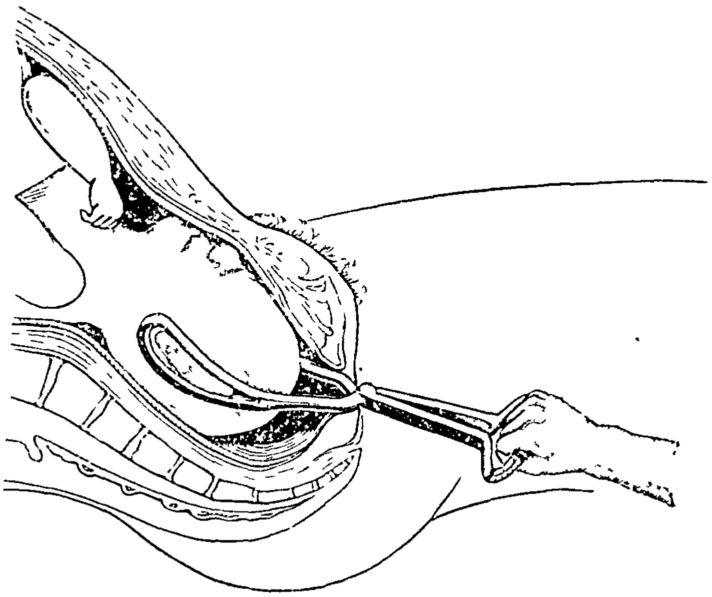


Figure 2.

Intermittent traction can be made without producing undue compression of the fetal head. Fig 2, represents the forceps applied in occipito-posterior positions, the grasp of the hand and the direction of traction after the head has made descent into the pelvis. In Fig. 3, is shown the axis-traction forceps with details of the lock of the axis-traction rods. These rods are applied after the forceps is adjusted to the fetal head. The blades are secured firmly by the clamp at E, on the handles. The traction rods, one at a time, are now attached to the blades at A. Further adjustments are made at C, and the handles at F. Motion is thus freely secured in all directions. After the head is drawn down into the pelvis, the curved rod is turned at right angles to the axis-traction rods and together with them quickly disengaged. The clamp at E is then removed and the labor is then completed as seen in Fig. 2.

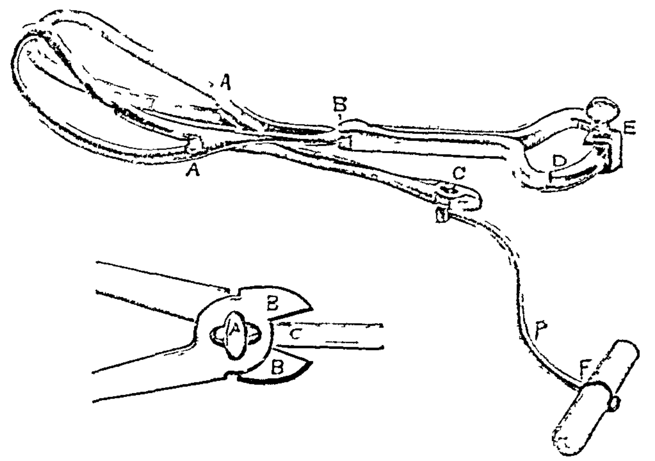


Figure 3.

To summarize: 1. The forceps accurately measures the fetal head. 2. Its application is no more difficult than any other instrument. The axis traction rods are applied more readily than in any other instrument. 3. And last, greatest of all, intermittent traction can be made without crushing the fetal head.

The lock and features of the blades are unique and new. This instrument is manufactured by Fred Haslam & Co., Brooklyn, N. Y.

6629 Harvard Avenue.

A BILL to Establish a Department of Public Health and to Define its Duties.

Be it Enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

Section 1. That there shall be established a Department of Public Health, the duties of which shall be to collect and diffuse information upon matters affecting the public health, including statistics of sickness and mortality in the several States and Territories; the investigation by experimental and other methods of the causes and means of prevention of disease; the collection of information with regard to the prevalence of infectious, contagious and epidemic diseases both in this and other countries; also the causative and curative influences of climate upon the same; the publication of the information thus obtained in a weekly bulletin; the preparation of rules and regulations for securing the best sanitary condition of vessels from foreign ports, and for prevention of the introduction of infectious diseases into the United States, and their spread from one State into another, which rules, when approved by the President of the United States, shall, in so far as they are consistent with the existing laws, be adopted and enforced as quarantine regulations at the various ports of entry in the United States, and so far as applicable to interstate commerce to prevent the spread of disease from one State or Territory into another or the District of Columbia, be, and become additional regulations thereof; the advising and informing the several departments of the government on such questions as may be submitted by them to it, or whenever in the opinion of the Department such advice and information may tend to the preservation and improvement of the public health.

A special report of the said Department of Public Health, relative to such action as will most effectually protect and promote the health of the people of the United States may at any time be required by the President of the United States.

Sec. 2. That the Department of Public Health shall be under the control and management of a Commissioner of Public Health; said Commissioner of Public Health shall be appointed by the President of the United States, by and with the advice and consent of the Senate, and his term of office shall be six years; he shall be a regularly educated physician holding a diploma conferred upon him by a legally incorporated medical college in the United States; he shall have had at least ten years' experience in the practice of medicine, and shall be learned in sanitary science, and shall hold a membership in one or more reputable sanitary or medical associations in the United States.

He shall be entitled to a salary of $6,000 per annum, and his necessary traveling expenses.

That the Commissioner of Public Health shall semi-annually on the first Tuesdays of April and October of each and every year, and at such other times as he may designate, call to meet in the city of Washington, D. C., an advisory council to be composed of the secretary or executive officer of each State and Territorial board of health, and one officer learned in the law, detailed by the Attorney-General of the United States from the Department of Justice; and that the necessary traveling expenses of the said advisory council incident to their attendance on the meeting of the said council shall be paid on vouchers to be furnished by the Secretary of the Treasury, said meetings not to include more than six days at each session, unless a longer continuance shall be authorized by the President of the United States.

That the Commissioner of Public Health may appoint an Assistant Commissioner of Public Health, who shall be a physician in good and regular standing in the medical profession, and skilled in sanitary science, and fix his salary at not to exceed $3,500 per annum and all actual and necessary traveling expenses incurred in the performance of his duties as Assistant Commissioner in said Department. All officers and persons in the service of the United States, detailed to perform any duty under the provisions of this act, or any existing act, of the Congress of the United States providing for quarantine against diseases, or to prevent diseases from spreading within the United States, shall not receive any additional compensation except for actual and necessary expenses incurred in the performance of such duties, such expenses to be approved by the Commissioner of Public Health or his assistant, and to be paid on vouchers provided by the Department of the Treasury.

It shall be the duty of the Commissioner of Public Health to preside at all meetings of the said advisory council, and in case of his absence on account of illness or any other unavoidable cause, it shall be the duty of the Assistant Commissioner of the Department so to preside.

Sec. 3. That the Department of Public Health hereby created shall succeed to all the powers and duties now and heretofore conferred upon the Marine-Hospital Service, or any officer thereof, by any law of Congress, except as hereinafter provided, and shall occupy the building now occupied by the Marine-Hospital Service for its offices, and shall have under its exclusive control and management all offices, officers, laboratories, appurtenances and property of whatever name and nature, which are lawfully in possession of the said Marine-Hospital Service at the time of the passage of this act, but it is hereby provided that there shall be in said department a bureau to be known as "The Bureau of the Marine-Hospital Service," which shall be under the exclusive control of the Commissioner of Public Health, and all laws governing the appointment to official positions in said Marine-Hospital Service, and to promotions in said service, shall continue in full effect, and all funds now or hereafter appropriated for the Marine-Hospital Service by Congress shall continue to be disbursed under the supervision of the Commissioner of Public Health by the direction of the Secretary of the Treasury until otherwise provided by law, it being the intent and purpose of this act to continue the Marine-Hospital Service and to confer all duties relating to quarantine and the public health upon the department hereby created.

Sec. 4. That whenever any department of government, or the executive of any state or territory, or the Commissioners of the District of Columbia, or the health authorities of any State, shall request information from the Department of Public Health in regard to any matter pertaining to the protection or promotion of the public health, said department shall promptly furnish such information as it may have on record, together with any necessary or pertinent advice; and whenever any information shall be received by the department which the interests of the public health require should be promptly communicated to any department of the government, or to any state officer, such information shall be forthwith furnished to the respective department or officer.

Sec. 5. That the department shall take such action, by adopting and enforcing such rules, and by correspondence or conference, as will tend most effectually to secure the coöperation of State, municipal, and local boards of health in establishing and maintaining an efficient and accurate system of notification of the existence and progress of contagious and infectious diseases, and of vital statistics in the United States, and said department shall also, by coöperation with the proper health authorities of foreign nationalities and municipalities, endeavor to extend to the United States a reliable system of international notification of the existence and progress of such diseases as cholera, yellow fever, typhus fever, smallpox, bubonic plague, or any other dangerous or contagious disease which may, in the judgment of the department, seem advisable to consider.

Sec. 6. That in sending notifications to, and receiving reports from, the different States or Territories in the United States, the department shall conduct all correspondence through the State and Territorial health authorities, and all information intended for local use received by the State and Territorial health authorities, shall by them be forwarded to the local boards of health, or health authorities, within their jurisdiction, and all reports and information received from local health authorities, and local boards of health, shall pass through the office of the State or Territorial health authorities to the said Department of Public Health.

Sec. 7. That the department shall, when in its judgment it may deem it necessary and proper, make such additional rules and regulations as are necessary to prevent the introduction of infectious and contagious diseases into the United States from foreign countries, or into one State or Territory, or the District of Columbia, from another State or Territory or the District of Columbia, and when said rules and regulations have been made they shall be promulgated by the said department subject to the approval of the advisory council, and the President of the United States, and enforced by the sanitary authorities of the States, Territorities, municipalities, and local boards of health, where the State, Territorial, municipal, or local health authorities will undertake to execute and enforce them, but if the State, Territory, municipal, or local health authorities shall fail or refuse to enforce such rules and regulations, the President of the United States shall execute and enforce the same, and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose.

Sec. 8. That it shall be the duty of said department to perform all the duties in respect to quarantine and quarantine regulations, which are provided for by this act, or by any existing act of the Congress of the United States, and all duties in regard to the prevention and spreading of diseases throughout the United States as provided for in this act, and to obtain information of the sanitary condition of foreign ports and places from which contagious and infectious diseases are, or may be, imported into the United States, and to this end the consular officers of the United States at such ports and places as shall be designated by the Commissioner of Public Health, shall make weekly reports to the department of the sanitary condition of the ports and places at which they are respectively stationed, according to such forms as the Department of Public Health shall prescribe; and the Commissioner of Public Health shall also obtain, through all sources accessible, including State and Territorial sanitary authorities throughout the United States, weekly reports of the sanitary condition of ports and places within the United States, and shall prepare, publish, and transmit to collectors of customs, and to State and Territorial boards of health, and through them to municipal health officers, and other sanitarians, weekly abstracts of the consular sanitary reports, and other pertinent information received by him, and shall also, as far as he may be able, by means of voluntary coöperation of State and Territorial authorities, and through them municipal authorities, public associations, and private persons, procure information relating to the climatic and other conditions affecting the public health.

Sec. 9. That it shall be unlawful for any merchant ship or other vessel, from any foreign port or place, to enter any port of the United States, except in accordance with the provisions of this act, and with such rules and regulations of State, Territorial and municipal health authorities as may be made in pursuance of, or consistent with, this act; and any such vessel which shall enter, or attempt to enter, a port of the United States in violation thereof, shall, upon conviction of the Master thereof, forfeit to the United States a sum to be awarded in the discretion of the court, not exceeding $5,000, which shall be a lien upon said vessel to be recovered by proceedings in the proper district court in the United States. In such proceedings the United States District Attorney for such district shall appear on behalf of the United States, and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

That any vessel, at any foreign port, clearing for any port or place in the United States, shall be required to obtain from the consul, vice-consul, or other consular officer of the United States at the port of departure, or from the medical officer, where such officer has been detailed by the President of the United States for that purpose, a bill of health in duplicate, in the form prescribed by the Department of Public Health, setting forth the sanitary history and condition of said vessel, and that it has in all respects complied with the rules and regulations in such cases prescribed for securing the best sanitary condition of the said vessel, its cargo, passengers and crew; and said consular, or medical, officer is required before granting such duplicate bill of health, to be satisfied that the matters and things therein stated are true; and for his services in that behalf he shall be entitled to demand and receive such fees as shall by lawful regulations be allowed, to be accounted for as is required in other cases.

The President of the United States in his discretion is hereby authorized to detail any medical officer of the government to serve in the office of the consul at any foreign port for the purpose of furnishing information, and making the inspection, and giving the bills of health hereinbefore mentioned. Any vessel clearing and sailing from any such port, without such bill of health, and entering any port of the United States shall, upon conviction of the Master thereof, forfeit to the United States not more than $5,000, the amount to be determined by the court, which shall be a lien on the same to be recovered by proceedings in the proper district court of the United States. In such proceedings the United States District Attorney for such district shall appear on behalf of the United States; and all such proceedings shall be conducted in accordance with the rules and laws governing cases of seizure of vessels for violation of the revenue laws of the United States.

Sec. 10.—That the Commissioner of Public Health shall from time to time, issue to the consular officers of the United States and to the medical officers serving at any foreign port, and otherwise make publicly known, the rules and regulations made by him, to be used and complied with by vessels in foreign ports, for securing the best sanitary condition of such vessels, their cargoes, passengers and crew, before their departure for any port in the United States, and in the course of the voyage; and all such other rules and regulations as shall be observed in the inspection of the same on the arrival thereof at any quarantine station at the port of destination, and for the disinfection and isolation of the same, and the treatment of the cargo and persons on board, so as to prevent the introduction of cholera, yellow fever, leprosy, bubonic plague, smallpox, or other contagious or infectious diseases; and it shall be unlawful for any vessel to enter said port to discharge its cargo or land its passengers except upon a certificate of the health officer at such quarantine station, certifying that said rules and regulations have in all respects been observed and complied with, as well on his part as on the part of the said vessel and its master, in respect to the same and to its cargo, passengers and crew; and the master of every such vessel shall produce and deliver to the collector of customs at said port of entry, together with the other papers of the vessel, the said bills of health required to be obtained at the port of departure, and the certificate herein required to be obtained from the health officer at the port of entry; and that the bills of health herein prescribed shall be considered as part of the ship's papers, and when duly certified to by the proper consular officer, or other officer of the United States, over his official signature and seal, shall be accepted as evidence of the statements therein contained in any court of the United States.

Sec. 11.—That the Commissioner of Public Health shall, and at such times as he may deem necessary, examine the quarantine regulations of all State and municipal boards of health, or detail an officer of the said department to make such examinations, and shall coöperate with and aid all State, municipal and local boards of health in the execution and enforcement of the rules and regulations made by the Department of Public Health under the provisions of this act, or any other act of the Congress of the United States providing for a quarantine against disease, and to prevent the introduction of contagious and infectious diseases into the United States from foreign countries, and into one State or Territory, or the District of Columbia, from another State or Territory, or the District of Columbia; and all rules and regulations made shall operate uniformly and in no manner discriminate against any port or place; and at such ports and places within the United States as have no quarantine regulations under State, Territorial or municipal authority, where such regulations are, in the opinion of the Commissioner of Public Health, necessary to prevent the introduction of contagious and infectious diseases into the United States from foreign countries, or into one State or Territory, or the District of Columbia, from another State or Territory, or the District of Columbia, and at such ports and places within the United States where quarantine regulations exist under the authority of the State, Territory, or municipality which, in the opinion of the Commissioner of Public Health, are not sufficient to prevent the introduction of such diseases into the United States, or into one State or Territory or the District of Columbia, from another State or Territory or the District of Columbia, the Commissioner of Public Health, if in his judgment it is necessary and proper, shall, with the advice and approval of the advisory council, make such additional rules and regulations as may be necessary to prevent the introduction of such diseases into the United States from foreign countries, or into one State or Territory, or the District of Columbia, from another State or Territory or the District of Columbia, and when said rules and regulations have been made and approved by the President of the United States, they shall be promulgated by the Commissioner of Public Health and enforced by the sanitary authorities of the State, Territories and municipalities, where the State, Territorial or municipal health authorities will undertake to execute and enforce them; but if the State, Territorial or municipal authorities shall fail or refuse to enforce said rules and regulations, the President of the United States shall empower the Commissioner of Public Health to execute and enforce the same and adopt such measures as in his judgment shall be necessary to prevent the introduction or spread of such diseases, and may detail or appoint officers for that purpose. The Commissioner of Public Health shall make such rules and regulations, with the advice and consent of the advisory council, and approved by the President of the United States, as are necessary to be observed by vessels at the port of departure and on the voyage, where such vessels sail from any foreign port or place in the United States, to secure the best sanitary condition of such vessel, her cargo, passengers and crew, which shall be published and communicated to, and enforced by, the consular officers of the United States. None of the penalties herein imposed shall attach to any vessel, or owner, or officer thereof, until a copy of this act, with the rules and regulations made in pursuance thereof, has been posted up in the office of the consul, or other consular officer of the United States, for ten days, in the port from which said vessel sails; and the certificate of such consul, or consular officer, over his official signature, shall be competent evidence of such posting in any court of the United States.

Sec. 12.—That on the arrival of an infected vessel at any port not provided with proper facilities for treatment of the same, the Commissioner of Public Health may remand said vessel, at its own expense, to the nearest National or other quarantine station, where accommodations and appliances are provided for the necessary disinfection and treatment of the vessel, passengers and cargo; and after treatment of any infected vessel at a National quarantine station, and after certificate shall have been given by the United States quarantine officer at such said station that the vessel, cargo and passengers are each and all free from infectious disease, or danger of conveying the same, said vessel shall be admitted to entry to any port of the United States named within the certificate. But at any ports where sufficient quarantine provision has been made by State, Territorial or local authorities, the Commissioner of Public Health may direct vessels bound for said ports, to undergo quarantine at such said State, Territorial or local station.

SEC. 13.—That whenever it shall be shown to the satisfaction of the President of the United States that by reason of the existence of cholera, yellow fever, or other infectious or contagious diseases in a foreign country, there is danger of the introduction of the same in the United States, and that notwithstanding the quarantine defense, this danger is so increased by the introduction of persons or property from such country that a suspension of the right to introduce the same is demanded in the interest of the public health, the President shall have power to prohibit, in whole or in part, the introduction of persons and property from such countries or places as he shall designate, and for such period of time as he may deem necessary.

SEC. 14.—That whenever the proper authorities of a State or Territory shall surrender to the United States the use of the buildings and disinfecting apparatus at a State quarantine station, the Commissioner of Public Health shall be authorized to receive them and to pay a reasonable compensation to the State or Territory for their use, if in his opinion they are necessary to the United States.

SEC. 15.—That whenever necessary there shall be purchased or erected, under the orders of the Commissioner of Public Health, with the approval of the Secretary of the Treasury, suitable warehouses with walls and enclosures, where merchandise may be unladen and deposited from any vessel which shall be subject to a quarantine or other restraint, pursuant to the health laws of any State, at such convenient places therein as the safety of the public revenue and the observance of such health laws may require.

SEC. 16. That whenever the cargo of a vessel is unladen at some other place than the port of entry or delivery under the foregoing provisions, all the articles of such cargo shall be deposited, at the risk of the parties concerned therein, in such public or other warehouses or enclosures, as the collector of customs shall designate, there to remain under the joint custody of such collector and of the owner or master, or other person having charge of such vessel, until the same are entirely unladen or discharged, and until the articles so deposited may be safely removed without contravening such health laws. And when such removal is allowed, the collector having charge of such articles may grant permits to the respective owners or consignees, their factors or agents, to receive all merchandise which has been entered, and the duties accruing upon which have been paid, upon the payment by them of a reasonable rate of storage, which shall be fixed by the Secretary of the Treasury for all public warehouses and enclosures.

SEC. 17.—That the master of any vessel employed in transporting passengers between the United States and Europe, is authorized to maintain good discipline, and such habits of cleanliness among the passengers as will tend to the preservation and promotion of health; and to that end he shall cause such regulations as he may adopt for this purpose to be posted up, before sailing, on board such vessel in a place accessible to such passengers, and shall keep the same so posted up during the voyage. Such master shall cause the apartments occupied by such passengers to be kept at all times in a clean, healthy state; and the owners of every such vessel so employed are required to construct the decks, and all parts of the apartments, so that they can be thoroughly cleansed; also to provide a safe, convenient privy or water-closet for the exclusive use of every one hundred passengers. The master shall also, when the weather is such that the passengers can not be mustered on deck with their bedding, and at such other times as he may deem necessary, cause the deck occupied by such passengers to be cleansed with chlorid of lime, or some other equally efficient disinfecting agent. And for each neglect or violation of any of the provisions of this section, the master and owner of any such vessel shall, upon conviction thereof, be severally liable to the United States in a penalty of one hundred dollars, to be recovered in any circuit or district co within the jurisdiction of which such vessel may arrive, or from which she is about to depart, or at any place where the owner or master may be found, or to imprisonment of not less than thirty days, or by both fine and imprisonment, in the discretion of the court.

SEC. 18.—That whenever the evidence shall appear conclusive to the President of the United States that cholera, yellow fever, typhus fever, typhoid fever, smallpox, diphtheria or other plague, exists in any State or Territory, or in the District of Columbia, to such an extent that there is great danger of the spread of such disease into other States, Territories, or the District of Columbia, by means of vessels and vehicles engaged in the transportation of goods, passengers, and the United States mail, by land and water, or by persons traveling, on foot or otherwise, he is hereby authorized to call together the Commissioner of Public Health and advisory council to take such action as may be necessary to prevent the spread of such disease from one State or Territory into another, or from any State or Territory into the District of Columbia, or from the District of Columbia into any State or Territory, and the Commissioner of Public Health shall make such rules and regulations, by and with the advice and consent of the advisory council, and the approval of the President of the United States, as may be necessary to meet the emergency, and all such rules and regulations shall have the force of law, and supersede all other rules, laws or regulations for the time being at the place designated, and any one violating any such rules and regulations shall, upon conviction thereof, be subject to arrest and imprisonment for a period of not less than thirty days. The Commissioner of Public Health may temporarily employ such inspectors and other persons as may be necessary to execute all rules and regulations adopted as aforesaid to stamp out and prevent the spread of such disease.

SEC. 19.—That the Commissioner of Public Health or any one appointed by him may, with the approval of the Secretary of the Treasury, select suitable localities for establishing stations on rivers and other lines of interstate commerce and travel by railroads, and may cause to be erected necessary temporary buildings for the disinfection of passengers, baggage, cargoes, vessels and vehicles, and may enforce such rules and regulations relating thereto as may have been, or may be, prescribed therefor.

SEC. 20.—That the Secretary of the Treasury is authorized whenever a conformity to such quarantines and health laws requires it, and in respect to vessels subject thereto, to prolong the terms limited for the entry of the same, and the report of the entry of their cargoes, and to vary or dispense with any other regulations applicable to such reports or entries. No part of the cargo of any vessel shall, however, in any case be taken out or unladen therefrom otherwise than is allowed by law, or according to the regulations and rules adopted and promulgated by the Commissioner of Public Health under the provisions of this act, or any existing act.

SEC. 21.—That the Commissioner of Public Health and the advisory council, created under this act, shall devise such means and methods as they may deem most effective to control and exterminate all domestic diseases transmitted by contact, such as phthisis pulmonalis or tuberculosis, diphtheria, scarlet fever, smallpox, leprosy and all diseases dangerous to the public health. That the said Department of Public Health may, under the direction of the Commissioner of Public Health, make investigations, both in the United States and, if necessary, in foreign countries, into the nature, origin and prevention of contagious, epidemic and other diseases, and the causes and conditions of particular outbreaks of disease in the United States, and in order that said experiments may be made, the Commissioner of Public Health shall, if necessary, enlarge the laboratories of the Marine Hospital Service, erect and maintain such other laboratories as may be necessary, and to equip said laboratories with the best appliances obtainable for investigation into the causes of disease and how to prevent and obliterate the same.

SEC. 22.—That the Commissioner of Public Health may engage the services of experts, not to exceed six in number, in such laboratories in the United States as are best adapted by location, equipment or special fitness, to aid the Department of Public Health in making investigations, the pay to be allowed such experts to be fixed by the Commissioner of Public Health. It shall also be the duty of the said department to investigate the best method for the disposal of sewage, the protection of public water supplies, to ascertain the best sanitary methods, to investigate all matters which relate to the public health, and to gather statistics relating to marriages, births, and deaths, and cause of death, and when the same [illegible] be done without prejudice to [illegible] [illegible]ublic se[illegible] [illegible] of the United [illegible] may [illegible] [illegible]ts of the government for temporary duty to act under the direction of said department, to carry out the provisions of this act, and all other acts of the Congress of the United States providing for a quarantine against disease and to prevent the spread of any disease within the United States.

Sec. 23.—That the Secretary of the Department of Agriculture, and the Commissioner of the Department of Labor shall respectively furnish for the use of the Department of Public Health such information as they shall from time to time gather upon the following and kindred subjects, to-wit: 1. The investigation of foods; also drugs, liquors and wines, their standard of purity and their adulterations. 2. The transmission of disease from animal to man and *vice versa*, such as tuberculosis, glanders, etc. 3. The statistics of climate with relation to infectious and other diseases. 4. The statistics and conditions relating to consanguineous and other marriages liable to produce physically and mentally defective offspring; and any information leading to race improvement through better marriage selection than obtains at present. 5. The statistics relating to child labor and to confined and unhealthy occupations, etc.

Sec. 24.—That it shall be lawful for the Commissioner of Public Health, when in his judgment it may seem necessary to confer upon any municipal or local health officer, or health authority, through the State or Territorial authorities in which he may have jurisdiction, power also to enforce the provisions of this act and any rules and regulations made in pursuance thereof, and any person who shall knowingly disobey or violate any order, rule or regulation made pursuant to the authority herein conferred, shall, upon conviction thereof, be deemed guilty of a misdemeanor punishable by a fine of not less than $500 or by imprisonment for a period of not less than one year.

Sec. 25.—That the Commissioner of Public Health shall make an annual report of the operations of the Department to Congress with such recommendations as he may deem important to the public interest; and said report, if ordered to be printed by Congress, shall be done under the direction of the Commissioner of Public Health, and that all mail matter of whatever class relative to the Department of Public Health and its duties, and addressed to the Commissioner of Public Health and indorsed "Official Business, Department of Public Health," or mailed by said department, shall be transported free of postage; and if any person shall make use of such indorsement to avoid the payment of postage in his private letter, package or other matter in the mail, the person so offending shall, upon conviction thereof, be deemed guilty of a misdemeanor and be subject to the penalty prescribed by the existing law.

Sec. 26.—That the Commissioner of Public Health is authorized to appoint for duty not to exceed six sanitary inspectors, at a salary not to exceed $1,800 per annum each, and their necessary actual traveling expenses; at least two of these inspectors shall be experts in quarantine matters, two shall be skilled bacteriologists, and one shall be an expert statistician. The Commissioner of Public Health is authorized to employ one chief clerk at a salary of $1,800; one clerk of class three at $1,400; and one clerk of class two at $1,400; and four clerks at $1,000 each, one messenger at $800, one stenographer at $800, one watchman at $600 per annum.

Sec. 27.—That any officer, or person acting as an officer, or agent at any quarantine station, or other person employed to aid in preventing the spread of disease, who shall wilfully violate any quarantine laws of the United States, any of the provisions of this act, or any of the rules and regulations made and promulgated as provided for in this act, or any other act of the Congress of the United States providing for and regulating quarantine against disease, or to aid and prevent the spread of any disease within the United States, or any lawful order of his superior officer, or officers, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not more than $500, or imprisonment for not more than one year or both, in the discretion of the court.

Sec 28. - That when any common carrier or officer, agent, or employe of any common carrier, shall wilfully violate any of the quarantine laws of the United States, or the rules and regulations made and promulgated as provided for in this act, or any other act of the Congress of the United States regulating and maintaining a quarantine against disease, and to prevent the spread of disease within the United States, such common carrier, officer, agent, or employe shall be deemed guilty of a misdemeanor, and shall upon conviction thereof be punished by a fine of not more than $500 or imprisonment for not more than two years, or both, in the discretion of the court.

Sec. 29.—That any person who shall wilfully violate any rule or regulation made and promulgated by authority of this act, or any other act of the Congress of the United States, providing for a quarantine against disease, and to prevent the spread of any disease within the United States, shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not more than $500 or imprisonment for not more than two years, or both, in the discretion of the court.

Sec. 30.—All convictions for the violation of any of the provisions of this act, or any other act of the Congress of the United States, providing for a quarantine against disease, and to prevent the spread of any disease within the United States, shall be tried in the district wherein the offense was committed, and it shall be the duty of the United States district attorney for such district to appear on behalf of the United States, and all trials and proceedings shall be conducted in accordance with the rules and laws governing criminal cases triable in the United States courts.

Sec. 31.—That all rules made and promulgated, adopted and published pursuant to the provision of an act entitled "An act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service," approved Feb. 15, 1893, shall remain in force until the same are annulled, changed, or modified, as provided for by this act, and other acts of Congress providing for quarantine against diseases, and the spread of any disease within the United States.

Sec. 32.—That all rules and regulations made and promulgated to enforce the provisions of this act, or any other act of the Congress of the United States, providing for a quarantine against disease, and to prevent the spread of any disease within the United States, shall be approved by the President of the United States, and when approved by him shall have all the force and effect of law.

Sec. 33.—That the Commission of Public Health shall annually submit to the Secretary of the Treasury, for transmission to Congress, estimates of the expense necessary to maintain properly the Department of Public Health for the ensuing year. That there shall be, and hereby is, appropriated out of the moneys in the Treasury and not otherwise appropriated, the sum of $75,000 for the purpose of this act. The sum of $1,000,000 already appropriated and known as an emergency fund to be expended by the President of the United States or the balance thereof not already expended, shall be a fund and held and expended at the discretion of the President of the United States in the execution of the provisions of this act.

Sec. 34.—Sec. 1, Chapter 19, Supplement to the Revised Statutes, Vol. 1, second edition, revised and continued (page 637) is hereby amended so as to read as follows:

Sec. 1. *Be it enacted, etc.*, That medical officers of the Marine Hospital Service of the United States shall hereafter be appointed by the President, by and with the advice and consent of the Senate, and no person shall be so appointed until after passing a satisfactory examination in the several branches of medicine, surgery and hygiene before a board of medical officers of said service. Said examination shall be conducted according to rules prepared by the Commissioner of Public Health and approved by the advisory council and the President.

Sec. 35.—Sec. 4,796 and 4,082, Revised Statutes of 1878, Chapter 66, laws of 1878, Supplement to Revised Statutes, Vol. 1, second edition, revised and continued: "An act to prevent the introduction of contagious or infectious diseases into the United States."

Paragraph 9, chapter 130, laws of 1875, same supplement: "An act making appropriations for sundry civil expenses of the Government for the fiscal year and for other purposes."

Sec. 7, chapter 156, laws of 1875, same supplement: "An act to promote economy and efficiency in the Marine Hospital Service."

Chapter 51, laws of 1890, same supplement: "An act to prevent the introduction of contagious diseases from one State to another, and for the punishment of certain offenses."

Paragraph 5, chapter 195, passed July 16, 1892.

Paragraph 3, chapter 211, passed March 3, 1893.

Paragraph 6, chapter 174, passed July 31, 1894.

Chapter 300: An act amendatory to the aforesaid, passed Aug. 18, 1894

Paragraph 9, chapter 177, passed March 2, 1895.

Chapter 114, Supplement of the Revised Statutes, Vol. 2, laws of 1893: 'An act granting additional quarantine powers and imposing additional duties upon the Marine Hospital Service," and all other acts, or parts of acts, inconsistent herewith, or repugnant to the provisions of this act, are hereby repealed.

Sec. 36.—This act shall take effect and be in force sixty days after its passage, within which time the Commissioner of Public Health and Assistant Commissioner of Public Health may be appointed.

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SATURDAY, OCTOBER 9, 1897.

ARE OUR BACTERIOLOGIC METHODS COMPLETE AND SCIENTIFIC?

The recognition of pathologic bacteria is now all important and in many disorders an essential part of medical diagnosis. There is no doubt as to the advantage in knowledge and accuracy that has been gained by the methods now employed, and medical bacteriologists at least have generally come to consider them as fully meeting all scientific demands. It is true that questions of identity of bacterial species often arise, and that uncertainty exists in regard to some practically important points, but there are apparently few who are inclined to doubt the prevalent methods of research as being fully sufficient for their ultimate solution. Any charge that the commonly accepted procedures in the study of these organisms are not in accordance with the approved methods of scientific investigation and liable to give imperfect of not actually misleading notions as to their real character and behavior under some very possible circumstances would probably be a surprise to many bacteriologists and would be received with doubt if not with absolute discredit.

This, however, is just the accusation brought against the prevailing method of bacteriologic study by no less eminent an authority than Professor H. Marshall Ward in his opening address as president of the Botanical Section of the British Association for the Advancement of Science at its late Toronto meeting. He showed how the earlier bacteriologists, Cohn, De Bary and Brefeld, followed a different plan from that now in vogue, and one more in accordance with approved scientific ideas; they sought to study individuals of the species, to isolate single spores under the microscope, and to trace continuously their growth through the fully developed form to the production again of spores; in short, to study the life history of the individual bacterium, which is the only true method in natural history. This was a difficult task and many mistakes were made by the earlier workers in the field, and had investigators been confined to this method alone it is not probable that bacteriologic diagnosis would even now be as important and efficient as it has been for a number of years past. Undoubtedly the introduction of the colony method of culture on gelatin and other substances, by Koch in 1881, was in its way a great stimulus to investigation and is responsible for the great extension and advance made since then in the practical utilization of its results. The earlier investigators, though on the right track, with their more imperfect appliances, fell into many errors, and the rapid method of making wholesale cultures was very naturally heralded as a great step in advance and, as it has been called, "the Columbus egg of bacteriology." Nevertheless, as Professor Ward says, "it turned the current of investigation of bacteria from the solid and trustworthy ground established by Cohn, Brefeld and De Bary, into an entirely new channel and one that really abandons the proper method of morphologic study, to satisfy itself with what is in comparison a superficial and untrustworthy one. While the more difficult method of studying the individual bacterium from spore to spore is subject to error from defects of technic and observation, it is nevertheless an ultimately practicable one, and the only one by which disputed points can be finally and satisfactorily solved. The importance of this can be shown by the testimony of Koch himself as quoted by Eisenberg in the preface to his "Bacteriological Diagnosis." He says: "The further bacteriologic investigation advances, the more obvious becomes the fact that it is absolutely unallowable to base our diagnosis of a given bacterium upon anything short of a careful consideration of all its characters and properties," and these are not to be ascertained beyond question by studying bacteria only *en masse* and neglecting their possible individual peculiarities. These are, in fact, implied in their behavior and modes of growth in the aggregated colonies, which must depend upon structural peculiarities of the individual members. The present prevalent method is, as Ward points out, only comparable to a botanist satisfying himself with observation of oaks, for example, as seen in masses in a forest, or grass and clover as they appear in a general view of a meadow, or, to approach nearer to the actual condition, to classifying molds by the appearance of the patches. There is no parallel to this in natural history, unless we admit as such the species of corals and sponges, but here the special indiv organisms are not neglected by the naturalist and wide distinctions are made between apparently similar forms. Species are not made, as in bacteria, exclusively on their behavior in aggregated masses, observed only as such, or if so, are not considered final and absolute determinations indicating an exhaustive knowledge of their peculiarities and life history, as appears to be the case in medical bacteriology. The quotation from Koch, which has been given above, which while literally accepted would seem to cover all the scientific demands, appears to have originally referred only to the imperfect method here deprecated: the observation of the form, color, marking and physiologic behavior of the colonies themselves and in different culture media, the popular and prevalent procedure, and the one almost, if not quite, exclusively taught in our medical text-books.

Professor Ward does not unduly disparage the results of the work of what he calls the test-tube school of bacteriologists; he admits that they have done a large amount of what may be considered valuable preliminary work, but he objects to and would discourage species-making merely on the data thus obtained. That his criticisms are just will probably be admitted, but it may be claimed that the present methods are amply sufficient for all medical needs and that without them the progress that has been made would have been impossible. The last of these propositions may be accepted as true without admitting the correctness of the other; imperfect knowledge may be better than none, but it can not be claimed to be all that is desirable. There is no need to say that our acquaintance with certain pathogenic bacteria is altogether insufficient, and any plan that will add to our knowledge of them ought to be welcomed. Even if it should be necessary to revise much of what has been written on medical bacteriology to meet all scientific demands the results ought to be worth the trouble they have cost. At present it is not satisfactory to be told that the deficiencies that exist in our knowledge in regard to many important points may be due to the inconsiderate acceptance of imperfect and insufficient methods of investigation.

However Professor Ward's address is received it should be a stimulus to more exact and thorough studies in medical bacteriology. In these minute but important investigations exact methods are as necessary as in any others, and while we may have to depend largely, as heretofore, upon the study of colony cultures, they need not be considered as the *ne plus ultra* of research of this particular branch of medical science.

THE ROLE OF GRANULATION TISSUE IN WOUND INFECTION WITH PATHOGENIC BACTERIA.

Nicolaus Afanassieff[1] of Moscow undertook to study the reactive changes that occur in granulation tissue when pathogenic bacteria are introduced into it. Some of the results obtained seem of more than ordinary interest and importance because they touch one of the most interesting questions in biology, namely, the nature of the struggle, if one may use the expression, of the organism against infection.

While very many investigators have studied the ability of granulation tissue to absorb alkaloids, various other chemic substances, and infusions of decomposing materials, none of the previous researches have taken up the question, under what conditions does infection with pathogenic bacteria of the whole organism take place through granulation tissue. Afanassieff made it his object to study the consequences of experimental infection of granulation tissue with various pathogenic microbes. After trying several methods it was found, by excising a small piece of skin with the subcutaneous tissue, and then pouring on a thick layer of collodion, that on removing the layer of collodion on the third or fourth day, there would be a nicely granulating surface; this method was found very serviceable in the case of such animals as mice, rabbits, chickens and pigeons. In the case of dogs and sheep a small wound was made and through this a sterile glass rod, about one and one-half inches long, was forced into the subcutaneous tissue. The wound was then sutured, covered with collodion, and after four days the sutures would be removed and the glass rod carefully extracted so as not to injure the granulations and cause hemorrhage. Under all circumstances great care was always taken not to experiment upon bleeding surfaces, lest the microbes should be introduced directly into the circulation. The microbes experimented with were principally anthrax bacilli and the vibrio Metchnikoff. The virulence of the cultures was carefully determined beforehand and only typical and highly virulent cultures were used. A small quantity was then placed on the granulating surface and simultaneously an equal amount of the same culture was placed on a fresh wound on the same place of the control animal as the granulating wound on the original animal. Subsequently the juice of the granulation tissue and the granulation tissue itself were examined microscopically and bacteriologically. The virulence of the cultures obtained from the granulation tissue was carefully determined and cultures were made from the internal organs of the animals that perished.

Without introducing the protocols and statistics of the experiments, it may be allowed to say that they show that animals infected with pathogenic microbes placed on an uninjured granulating wound, do not succumb; that a general infection of the organism does not take place; the bacteria placed on the granulations do not, if these are healthy, reach the internal organs. Furthermore, that such animals become almost wholly immune to subsequent infection with fully virulent cultures introduced through fresh wounds. Inasmuch as bacteria did not enter the organism when placed on granulating wounds, it must be concluded that the absorption of some products of the reaction between the bacteria and the granulation tissue produced the more or less well marked immunity.

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[1] Ziegler's Beiträge, Bd. xxii, Heft 1, 1-6.

The examination of the infected granulation tissue by means of cover-glass preparations of the juice, as well as the suitably prepared sections of the tissue itself, shows in brief that the bacteria undergo a progressive destruction in the form of various degenerations and disintegrations. This process of destruction was observed to begin so early that but little, *often no, signs of phagocytosis were evident; but as* the bacterial disintegation became more marked phagocytosis became more and more pronounced. The earliest evidences of degeneration of the bacteria consists in irregular or poor staining in ordinary solutions; in the anthrax bacilli fine granules would also appear; more rarely the bacteria would swell up into worm-like, irregularly and poorly stained, often thin threads.

Another form of degeneration of the bacteria was observed in a failure to stain with basic dyes and, on the other hand, affinity for acid coloring matters, such as eosin; this degeneration was noted in the free as well as the intracellular bacteria, and a few times as early as fifteen minutes after the placing of the bacteria on the granulation. BORDET, METCHNIKOFF and others have described such *eosinophile* bacteria in the interior of cells and have interpreted the change in the affinity for stains as evidences of phagocytosis. Furthermore, AFANASSIEFF also observed granular, bacterial detritus, staining red with eosin, in the interior of the leucocytes. Similar changes also occurred when bacteria were placed on fresh wound surfaces, but much later and in less pronounced degree. It was noted that when bacteria such as mentioned were placed on the wounds a free exudation of serum took place, lasting a few hours. These observations go to show that in granulation tissue bacteria may begin to disintegrate under the influence of the tissue juice without any participation of the phagocytic leucocytes. AFANASSIEFF interprets this as meaning that the phagocytosis plays either no part or merely a secondary one in the struggle of the organism against infection; it would seem *that this might be true as regards actual phagocytosis* in this case, but it must not be forgotten that the extracellular, bactericidal action of the serum may, in the last instance, depend upon substances produced or liberated by leucocytes and other cells.

In conclusion it may be allowed to mention the more important conclusions to be drawn from AFANASSIEFF'S research:

1. General infection of the organism with pathogenic bacteria does not take place through healthy, uninjured young granulation tissue.

2. Animals experimented on by placing pathogenic bacteria on granulating wounds become less susceptible than normally to a subsequent infection with fully virulent cultures through fresh wounds.

3. Pure cultures made from infected granulation tissue ten to twelve hours after infection, were found to be more or less attenuated.

4. Pathogenic bacteria placed on granulating wounds undergo a progressive disintegration under the action of the tissue juice, the processes of phagocytes playing a secondary role.

Finally, it should be mentioned that these observations are of *direct practical interest* because they indicate that healthy granulation tissue forms a protective wall against general infection; consequently, the surgeon should treat granulating surfaces with great tenderness and care, so as *not to produce injuries to* the young tissue through which infection would be more liable to occur.

ON THE OCCURRENCE OF THE FAT-SPLITTING FERMENTS IN PERITONEAL FAT NECROSES AND THE HISTOLOGY OF THESE LESIONS.

The interesting subject of fat necrosis in its relation to certain diseases of the pancreas has been commented upon in these editorial columns before. The coincidence of disease of the pancreas with fat necrosis in the peritoneum and elsewhere has lent support to the view that a *definite relation of cause and effect* must obtain between the gland and the changes in the fat. LANGERHANS[1] was the first to furnish experimental proof of this assumption. He injected sterile pulp of fresh pancreas into the perirenal tissue of a rabbit, with the result of causing inflammatory changes and some necrosis of the fat. Subsequent experiments by DETMER, HILDEBRAND, KÖRTE and WILLIAMS[2] have established: 1, that the secretion of the pancreas may enter the peritoneal cavity without setting up diffuse inflammation; 2, that in certain instances free, sterile pancreas or the pancreatic secretion causes focal fat necrosis; and 3, the element of *infection plays an insignificant, if not unessential,* part.

In order to reach more exact *notions of this pathogenic* action of the pancreatic secretion, FLEXNER[3] attempted to demonstrate the *presence of the fat-splitting* ferment in areas of necrosis and its absence from normal human fat. Without going into details as to chemic methods employed for demonstrating this ferment, it will suffice to state that positive reactions were obtained in a human case of widely disseminated necroses and in areas of fat necrosis produced by ligating the veins and lacerating the pancreas in cats and dogs when the animals were killed no longer than three to four days after the operation. By excising necrotic foci on the third day or so it could be shown that the fat-splitting ferment which was then present would gradually disappear. Microscopic examination showed a marked difference between the early and the late lesions, the former, which contain the ferment, being acute, the others presenting pronounced evidences of cicatrization. Hence FLEXNER concludes that although it can not be affirmed that steapsin is the direct cause of the necrosis, yet such an assumption is rendered highly probable by its constant occurrence in the diseased areas, its absence from healthy fat and the nature of the pathologic changes. The escape of the pancreatic secretion into the peri- and para-pancreatic tissues must be regarded as the cause of the fat necroses, and this escape is made possible by lesions of the pancreas itself, and also by disturbances of its circulation.

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[1] "Experimenteller Beitrag zur Fettgewebsnekrose," Virchow's Festschrift, 1891.

[2] All quoted by Flexner, "Trans. American Assoc. of Phys.," 1

[3] Loc. cit.

That necrosis of fat cells may occur from other causes is not excluded by these demonstrations. The cause of the necrosis found in the marrow of bones by PORFICK,[4] and in the subcutaneous and pericardial fat by CHIARI,[5] would be difficult to determine. Perhaps micro-organisms may play some part in these instances.

As regards the histologic changes, the main facts to be gleaned from the observations of PORFICK, FITZ. CHIARI, LANGERHANS and others are the following: The process begins with a decomposition of the neutral fat contained within the fat cells; the fluids are eliminated, the fatty acids remain behind as crystals which, after a time, unite with calcium to form insoluble lime salts; in the meantime the nuclei of the affected cells lose their affinity for stains, and soon the lime compounds form granules, rings and hyaline masses. Around such foci reactive inflammatory changes soon occur. Late proliferation of the fixed cells begin, the necrotic material gradually shrinks and finally it becomes completely replaced with connective tissue. When such changes occur around areas located in the connective tissue septa or parenchyma of the pancreas, small districts characteristic of interstitial pancreatitis result. Around the areas of necrosis produced experimentally, FLEXNER observed the occurrence of giant cells during the process of absorption.

From this brief review of some of the points in connection with fat necrosis, it would seem that our knowledge of its genesis is becoming more and more complete and satisfactory.

Let us have a Department of Public Health!

THE PUBLIC HEALTH BILL.

We print in this week's issue the Bill to establish a Department of Public Health, recommended by the Committee of our ASSOCIATION at Philadelphia. It has undergone, as will be noticed, very careful revision and it is believed it now meets the views of nearly all the members. The passage of the Bill may inconvenience some "coburghers" in official positions, but such considerations should not stand one moment in the way of the Bill, which is demanded by every consideration of humanity, by the voice of the united profession and by the dictates of common sense. The present calamitous epidemic is in itself an eloquent and terrible warning against the continuance of the present conditions. The Government quarantine was moved from Chandleur to Ship Island in spite of the lessons of the past, in spite of the law, in spite of the protest of the local health officer, and it is due to State Health Officer HARALSON of Mississippi, to say that during the past year he repeatedly protested against the reoccupancy of Ship Island quarantine. But this is a minor matter, notwithstanding the lives that have been lost in consequence of the sad blunder. The real need is for a Department of Public Health; at its head a commissioner who will not rule the Department by fear or favor; who will neither farm out the best positions in the service to personal favorites and sycophants, nor spend thousands of public money uselessly, and who will carry out the law with regard to conscience, right and the wishes of the people. At the proper time the Committee of the ASSOCIATION will urge the passage of this Bill, and at the suggestion of the Chairman of the Committee, Dr. WINGATE, we have had the bill electrotyped, so that any member desiring to write to his member of Congress or Senator in regard to it can have a copy sent to him by return mail. This is the way to secure the passage of the Bill, and now is the proper time when the whole country has been startled by the incompetence of the existing management.

Let us have a Department of Public Health!

THE "RECOGNITION" OF MEDICAL COLLEGES.

We observe in the columns of our esteemed contemporaries, the lay press, that frequent applications are made to the Board of Examiners, State Boards of Health, etc., for recognition by certain alleged medical colleges, some that are engaged either in selling diplomas outright or in giving them away after more or less protracted periods of study; usually less. We have had three letters within a week inquiring whether the "Independent" Medical College of Chicago was "recognized" or not. We have similar inquires concerning other alleged medical colleges. In our humble judgment the test of a medical college is its curriculum and its equipment for teaching students. Colleges that are unprovided with the modern facilities for teaching students should not be recognized by any board, and a requirement to that effect might well be the first test. The efficiency of the medical school is in proportion to the completeness or otherwise of its teaching outfit.

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[4] Virchow's Archiv, lvi, 1872, p. 542.

[5] Prager Med. Wochenschrift, viii, 1883.

A school which is not fully equipped should be suppressed. So far as this "Independent" Medical College is concerned we do not believe it has any existence except on paper. Its graduates are to be considered as practicing medicine and obtaining money from their patients under false pretentions. This is, as we understand it, one of the concerns that offer to teach students at their own homes and prepare written questions and answers so that the student may not be put to the trouble of visiting the "college," but may have his degree conferred *in absentia*. The time has come when medical men should speak out in regard to certain half-baked institutions which flaunt their signs in the air like those announcing an approaching circus.[1] The mere desire of some half-educated person to be a "professor" should not of itself constitute any reason for recognizing a paper college, and that there are numerous medical colleges that are not demanded by the community or the necessities of the times is self-evident, and the profession itself should neither encourage students in going to these cheap John establishments nor give countenance to the persons engaged in keeping them up. So far as the "Independent Medical College" is concerned, we have never heard that they ever passed through the formality of giving lectures, and indeed it is quite probable that the kind of medicine taught by this particular diploma mill may come as well by mere contact with the sheepskin as by personal instruction of a venal "professor."

Let us hope that the State Boards of Examiners and licensing bodies everywhere may stimulate and encourage good schools by strong and vigorous rulings concerning teaching methods and appliances.

CORRESPONDENCE.

Drs. Rochester and J. R. Lemen on Paquin's Serum.

St. Louis, Sept. 29, 1897.

To the Editor:—Dr. Rochester's letter (Journal American Medical Association of September 18) in reply to my explanation of his unfair criticism of my work (Journal, August 31) is self-condemning. It does not demonstrate that he was justified, and that his efforts to find the truth about sero-therapy in tuberculosis were unbiased. It emphasizes the spirit of reckless indulgence which was manifest in his criticisms of a remedy, which, although not claimed by me to be perfect, is just what I have represented it to be, and was endorsed by many superior physicians. And it again shows a disposition to ruin rather than help those who sacrifice their existence in work to advance the sciences of medicine. I was humiliated to have to publish letters to explain my position, but I was justified; Dr. Rochester left no other recourse.

As to Dr. Joe Lemen of St. Louis, his good results with serum (Paquin) in tuberculosis are on record, and the records were written by himself and sent to me. The case of acute tuberculosis (the purest type of the disease) that recovered under this treatment, three years ago, under his care, is still living and well, and may be seen by the doctors who will go to the trouble to get at the facts. This is evidence that he wrote the truth then.

As to any special damage produced by antitubercle serum, such a thing does not occur in the hands of the careful physician. The usual untoward effects of sero therapy in general, occasionally noted after injections of the best diphtheria antitoxins of Germany, France and other countries, have rarely occurred with antitubercle serums. Deaths have occurred from the use of the most vaunted foreign antidiphtheric serums, but never with antitubercle serum (Paquin). We are frank enough in our literature and directions *to explain all the untoward effects known*. Such precautions are not generally taken by other antitoxin-producers. Thus advised, a conscientious physician will act properly and safely. Such serious accidents as are charged to some diphtheria serums, have never been reported as resulting from the use of any of the serums (for tuberculosis, tetanus, diphtheria, erysipelas, septicemia, puerperal fever, etc.) of the Paul Paquin Laboratories.

Dr. Lemen's comparison between the effects of antitubercle serum and Koch's old tuberculin amazes me. I thought Dr. Lemen knew that one is antitoxin, the product of immunized blood, and the other a toxin, the product of germ life in culture. These two agents are antipodes. They have opposite effects. No amount of unjust criticisms and unjust repudiation on the part of Dr. Lemen or any one else, no matter how good a physician, can outweigh the reports made by the scientific investigators of character who have made favorable reports. Such men can not be influenced by personal motives, or led by unscrupulous taskmasters. In self defence, the ground of the Doctor's attack might be given, did I not feel it indelicate and too ungenerous. This must be held as a *dernier ressort* should it become absolutely necessary to repel any more of the unkind criticisms and fallacies. I court fair criticisms of a scientific nature and gladly discuss them. They conduce to the advance of science. But mere denials or statements, or repudiations, without scientific backing, and without clinical records, particularly when inspired by unworthy motives, force upon me very painful duties. I can only meet them in part and can scarcely do justice to myself, without touching on personalities and giving offence. The consolation I have is the feeling that, as a rule, the readers realize quickly and appreciate the animus of an unfair critic. Paul Paquin, M.D.

An Aseptic Hospital for Yellow Fever.

Chicago, Oct. 4, 1897.

To the Editor:—During the epidemic of yellow fever in 1878, I suggested the plan of what might be called an aseptic hospital. The suggestion brought forth no fruit. It seems to me that the present is an opportune time to repeat my proposition. It is based on the assumption that the germ of the disease pervades the atmosphere and that, as a necessity, the patient is continually inspiring new quanta of the noxious toxin.

The suggestion is to prepare a building for hospital purposes so that it shall be air-tight. Air enters it and leaves it through channels comparable to the ordinary furnace and ventilating pipes. This air has been heated to a degree judged to be sufficient to destroy the yellow fever germ and subsequently cooled to a proper temperature. It is forced into the building by an air blast, and it is withdrawn from it by the suction force of a pump. In this way all parts of the sanitarium are supplied by air freed from germs of the disease. The exhaust air from the building is also on its way outward purified by heat.

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[1] When we wrote this line we were not thinking of a nocturnal institution that has stretched a canvas sign across one of the principal streets of Chicago!

In the halls through which the building is entered an extra pressure of air is maintained, so that a strong blast from within prevents the entrance of the circumambient air when the doors are momentarily opened. It would be necessary, of course, in extemporizing such a sanitarium, that plants already erected and offering facilities for the contemplated arrangements should be pressed into service. Thus, gas works would be available for supplying heated air; and a manufactory of ice, or a cold storage warehouse, could be utilized for refrigerating it. John Bartlett, M.D.

Philadelphia County Medical Society.

Philadelphia, Sept. 25, 1897.

To the Editor:—Will you kindly announce on behalf of the Philadelphia County Medical Society that I have a considerable number of volumes of Transactions of the Medical Society of the State of Pennsylvania from 1889 to 1894, and some earlier ones in not perfect condition, which I shall be glad to furnish any one who will apply in person, or forward to any one who will accompany his application with the cost of packing and transportation, about 25 cents by mail.

Respectfully, Augustus A. Eshner, M.D.
Chairman Publication Committee.
224 S. Sixteenth St.

A Department of Public Health.

Amite City, La., Oct. 3, 1897.

To the Editor:—The urgent need for a Department of Public Health comes prominently to the front in this section of the country.

Arbitrary and irrational quarantine methods are the rule, frequently enforced by the persuasive shotgun, travel and traffic are interfered with, the mails are delayed or stopped altogether, running of trains upon trunk lines hampered, and every inconvenience imposed that the ingenuity of frightened people can devise.

Quarantine and safety would both be made sure, the needs of commerce and the general public alike protected, and the losses minimized, if all interests centered in a Department of Public Health, instead of allowing each community to regulate such matters for itself.

From a shut-in center, with all kinds of quarantine on all sides, I certainly echo your sentiments, let us have a Department of Public Health. Yours truly,

C. S. Stewart, M.D.

SOCIETY NEWS.

Detroit Medical and Library Association.—At the regular meeting of the Detroit Medical and Library Association September 13, Dr. Andrew P. Biddle read an interesting paper on "Some Common Types of Germ Dermatoses," in which he took up some of the common skin diseases that owed their existence to micro organisms and in which the bacteriologists made the diagnosis and the clinicians with their practical therapeutics proved the correctness of the etiologic factor. The author dwelt upon the subdivision of the schizomycetes, naming as the factors in the causation of some of the diseases, the micrococci and the bacilli, especially the former, the streptococcus pyogenes and staphylococcus pyogenes aureus, and also taking the stand that we suspect a *microbic origin in eczema, psoriasis,* pemphigus, etc. The requirement of a suitable soil for the developing of micro organisms was first mentioned and then the clinical difference in different cutaneous diseases which are produced by their surroundings and accidental causes was touched upon, and the boil and carbuncle were cited. These, it was stated, were due to the presence of the staphylococcus pyogenes aureus; that both have an active local inflammation of more or less intensity, resulting in the formation of a core, and that they both produce a systemic disturbance due to the auto-intoxication. It was also stated that the difference was caused by the different situations of the two lesions; that the carbuncle invaded tissue that was less elastic, that the exit of the pus was more difficult and that the fertile soil of patients suffering from diabetic and other trouble in which carbuncle was often found, made it more easy for the propagation of the micro-organism. He showed that micro-organisms were to be found around the invaded area of boils, and illustrated the same by citing a case in which, after the partial disappearance of a boil a second one appeared. The first one being one of considerable annoyance, both local and constitutional, to the patient; the doctor excised the second with the result that the local and constitutional trouble was cut short. The Doctor gave the history of some cases that came under his care in the Children's Free Hospital, in which on the parts subject to exposure to infection, as the hands, the face and the buttocks, there was found a condition of pustulo-crustaceous eruption, to which the Doctor was unable to give a categoric name. There was a number of pustules about the size of a split pea of irregular shape, raised above the surface and with a tense epidermic wall sometimes covered with a yellow, brown or blackish crust undermined by a purulent discharge, with a history of scratching, and upon examination pediculosis, scabies, and the other parasitic causes were eliminated. The Doctor came to the conclusion that this disease was due to infection with pus-producing cocci, usually staphylococcus pyogenes aureus or albus, and classed these cases with those suffering from pyodermia. Another class of diseases cited was among those admitted to the Children's Free Hospital, in which the skin lesion was so extensive as to make one believe that the trouble was some loathsome constitutional disease. The parts affected were the region of the genitalia and in the neighborhood of the uncombed hair, which is a mass of pustulo-crustaceous eruption. The skin is reddened, excoriated and infiltrated, which causes intense suffering to the little ones. Removal of the crust with soap and hot water and the application of antiseptic washes, destroyed the pus germs and at once brought about a change for the better. Another trouble is furnished by men who have been to some barber shop (probably the cleanliest) and who come, fearing they are suffering from barber's itch. Barber's itch or tinea sycosis is caused by the tricophyton. There is another variety of sycosis however, which somewhat resembles barber's itch, which is due to the invasion of pilo-sebaceous crypts with pus cocci. This variety does not present fully the picture of the tinea sycosis, though if it is neglected the hair follicles become sooner or later involved, especially in the region of the upper lip. The lesions are as a rule few in number and usually circular or oval in outline. There is some tumefaction and exudation covered with a very tenacious, brownish-yellow crust, beneath which is a purulent discharge. That pus organisms are present is proven by the fact that an antiseptic ointment applied after carefully removing the crusts, rapidly cures the disease. Very often this disease assumes the nature of a boil. The Doctor then enumerated some cases met with in his own practice, illustrating the different types of this disease, concluding with the advice that all cases should have careful attention in treatment after the recognition of their true nature with perseverance in the application of cleanliness, antisepticism and slight astringency.

PUBLIC HEALTH.

The Bubonic Plague, according to a dispatch of September 22, is again on the increase in Bombay Presidency, several Europeans having been attacked.

Division, Milk and Food Inspector, Weather Review for 1896 and Mortality Tables of the city.

Proceedings of the Connecticut Medical Society, 1897. Cloth, 385 pages. Published by the Society. 1897.

This is a complete report of the one hundred and fifth annual convention, held at Hartford, May 26 and 27, 1897. The papers on general medicine and obstetrics include papers relating to infantile diarrhea, tuberculosis, diphtheria, theories of immunity, "The Value of Correct Sitting as an Exercise for Invalids," and papers on Obstetric cases. The surgical papers are: "Essay on the Progress of Surgery," "The Treatment of Pus Cases in Operating for Appendicitis," "Laparotomy at the Hartford Hospital," "Report of Five Cases of Uterine Retrodisplacement Treated by Vaginal Fixation."

MISCELLANY.

Subjects announced for discussion at the fourth French Congress of Internal Medicine, to be held at Montpellier, April 12, 1898, are: 1. Clinical forms of pulmonary tuberculosis. 2. Associated bacterial and mixed infection. 3. Therapeutic application of organs with internal secretion.

The report of the Moscow Congress published in the Journal was selected and translated from the excellent report which appeared simultaneously and identical at first in all the leading foreign exchanges, furnished by the International Scientific and German Medical Press Associations.

Physicians in the Italian Legislature.—The *Gazzetta degli Osp. e delle Clin.* publishes the list of physicians who are members of the legislature, twenty-three in number, including three alienists of note and six professors, among them Professors Bacelli and Celli of Rome, Professor Bianchi of Naples and Professors Albertoni and Tizzoni of Bologna. Only four are mentioned as having retired from active practice.

New Million Dollar Hospital.—At Newcastle, England, Mr. John Hall has donated $500,000 to rebuild the Royal Infirmary and Mr. R. Lord, an ex-mayor of that city has been able to double the sum by his energy as a collector in the name of charity and of the Queen's diamond jubilee. The *Lancet* says of this generous hospital donation, that it is the greatest that has been made in the jubilee year outside of London. As the generous donor, Mr. Hall, has accompanied his gift with no onerous restrictions the governors of the infirmary are in a position to immediately accept it, and to soon give to Newcastle a modernized and magnificent structure.

A Worthy Medical Appointment in New York.—We take pleasure in noting the appointment of the veteran sanitarian, Dr. Stephen Smith, by Mayor Strong of New York City, to become a member of the important board of commissioners of charities and corrections, in succession of Mr. Silas Croft who recently was appointed to the surveyorship of the port of New York by President McKinley. This appointment of Dr. Smith is spoken of by the local press as being one of the best acts of the reform mayor, and this reason is given by one of the papers, namely, that Dr. Smith's services will be of especial value in helping the board to properly construct the buildings that have become necessary, and have been ordered to be built to relieve the enormous pressure that exists in nearly all the charitable and correctional institutions of the city

Maproni's method of enterostomy and enterorrhaphy as described in the *Gaz. degli Osp. e delle Clin.* of July 18 consists of an invagination of the intestines after the two stumps have been sutured together with a Czerny-Lembert suture. The inferior section is slipped into the superior for 5 or 10 mm., bringing the surfaces of the mucous membranes into contact, as also the serous. The triple thickness is then sutured through the two outside layers and partially through the inner, with double threads, each stitch 2 to 4 mm. long. A second row of stitches is taken parallel to the first, passing through the first two strata of the inferior portion of the intestine. The ends of the threads of the superior row of stitches are then tied two by two with the threads from the second row, which must be very close to the fold to prevent tearing out. This method is adapted to all cases of transverse section of the intestines and combines the advantages of the Murphy button and the Wölfler method, according to the inventor, who is surgeon to the Milan *Poliambulanza.*

The International Scientific Language.—Professor Sklifassowski proposed at the Moscow Congress the appointment of a committee of two delegates from each nationality represented, to decide the question of an international language, as the variety spoken is one of the chief drawbacks to international congresses. German preponderated at Moscow; even the delegate from Japan spoke in German when he expressed the hope that his country would be selected by the Congress for some future meeting. The number of important German universities in Germany, Austria and Switzerland must be borne in mind, as there is nominally only one French university. Even the *Progrès Médical* admits that more than one language is necessary, remarking that those who are unable to comprehend a paper or take part in a discussion in any one of the three principal languages on a technical subject with which they are perfectly familiar, had better stay at home.

Electrotherapeutics.—Recent communications emphasizing the importance of electricity in comparatively new fields are by Nedorodoff, in the treatment of extrauterine pregnancies, particularly when not over three months—"the only treatment when there are complications of hematosalpingitis or old periuterine hematoceles." Civera Lalse, in regard to treatment of diseases of the spine concludes: "Recovery can be obtained with it almost always when there is no osseous deformation, and when there is, electric treatment is a palliative of the greatest value" (Moscow Congress). Professor d'Arsonval's apparatus for "high frequency" and "undulatory" currents are recommended in high terms from several quarters. Apostoli has observed 518 patients treated, and calls the former "*the* treatment for the cell and general metabolism," while the latter is "an analgesic and congestion-relieving therapeutic measure in gynecologic cases of the highest order" (145 cases, including 108 gynecologic).—Report to Paris Acad. des Sciences, July 26.

Existence of a Nucleus in the Red Corpuscles and Anti-Coagulating Role of the Blood Plaques.—Professor Petrone of the University of Catania, Italy, has established the fact of the existence of the blood plaques in the blood as a normal morphologic element with the office of inhibiting coagulation. He also announces the existence of a nucleus in the adult red corpuscle in the blood of the higher mammals. His numerous experiments and tests, mostly with Lugol's solution, are described fully in the *Gaz. d. Osp. e d. Clin.* of July 25. The results authorize him to conclude that the fibrin ferment is not derived from the leucocytes, which are not a morphologic element proper of the blood, but from the red corpuscles. As they are destroyed this fibrin ferment, the so-called zymogen is liberated. The phenomena of coagulation therefore depend upon the action of the contained hemoglobin, the fibrin ferment on the fibrinogen while the blood plaques contain the coagulation-inhibiting substance.

Civilization and Syphilization explain the etiology of the present alarming increase in the cases of general paralysis, Krafft-Ebing asserted in the conclusion to his masterly presentation of progressive paralysis at the second general session of the Moscow Congress. While neurasthenia and progressive paralysis were scarcely known by name a hundred years ago, and until recently the average age was 40 years, now it is frequent and is observed even in the young. The increasing difficulty of the struggle for existence makes ruinous demands on the brain and general system, and stimulation is sought in excessive use of coffee, tea, alcohol, tobacco and excitements. The constantly greater prevalence of celibacy with the increasing difficulty of establishing a home at a suitable age, leads to the outside satisfaction of the sexual impulse, prostitution and syphilis. He considers the fact established by statistics that syphilis is the *sine qua non* of the disease, and that prophylactic measures against syphilis are the means to combat it.

The Brooklyn Maternity Institution.—At the Low Maternity of Brooklyn, in 1896, the number of patients was 109, mortality two. The school for nurses is maintained, but has not yet received an endowment of permanence. At the clinic for gynecology over two hundred new cases were treated. The interne staff, headed by Dr. MacLean, served in rotation, acting under the injunction to treat the patients with the same consideration that the latter would receive in a private house, and to "respect the feelings of modesty inherent in the sex." The writer of the report thinks that the amount of ophthalmia has been diminished by throwing over the Credé method, and says: "In the treatment of the eyes of the newly born infant we have for more than a year rejected the Credé method: the instillation of solution of nitrate of silver. Our experience since its rejection is that we have had fewer cases of ophthalmia, and those have been of less severity than we formerly had. At birth the eyes are carefully wiped out with a saturated solution of boracic acid, and this washing is repeated daily. In cases of severe ophthalmia the nitrate of silver is used occasionally, but in every case where it is used, the eyes are immediately afterward washed out with a solution of salt. Usually, a more frequent use of the solution of boracic acid, the increased secretion being removed as fast as it is poured out, is the only treatment required even in severe cases.

Increased Facilities for Laboratory Study at Jefferson Medical College.—The Board of Trustees of Jefferson Medical College has taken another forward step in adopting plans for instruction in the new laboratories of the college, and in making elaborate preparations for summer laboratory courses and for postgraduate teaching. The arrangements are that post graduate instruction in the various sub-departments of pathology shall be open to holders of medical degrees only; that undergraduate instruction shall be given between May 1 and October 1 of each year, such instruction to be credited on next year's work; and that any student or graduate of the college who may show special ability may be appointed by the professor of pathology to do prize work in the laboratories, or work which shall be honored by publication as original investigation. In this way, without at all impairing the efficiency or restricting the scope of its regular winter course, the Jefferson College establishes a complete system of summer laboratory work. The importance of this to young men, of whom there are many who wish to make the most of their time, and to equip themselves as quickly as possible for the practice of their chosen profession, is too obvious to need pointing out.

Hydrotherapy a Subject for Clinical Teaching.—The House of Parliament, Vienna, has taken up the subject of establishing a recognized educational clinic for the purpose of elucidating hydrotherapy. The proposer of the bill has so far succeeded in establishing his proposition that the representatives resolved a few months ago to appoint a special commission to inquire into the necessity and propriety of establishing such a school of education, and named Professor Albert as the chairman of the commission. The report briefly stated disapproved of any separate chair being established in the university. It discussed the various advantages and disadvantages of the treatment, stating that lectures are already given in Italian and German schools, while two of the Austrian medical faculties, Vienna and Innsbruck, provide ample instruction for the special treatment. Different doctrines of pathology and therapy are advanced in the elucidation of hydrotherapy that necessitate its connection with the present clinic. The treatment is nothing more than a special application similar to the serum treatment, electrotherapy, mechanical therapy, or massage, which might equally claim a separate chair in a university. The present schools have already sufficient assistants to teach this therapeutic method of treatment without further encumbering the chancellor of the university with new professorships.

The International Olympian Congress held at Havre in July included the delegates to the Olympian Games, representatives from educational and athletic institutions and organizations, etc. The resolutions adopted by the Congress advocated the harmonic union of gymnastics and athletic exercises as the aim of the renaissance of physical education. It considered that the development of games in educational institutions should be left to the initiative of the pupils; that the game should not be directed by the technical professors and that athletic associations should be freely organized and freely administered, under the benevolent eye of authority and the patronage of technical professors. It also advocated that the names of pupils who win distinction in both intellectual and athletic exercises should be published in the educational organs every year. Also that special cards recording the physical development should be sent to the parents twice a year. The establishment of a hydrotherapeutic service in every educational institution was demanded by the Congress and the game of tennis especially recommended for scholastic institutions. The professor of gymnastics should possess a certain knowledge of physiology, anatomy and hygiene and submit to written, oral and practical examinations before obtaining his diploma. The attention of the public authorities was called to the precarious pecuniary circumstances of most professors of gymnastics and the hope expressed of a change for the better. Further details will be found in the *Jour. d'Hygiène* of September 2.

Power of Township Trustee to Employ Physician.—A township trustee is, by Indiana law, made the overseer of the poor of his township. But the power to employ medical and surgical aid for the poor of a township or the county is vested in the board of county commissioners. Where there has been an exercise of that power, and suitable provision has been made, the appellate court of Indiana points out, in Board of Commissioners v. Galloway, June 2, 1897, it divests the township trustee of power to act, and he has no authority to employ medical aid for the poor of his township, unless the physician employed by the county abandons his contract, or refuses to perform it, or is at such a distance that his attendance can not be readily procured, or an emergency exists, or he lacks the skill and experience necessary to render reasonably efficient services in the case, and the dictates of humanity seem to require immediate action upon the part of the trustee. Even in these exceptional cases, a township trustee can only bind the county while he acts within the scope of his authority as the agent of the county. Where a trustee does not act within the scope of his statutory power, and where he has no authority to act at all, he can neither bind his township nor the county. And his agency is of such a character that the court holds all are bound to take notice of its scope and limitations.

Internal Causes of the Putrefaction of Cadavers (Med.-Leg. Congress.)—In case of a healthy person dying suddenly, microbes are only found on the surface of the body and in the large cavities communicating with the outer air, especially the alimentary canal, but in case of a diseased person the microbes may have already invaded the organs at the moment of death. In infective diseases such as cholera, putrefaction [illegible] during life; the emigration of the microbes into t[illegible] also have been started by intoxication from [illegible] etc. Bacteriology has furnished an explanation of the fact that an infant born dead putrefies like a piece of meat, while if the infant has lived a few hours the putrefactive processes start in the intestines. At birth the intestine is completely sterile, and it is possible by means of bacteriologic cultures to determine in certain cases by analyzing the intestinal flora, whether the corpse is that of a still-born infant or whether it had lived a few hours (from Malvoz' address). Descoust added that examination of the eyes showed that the cornea loses its transparency by the end of twenty-four hours, when important changes commence in the media of the eye. First they become turbid and then they ferment, when the eye protrudes from between the lids. It is at commencement of this period that the green spot appears in the right iliac fossa. Later the cornea is luxated by the progress of the putrefaction or there is a kind of resorption of the media. In both cases the organ collapses whether the humors have escaped or been absorbed. By this time it is the twentieth or twenty-second day in winter; the fifth or sixth in summer.—*Presse Med.*, August 25.

Bacteriology at the University of Virginia.—At the above-named university bacteriology is taught by lectures accompanied by practical work in the laboratory. The instruction given at the university in this subject differs from that given in most schools of medicine in several important respects. It is very commonly the case that the student is brought almost at the very outset into relation with the bacteria of disease, the whole or the larger part of the course of instruction being given to their specific study, the technique involved in their culture and determination and the specific products of their activity. These are all matters of the highest importance and should by no means be neglected, but exact and extensive knowledge of them may be and too often is associated with ignorance of the real nature and affinities of the bacteria, the general principles of vegetable physiology of which their characteristic activities constitute a special case, and of the essential conditions on which their culture depends. Believing that the educated physician should as far as possible know the scientific principles on which his professional knowledge rests, provision has been made for a short course which deals with the bacteria from the botanic standpoint, discussing the general morphology and physiology of plants to an extent sufficient to give the student an intelligent idea of the place of these organisms in the vegetable kingdom and of the relation of their life to that of other plants. This knowledge is made the basis of the farther discussion of their economic relations, their action as causes of disease and the methods resorted to for their manipulations, the most important processes of bacteriocultural technique being as far as possible fully illustrated and demonstrated in the laboratory.

Dr. Fuller, New England's First Physician.—Dr. E. E. Cornwall of Brooklyn contributed to the *New England Magazine*, February, a medico historic essay calling attention to the causes of the high mortality among the early settlers of Plymouth Bay. He states that there was an infectious element early at work as a destroyer of life, namely, that of pulmonary tuberculosis in the acute form of so-called "galloping consumption." This infection occurred among the Pilgrims in a degree almost epidemic, being conveyed "right and left" from one to another. Dr. Fuller was the first physician in New England, and a worthy representative of the medical profession. He lived in an age when medical science was in a very imperfect state, and the few glimpses we get of his methods of treatment do not indicate that he was at all in advance of his age, but he did the best he was able to do with the light he had, and died doing his duty in an epidemic. In personal character he stood very high. He was one of the pillars of the Pilgrim society. In 1633 an "infectious fevoure," thought by many to have been typhus fever, was brought to Plymouth, and twenty of the settlers there died of it, including three of the "Fathers," Peter Brown, Francis Eaton and Dr. Samuel Fuller. During the next thirty years eighteen more passed away, in the cases of only two of whom, Miles Standish and Edward Winslow, do we know the cause of death. The former died from vesical calculus and the latter of a fever, probably malarial, which he contracted in the West Indies. It was not till the end of the century, almost fourscore years after the landing on Plymouth Rock, that the last survivor, Mary Allerton, died at the age of 90.

Rules as to Skill and Pay Laid Down in Malpractice Case.—The correct rule, the supreme court of Iowa maintains, in the malpractice case of Whitesell v. Hill, is that a physician and surgeon when employed in his professional capacity is required to exercise that degree of knowledge, skill and care which physicians and surgeons practicing in similar localities ordinarily possess. It however does not consider that any harm was done in this instance by charging the jury that as some authorities hold, the degree of proficiency, skill and care required was that ordinarily possessed by members of the profession in the vicinity where the defendant practiced, inasmuch as the evidence showed that there were several educated and experienced physicians and surgeons there. The contention, which there are also some authorities tending to support, that a valid claim for services rendered by a physician, and one for damages sustained by the patient in consequence of malpractice, can not co-exist, the court holds is not in accord with the law and practice in Iowa. It says that the right of one party to a contract but partly performed by him to recover the value of the services he has rendered, is subject to the right of the other party to a proper allowance for damages he may have sustained without fault on his part for the failure of the party seeking to recover to fulfill the agreement on his part. And it declares that it does not know of any sufficient reason for not applying these rules to the contract between a physician and his patient. It says that a physician may render service which in the main is all that is required of him, but he may have been negligent in some particulars to the injury of his patient, and in such a case a proper allowance for the injury should be made. Likewise, if the physician's treatment is so unskilful or negligent that the injury exceeds the value of his services, he should be permitted to show the value of the services, to reduce the amount for which he is liable. And this is true whether the action against him for malpractice is regarded as founded upon contract or tort.

Progress in the Treatment of Rinderpest.—The inoculation method of Professor Koch has advanced sufficiently in its practical testing to enable experts to begin to criticise its value and to ascertain what are its disadvantages. It appears that the use of fresh bile has not been without disaster, for some cattle inoculated by Dr. Kohlstock have shown an enormous mortality, over 80 having died out of a fine clean herd of 149 very valuable cattle. In the case of clean herds, generally speaking, fairly good results are obtained, although it is reported that no herd has yet been inoculated with bile in which rinderpest has not followed. The greatest difficulty is the fact that the bile does not keep, and that, according to Dr. Koch, only green biles can be used. But green biles are only obtained rarely, the most frequent proportion being one in seven. As only fifty animals can, on the average, be inoculated from the bile of one animal, it follows that one rinderpest animal is required even under the best conditions to inoculate seven animals. It is reported that Dr. Edington states that the addition of a certain proportion of glycerin to fresh bile succeeds in preserving it without interfering with its immunizing property. The same experimenter finds that the blood of cattle taken during the latter stages of the malady, if prevented from coagulation by citrate of potash and then preserved by glycerin, has also very considerable immunizing power, but blood virus, like blood serum, appears to be a little uncertain in its action, and all samples do not show equal results. If the discovery of Dr. Edington is correct, that glycerin can be used, and that under such circumstances galls other than green are useful, this will probably be found the best method to adopt, provided always that the bile inoculation is followed up by virulent blood during the period that the temporary immunity holds.—*British Medical Journal.*

The Moscow Congress was one of the most important ever held on account of the scientific activity displayed (over 1,000 communications were received), although it was not marked by any epoch-making discovery. The attendance was fully 10,000 including the ladies and children. A Russian exchange mentions with interest a family from New York in which the father, mother, two sons, daughter and son-in-law, were all physicians and inscribed members of the Congress. The weather was extremely warm all the while. All speak of the cordial hospitality of the Russians with enthusiastic gratitude. Paris was selected as the seat of the next Congress, in 1900, with Professor Lannelongue, President, and Chauffard, General Secretary. The triennial international prize of 5,000 francs founded by the city of Moscow, to be awarded at each International Medical Congress, as already mentioned in the JOURNAL, page 298, was presented to Henry Dunant, the founder of the Red Cross, who has spent his life and his fortune in the relief of suffering humanity. He is also suggested as the possible recipient of one of the five large prizes to be awarded annually, according to the will of the Swedish dynamite multimillionaire, Alfred Nobel (*vide* JOURNAL, Vol. xxviii, page 330).

Medical Practice Among the Mongols.—According to the *Medical Press and Circular*, a very prevalent affection among the Mongols is the itch, due in a large degree to their repugnance to the washing of either their persons or garments. In their tents they live so closely together that if one of them gets the itch all soon have it. Various other skin diseases are prevalent among them. Rheumatism is often of frequent occurrence and the remedy largely used for that trouble consists of kneading or a kind of massage; they make use of a "rheumatism stick," a piece of wood so bent that any part of the body can be reached by the patients in their self application of the kneading process. A peculiar disease called "narry," due to their indulgence in their native spirituous liquor, is frequent; the stomach becoming intolerant of food so that the patient ultimately dies of starvation. The treatment of the sick and injured rests chiefly with the priests or Buddhist lamas, whose system is quite elaborate, but based for the most part on superstition. Instead of paying occasional visits to the patient, their method is to reside in his house until recovery or death takes place, or the case is decided to be incurable. The people have great confidence in drugs and medical regimen, including the water-cure, the latter object causing them to resort to springs, both hot and cold, that are somewhat abundant in Mongolia and Northern China. They place implicit confidence in the medical knowledge of the foreign missionaries who visit their inhospitable country, but express wonder and astonishment when their proffered recompense is refused by the latter. For the bite of a dog they apply to the wound a portion of the fur of the animal; literally "the hair of the dog" is their remedy. They use the loadstone in powdered form as a cure for ulcers, deafness, etc. They attribute many diseases to the influence of the planets and constellations, to offenses committed and to fate. Hygiene or preventive measures do not enter much into their scheme of treatment.

Realizing Upon Life Insurance.—A legal friend of ours believes that he knows of at least one case where a well-insured man, suicidally inclined, has been able to dupe both the insurance company and the coroner's jury. This man, aged under 50 years, had been greatly worried over losses in business, and set to work in the most methodic way to take his own life in such a way that the fact of suicide might never be known. In his third attempt he succeeded in taking a lethal dose of a prepation of morphin, and so prepared the circumstantial evidence that was to come under the notice of the coroner, that the latter assented to a verdict of death by heart disease. In a previous effort he had failed to take a dose sufficiently large to cause death, but had laid his plans to a nicety for the purpose of "realizing on his life insurance" for the benefit of dear and dependent members of his family. He first set about to give himself an attack of indigestive diarrhea by making a meal of cheese, lobster, ice-cream, etc., and so far succeeded, that he had an excuse for having an antidiarrheal mixture and a strong morphin preparation in two bottles, almost identical in appearance, and kept by him side by side on his medicine shelf, his intention being to so dose himself with the latter preparation that he would be found dead in his bed in the morning, and the inquest would be led to decide that an accidental overdose was the *causa mortis*; but this attempt failed, because his dose was too small for his object. A further effort, and second failure was one in which he wilfully exposed himself to a pneumonia in midwinter weather; he first, by violent exercise get himself into profuse perspiration, and then removing all his clothing, placed himself before an open window courting the icy blasts of nearly zero weather. But he could not "realize" in that manner. His third attempt succeeded, as said before, and his ante-mortem conduct and arrangements appear to have been so complete as to have side-tracked the inquest and to have humbugged the officers of the law into accepting a certificate of death from heart disease, without a verification by autopsy. It is surmised by our informant that this form of accident is not an infrequent occurrence among despondent men who have been carrying heavy life insurance. We believe that there are not a few who, at certain periods of their lives, think less of their own lives than they do of the comfort of their families, and are ready to undertake to realize on their life insurance for the benefit of the latter.

The Successful Treatment of a Wound of the Heart.—Dr. Rehn, of Frankfort, at the Congress of the German Surgical Association, held in April last, read a paper on wounds of the heart and their treatment. After pointing out that penetrating wounds of the heart are rare, and that large lesions cause immediate death while small ones may heal, he went on to state that auricular wounds are more dangerous than ventricular owing to the thinness of the auricular wall. Hemorrhage, however, is apt to be more profuse when the right ventricle is damaged, and the prognosis in any case depends practically upon the quantity of hemorrhage. The diagnosis of the site of lesion is difficult to make, but in doubtful cases cautious probing must be performed. The main indication of treatment, Dr. Rehn said, was to keep the patient as quiet as possible, but severe dyspnea generally precludes this. Venesection has been recommended to check the hemorrhage. To remove the blood from the pericardial it has been recommended to puncture the pericardium; but as there is risk of inflicting a new lesion it is better to make a long incision and discover the seat of the lesion. Italian surgeons were the first to suggest sutures in these cases, and Professor Rehn has lately been so fortunate as to meet with a case of wound of the heart where by suturing he was able to save his patient. A young man was brought to hospital, having received an injury from a knife in the left side of the chest. There was much dyspnea and hemorrhage. As the pericardium became diluted the patient's state became worse and worse. The wound in the fourth intercostal space was then opened up, and after resection of the fifth rib the pericardium was incised. A wound one and a half centimeters in length was then found in the right ventricle. This Dr. Rehn closed by three sutures and packed the pericardial cavity with iodoform gauze. After the operation the pulse and respiration immediately improved, and although the patient's convalescence was retarded by suppurative pleuritis he made in the end a complete recovery.

Detroit.

THE WAYNE COUNTY MEDICAL SOCIETY held a very interesting meeting Thursday evening, September 23. The paper of the evening was on the subject of "Croup," read by Dr. B. R. Shurly, dealing particularly with diphtheric croup both as a primary disease and as secondary to involvement of the pharynx. He laid down the principle that all cases of croup in which there is a gradual increase in the dyspnea with cyanosis, etc., diagnosis of diphtheria should be made, so that the physician and patient may be on the safe side; and all children between the ages of 1 and 6 years in the same household should be immunized. The treatment in these cases is antitoxin combined with intubation. In the old treatment of these cases combined with intubation, the death rate is about $66\frac{2}{3}$ per cent.; with the antitoxin and intubation method the death rate has been reduced to $33\frac{1}{3}$ per cent., and in his own cases to 28 per cent. Out of ninety cases treated by him with intubation there were twenty-six deaths. In the discussion the President brought up the question of paralysis following diphtheria, and stated that it was remarkable how often cases of true diphtheric laryngeal inflammation had been overlooked as cases of diphtheria and treated for simple tonsillitis. He stated that he had frequently seen patients suffering from paralysis of accommodation of the eye, who had denied ever having diphtheria but who had admitted having had tonsillitis. In his opinion, paralysis never occurred after primary laryngeal diphtheria. In reply the author of the paper said that he believed the reason why paralysis never followed laryngeal diphtheria was because of the fact that the larynx was particularly impervious to the toxins of diphtheria, illustrated by the fact that primary laryngeal diphtheria, when not of the ascending or descending variety, does not produce septic features.

TELEPHONE COMPANIES.—Owing to the fact that there are two telephone companies in Detroit the druggists and physicians have determined to organize for the sake of minimizing the evil thus arising, and committees have been appointed from the different medical societies of Detroit and from the organized druggists to confer for the purpose of arranging some plan of action whereby the telephone nuisance may be abated.

THE HEALTH OFFICE REPORT for the week ending September 26 shows 90 deaths in the city, of which 40 were children under 5 years of age; births 86, of which 43 were males. There are at present 16 cases of diphtheria and 28 cases of scarlet fever. Three deaths were caused by diphtheria and 2 by scarlet fever.

Societies.

American Association for the Study and Cure of Inebriates.—The annual meeting will be held at New York City, October 22.

The American Public Health Association will hold its annual meeting in Philadelphia, Pa., October 26 to 29.

The Vermont State Medical Society will meet at St. Albans, Vt., October 15 and 16.

The following meetings were recently held:

District of Columbia.—National Society of Electro-Therapeutists, Washington, September 29 and 30.

Illinois.—Illinois Army and Navy Medical Association, Springfield, September 29. The following officers were elected: President, Dr. A. C. Corr, Carlinville: first vice president, Dr. P. L. Dieffenbach, Havana; second vice-president, Dr. W. O. Ensign, Rutland; third vice president, Dr. O. B. Ormsby, Murphysboro; fourth vice-president, Dr. D. H. Law, Dixon; secretary and treasurer, Dr. E. R. Bartlett, Springfield. Chicago Medical Society, Chicago, September 29.

Maryland.—Baltimore County Medical Association, Baltimore, September 23.

Minnesota.—Ramsey County Medical Society, St. Paul, September 27.

Ohio.—Cleveland Medical Society, September 24. Mansfield Academy of Medicine, September 28.

Pennsylvania.—American Electro-Therapeutic Association, Harrisburg, September 22 and 23.

Tennessee..—Marshall County Medical Society, Lewisburg, September 21. East Tennessee Medical Society, Knoxville, September 30 and Octocer 1.

CHANGE OF ADDRESS.

Berens, Bernard, from 2002 to 2041 Chestnut St., Philadelphia, Pa.
Butler, F. A., from 210½ Clark St., to Ill.
Brown, E. V. L., from Morrison, Ill., t ago, Ill.
Ewing, W. Brown, from Wernersvill
Houston, J. M., from San Francisco to Falls City, Neb.
Kaull, Wm. A., from Princeton to Ohio, Ill.
Kuhlman, C. G., from 935 Market St. to 123 Ellis St., San Francisco, Cal.
Knopf, S. A., New York, N. Y., address is 955 instead of 935 Madison Av., as published in September 25 issue.
Logan, J. E., from 306 Keith & Perry Bldg. to 1208 Wyandotte St., Kansas City, Mo.
Le Grand, J. C., from Annison to Birmingham, Ala.
McDermith, S. F., from 1702 Champa St. to 503 Mach Block, Denver, Colo.
Morrow, J. C., Scio, Ohio, to 337 Jacunda St., Pittsburg, S. S., Pa.
Moore, J. Wm., from Detroit to Atlantic Mine, Mich.
Mattison, F. C. E., from 4936 Vincennes Av. to 4458 Cottage Grove Av., Chicago, Ill.
Reed, B., from Atlantic Mine, N. J., to 4726 Kingsessing Av., Philadelphia, Pa.
Rogers, A. S., from Vassar to Ann Arbor, Mich.
Tudor, Mary S., from South Windsor, to 179 Sigourney St., Hartford, Conn.
Tombaugh, L. H., from Washington, Pa., to Three Rivers, Mich.
Van Eman, J. H., 1003 E. 14th St. to 1326 Forest Av., Kansas City, Mo.
Wagely, T. J., from Paris, France, to Cleburne, Texas.

LETTERS RECEIVED.

Bauer, L. D., Philadelphia, Pa.; Boehringer, C. F., & Soehne, New York, N. Y.; Barlow, E. B., Toledo, Ohio.
Chamberlain, G. L., Newberry, Mich.
Fleming, Ellis, Woodland, Iowa; Fisk, Samuel A., Denver, Colo.
Gaut, S. G., Kansas City, Mo.
Knopf, S. A., New York, N. Y.
Hummel, A. L., Advertising Agency, New York, N. Y.
Le Count, E. R., Chicago, Ill.
McCormick, Henry C., Williamsport, Pa.; McCorn, W. A., Kankakee, Ill.; Mathews, J. M., Louisville, Ky.
Pallak, S., St. Louis, Mo.; Peacock Chemical Co., St. Louis, Mo.; Paquin, Paul, St. Louis, Mo.; Porter, John L., Chicago, Ill.
Ridlon, John, Chicago, Ill.; Rowley, W. S., Chicago, Ill.
Sothoron, Elmer, Washington, D. C.
Vansant, E. L., Philadelphia, Pa.
Weaver, W. H., Chicago, Ill.; Williams, E. J., Windsor Mills, Quebec; Wingate, U. O. B., Milwaukee, Wis.; Walker, Jason, Minot, Me.; Williams, C. L., Conneaut Lake, Pa.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from September 25 to October 1, 1897.

First Lieut. William F. Lewis, Asst. Surgeon, the order directing him to report for duty at Ft. McPherson, Ga., is amended so as to direct him to report for duty at the new post on Sullivan's Island, S. C.

Capts. Charles Richard and George McCreery, Asst. Surgeons, ordered to report Oct. 4, 1897, to the president of the examining board appointed to meet at the Surgeon General's office, Washington, D. C., for examination for promotion.

Col. Charles R. Greenleaf, Asst. Surgeon-General, will in addition to his present duties in charge of the medical supply depot in San Francisco, Cal., take charge of the office of the chief surgeon, Dept. of California, during the absence on leave of the chief surgeon.

Capt. Robert J. Gibson, Asst. Surgeon (Ft. Thomas, Ky.), is ordered to report to the president of the examining board at Surgeon-General's office, Washington, D. C., Oct. 4, 1897, for examination for promotion.

First Lieut. Henry R. Stiles, Asst. Surgeon, Ft. Preble, Maine, ordered to report to the president of examining board at Washington, D. C., Oct. 18, 1897, for examination for promotion.

Major Charles B Byrne, Surgeon, is relieved from duty at Ft. Snelling, Minn., and ordered to Plattsburg Bks., N. Y., for duty.

Major Philip F. Harvey, Surgeon, on being relieved from duty at Plattsburg Bks., N. Y., is ordered to Ft. Snelling, Minn., for duty.

Capt. Jefferson D. Poindexter, Asst. Surgeon, now at Willetts Point, is ordered to temporary duty as attending surgeon and examiner of recruits in New York City, relieving Capt. Charles Richard, Asst. Surgeon, who is ordered to Ft. Monroe, Va., for duty.

A board of officers to consist of Lieut.-Col. Alfred A. Woodhull, Deputy Surgeon General; Major Curtis E. Munn, Surgeon; Capt. William F. Lippitt, Jr., Asst. Surgeon, is appointed to meet at Hdqrs. Dept. of the Colorado, Denver, Colo., Monday, Oct. 18, 1897, for the examination of medical officers for promotion.

First Lieut. Harry M. Hallock, Asst. Surgeon, will report to the president of the examining board at Denver, Colo., Oct. 18, 1897, for examination for promotion.

A board of officers to consist of Col. Charles R. Greenleaf, Asst. Surgeon-General; Major Edward R. Moseley, Surgeon; Capt. Euclid B. Frick, Asst. Surgeon, is appointed to meet at Hdqrs. Dept. of California, San Francisco, Cal., on Monday, Oct 25, 1897, for examination for promotion of officers of the Medical Department.

Capt. Paul F. Straub, Asst. Surgeon (Angel Island, Cal.), ordered to report to the president of the examining board, San Francisco, Cal., Oct. 25, 1897, for examination for promotion.

A board of officers to consist of Lieut.-Col. Henry R. Tilton, Deputy Surgeon General; Capt. William C. Borden, Asst. Surgeon; Capt. Henry A. Shaw, Asst. Surgeon, is appointed to meet at Hdqrs. Dept. of Dakota, St. Paul, Minn., on Monday, Oct. 18, 1897, for examination of medical officers for promotion.

First Lieut. George J. Newgarden, Asst. Surgeon, ordered to report to the president of examining board, St. Paul, Minn., Oct. 18, 1897, for examination for promotion.

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ADDRESS.

THE RISE AND PROGRESS OF DERMATOLOGY.

An address delivered at the opening of the Section of Dermatology, at the Sixty-fifth Annual Meeting of the British Medical Association, Montreal, Aug. 31 to Sept. 4, 1897.

BY MALCOLM MORRIS, F.R.C.S. Edin.

PRESIDENT OF THE SECTION; SURGEON TO THE SKIN DEPARTMENT, ST. MARY'S HOSPITAL, LONDON.

[Abstract from advance sheets of the British Medical Journal.]

As embryology furnishes the key to the riddles of anatomy, so the history of the evolution of any branch of science throws light on many points that would otherwise be dark, explains the origin of terms and theories, rescues from oblivion truths overlooked or forgotten, and, showing the pitfalls which hindered those who have gone before, teaches us to walk more warily.

Dermatology, although its victories have perhaps been less showy than those won in some other special departments, has not lagged behind in the onward march of medicine. The centenary of the birth of scientific dermatology is not long past. In 1790 the Medical Society of London awarded the Fothergillian gold medal to Robert Willan, who had some time before submitted to it the outline of his plan for the arrangement and description of cutaneous diseases. Willan may justly be called the creator of dermatology. Before him the skin was looked upon more as a mirror on whose face internal disease "glassed itself in tempest" than as an important organ subject to manifold disorders peculiar to itself.

Forerunners of Willan.—Willan was not the first who wrote on skin disease. As our terminology bears witness, the Greeks gave a good deal of attention to the subject. Hippocrates speaks of "pityriasis," "lichen," "herpes," "pomphi," and many other forms of cutaneous lesion, and roughly classifies them. Later Celsus, Galen, Paul of Ægina, and after them the Arabians, described various affections of the integument. The medieval writers saw much of leprosy, and they doubtless often imagined it where it did not exist. At a later period syphilis overshadowed everything.

The first treatise professedly devoted to diseases of the skin was that of Hieronymous Mercurialis of Venice, "De Morbis Cutaneis et de Omnibus Corporis Excrementis." The author had, however, nothing to teach beyond what he found in the ancient writers. In the early part of the eighteenth century Daniel Turner produced "A Treatise of Diseases Incident to the Skin," which is almost wholly a compilation from other writers, and treats not of the skin alone, but of all "distempers" affecting "the outward parts or confines, as may be said, of the human body." Thus not only the eruptive fevers, the "green sickness" and the "yellow jaundice," but phimosis and paraphimosis, hemorrhoids, "chaps on the fundament," imperforate conditions of the natural passages of the body, ulcerations of all kinds, burns, stings and bites of venomous creatures, hydrophobia and poisoned wounds, are looked upon by the author as falling within his province.

Later in the same century there appeared almost simultaneously two works, each of which in its own way marked a distinct advance towards a scientific dermatology. In a book entitled "Doctrina de Morbis Cutaneis," Vienna, 1776, Joseph Jacob von Plenck for the first time attempted a complete classification of diseases of the skin. He arranged them according to what appeared to him to be the most characteristic objective features, in 14 groups with 120 varieties. In his "Tractatus de Morbis Cutaneis," Paris, 1777, Lorry, besides giving good descriptions of clinical phenomena, discussed the pathology of cutaneous affections in the light of the knowledge of the structure of the skin and the morbid processes of which it might be the seat, that existed in his day.

Neither Plenck nor Lorry, meritorious as were their works, did much to dissipate the darkness that was upon the face of this branch of medicine. At the beginning of the nineteenth century it could be said with perfect truth that little improvement had been made in the subject at large since the days of Avicenna.

The birth of dermatology.—In 1808 there appeared the first volume of Willan's treatise "On Cutaneous Diseases," a great work which its author did not live to complete. Ten years before, he had given to the world a slender volume dealing with a particular class of lesions of the skin. Willan set himself the task of reducing the chaos of skin diseases to something like a cosmos. The following are, in his own words, the objects at which he aimed in the execution of this design:

1. To fix the sense of the terms employed by proper definitions.
2. To constitute general divisions or orders of the diseases from leading and peculiar circumstances in their appearance; to arrange them into distinct genera and to describe at large their specific forms or varieties.
3. To classify and give names to such as have not been hitherto sufficiently distinguished.
4. To specify the mode of treatment for each disease.

Like Plenck, Willan grouped skin diseases according to the character of the predominent lesion; and indeed there can be little doubt that he took the groundwork of his classification from Plenck. The English dermatologist, however, reduced the fourteen orders of his Austrian forerunner to seven. To these another order, "bullæ," was afterward added. This classification is of course very defective, inasmuch as it takes account only of the outward and visible signs and results of disordered action. As has but a limited range of pathologic expression, lesions identical in appearance and in structure are produced by widely different causes. Hence a classification based solely on objective appearances inevitably led to the formation of motley groups including conditions having no essential feature in common. But Willan's classification, defective as it was, at least introduced a definite principle of arrangement into a region of pathology where before all was "most admired disorder." If he got the idea from Plenck, he must be allowed the credit of having greatly bettered the instruction which he received, and of having presented it to the medical world in such a manner as to impress on the mind of the profession.

It is not, however, Willan's classification that constitutes his chief title to be regarded as the founder of dermatology. His judicious selection and accurate definition of terms; his astonishingly faithful word pictures of the appearances of disease drawn directly from nature, and made more vivid but scarcely more graphic by the colored engravings with which he supplemented his descriptions, and his rational methods of treatment, were all his own. It was his teaching that transformed a confused jumble of folklore as to "tetters," wet and dry, and of figments of the medical imagination embodied in words of learned sound but little meaning into a science, rudimentary indeed, but grounded on a solid foundation of observed fact.

The English school.—Willan left behind a disciple well worthy to wear his mantle. Thomas Bateman, who completed Willan's unfinished "Delineations of Cutaneous Diseases," published a "Practical Synopsis of Cutaneous Diseases," which did far more to make his master's work known than Willan's own unwieldy and incomplete book. It is hardly too much to say that without Bateman Willan might have been forgotten. Bateman, however, was not a mere expositor; he was a man of truly scientific mind, and would doubtless have added largely to knowledge had not he, too, been cut off prematurely.

Bateman's "Synopsis" ran through several editions in his lifetime, and afterward found an editor in Anthony Todd Thomson, who also published an "Atlas of Delineations of Cutaneous Eruptions," illustrative of the descriptions in Bateman's book. Thomson paid special attention to diseases of the skin for more than thirty years. He was an accurate observer and was very successful in treatment. Toward the end of his life he embodied the fruits of his experience in a "Practical Treatise on Diseases Affecting the Skin," which was completed by his nephew, Edmund Alexander Parkes, and published in 1850. Thomson held that there could "scarcely be any difference of opinion respecting the necessity of arranging the tribe of those diseases. . . . (of the skin) according to the physical characters of the eruptions," and in adopting this method he chose "as the least exceptionable the order of Willan." Thomson was physician to University College Hospital, where he was the first of what may be termed the dermatologic succession, which, handed on in turn by Parkes, Hillier and Tilbury Fox, is still worthily continued by Radcliffe Crocker.

Almost simultaneously with the treatise of Thomson and Parkes there appeared a work which is one of the landmarks in the history of the English school of dermatology. This was Erasmus Wilson's "Diseases of the Skin," the preface to which is dated 1851. Wilson, who had commenced his scientific career as an anatomist, had already done a good deal of work in dermatology, particularly in the microscopic study of the cutaneous tissues. He made a new classification of skin affections, grouping them according to the structure in which the morbid process originated into four primary divisions. 1, diseases of the derma; 2, diseases of the sudoriparous glands; 3, diseases of the sebiparous glands; 4, diseases of the hair and hair follicles. Wilson's influence was for a long time predominant among his own countrymen, and by workers in other countries he was looked upon as the foremost representative of British dermatology. He had an eye for form and color and often found the right word to express them. His description of the diseased conditions are thus almost unrivaled in their picturesque and yet faithful rendering of appearances. He added little, however, to our knowledge of the pathology and therapeutics of skin diseases, and added not a little to the confusion which existed on the subject by his artificial classification and his ever-changing nomenclature.

The living leader of our British school of dermatology, Mr. Jonathan Hutchinson, has brought to the study of the pathology of the skin a knowledge of disease in general such as probably no other dermatologist has ever possessed. This, together with a marked originality and independence of mind, and a singular power of seeing points of likeness in things to outward seeming most unlike, has enabled him to throw an unexpected light on many dark places of dermatology. The characteristics of the British school of dermatology are those commonly held to be distinctive of the British intellect in whatever sphere it is set to work. We are a practical people, loving facts and caring little for theories. Accordingly British dermatologists from Willan to Hutchinson have been, first of all, observers. They have striven to get at what Majendie called the *fait brut*, to see things as they really are, and to describe what they saw as faithfully as they could. They have been distrustful of generalizations and cautious, perhaps over-cautious, in deductions. But the facts gathered by them have endured while theories and systems have followed each other into nothingness; and dermatology as it exists today is largely the work of their hands.

The French school.—In France a school of dermatology arose independently in the early years of the century. In 1808 Alibert published his "Description des Maladies de la Peau observées à l'Hôpital Saint Louis," which he followed up two years later by a "Traité Théorique et Pratique des Maladies de la Peau" and several other works. The most valuable part of his publications was the illustrations; his writings only added to the darkness in which the whole subject of diseases of the skin was then enshrouded. His terminology was to the last degree confusing, his classifications arbitrary, his descriptions often fanciful. Yet he contributed to the advance of knowledge by directing the attention of more scientifically minded workers to the subject. Among these was Biett, who adopted Willan's classification with some modifications and introduced it into France. In 1831 Rayer sketched out a plan of classification of skin diseases on a basis of morbid anatomy, dividing them into: 1, inflammations; 2, morbid secretions; 3, congestions and hemorrhages; 4, anemias; 5, neuroses; 6, deformities. Among the leaders of the French school who followed Biett were Cazenave, Gibert, Devergie and Bazin, all of whom did something to advance the knowledge of skin diseases, although they were apt to let themselves be misled by a tendency to erect systems on unsound foundations. In recent years the labors of Hardy, Vidal, Besnier and Brocq have placed the French school in the forefront of scientific dermatology, a position which, with such men as Darier, Thibierge, Wickham to take the place of their seniors when they have to fall out of the ranks, it is in no danger of losing.

The German school.—The year 1844 marked the beginning of a new era in the study of disease of the skin, for it witnessed the first appearance before the scientific world of Ferdinand Hebra. That remarkable man breathed a new life into the dry bones of dermatology, and set it on a path of progress which has already led to great results. Hebra applied to the investigation of skin diseases the pathologic teaching of Rokitansky. He classified them not according to their objective appearances or to the structures supposed to be primarily or mainly affected, but according to the nature of the pathologic processes of which they were examples. He used the experimental method, producing various lesions on healthy skin by artificial means, and observing the changes which they underwent when allowed to run their own course and when modified by treatment of different kinds. In this way Hebra rationalized dermatology, ridding it of the superstitions as to dyscrasiæ with which it had before been infested and giving to the treatment of skin disease a directness of purpose and a simplicity of means undreamed of by his predecessors. The influence of his teaching was felt everywhere except in France, where the traditional belief in dyscrasiæ persisted till a comparatively recent period. Hebra's work has been carried on by Auspitz, Kaposi and Neumann in Vienna, by Pick in Prague, Schwimmer in Buda-Pesth, Lewin and Lassar in Berlin, Neisser in Breslau, and others.

If Willan was the creator, Hebra must be acknowledged as the greatest among the reformers of dermatology. This glory must be his in spite of the fact that his classification in its leading features had been anticipated by Rayer. Hebra, however, worked it out so fully as to make it his own; and his classification, though it has necessarily been modified as knowledge grew, notably by the influence of Virchow's "cellular pathology" and by the newer bacteriologic doctrine, can never be superseded till an arrangement based on etiology becomes possible.

The American school.—The history of dermatology in America has been written by Prof. J. C. White of Harvard and by Prof. Louis A. Duhring of Philadelphia, from whom all that here can be said on the subject is taken. For the first thirty years or more of the century little or no interest was taken in cutaneous affections in America. In fact, as Duhring tells us, a disposition existed to consign the whole of this branch of medicine to those outside the professional pale. No one seemed prepared to take up the matter. In 1845 appeared the first American work on dermatology, "A Synopsis of the Symptoms, Diagnosis and Treatment of the more Common and Important Diseases of the Skin," by N. Worcester, Professor of Physical Diagnosis and General Pathology in the Medical School of Cleveland. The book is described by Duhring as being little more than a compilation from the works of the French and English dermatologists of the day. In 1836 an infirmary for diseases of the skin was opened in New York, being the first institution of the kind established in the United States, and lectures on skin diseases were delivered there and afterward in some of the medical schools of New York between the years 1837 and 1854 by Dr. H. D. Bulkley, father of Dr. L. D. Bulkley, whose name is well known to all dermatologists.

At this time Paris was the center of the dermatologic world, and American students accordingly went there for instruction in the subject. Hence for many years American dermatology was the direct offspring of the French school, the influence of which was only slightly tempered by reprints of the works of Wilson and other English writers. At a later period Americans flocked to Vienna, and on returning home spread the doctrines of Hebra among their countrymen. As early as 1859 Hebra's teaching was made known in America by Prof. James C. White, who two years later gave the first course of lectures on diseases of the skin at Harvard. After the Civil War clinical lectureships on the subject were established in several important schools. In 1870 the foundation of the *American Journal of Syphilography and Dermatology* did something to promote the advancement of the knowledge of skin diseases in America, and the establishment of the American Dermatological Association in 1877 gave a powerful impulse in the same direction, which was further aided by the creation of the *Archives of Dermatology*. Yet in 1871 Professor White complained that as yet America had contributed little to dermatology, and that this branch of medicine had hardly then found a place among his countrymen as an acknowledged specialty. Now this reproach has been wiped away, and American dermatology represented by Duhring, White, Bulkley and others, is recognized as being in the van of progress.

The fusion of the schools.—Each of the three great schools which helped to lay the foundations of modern dermatology had certain marked characteristics. The English was essentially clinical, using classification only as a practical help in diagnosis. As observed, the French systematized, striding somewhat impatiently over facts to get at general formulas, which though plausible on paper, too often broke down in application. The German was pathologic, giving attention mainly to the mechanism and occasionally taking too little heed of the causes setting it in motion. Much of what was good in each still survived in the cutaneous medicine of the present day.

Now dermatology is truly international, the different schools which were formerly as separate states having become fused into one scientific commonwealth. This has been accomplished by the translation of representative works of each school into the language of the others; by the multiplication of journals devoted to this special branch of medical science in which everything of value that is published in any part of the world is gathered up and summarized; by the facilities of communication which make it easy for the scientific pilgrim to visit every dermatologic shrine where his devotion is likely to be rewarded with knowledge of some new thing; and by congresses, those marts for the exchange of scientific wares which have so powerfully aided in the diffusion of knowledge in the extinction of national jealousies and in the correction of provincial ways of thought.

A man trained in a particular school is apt to be narrow if he knows nothing of any other. In dermatology this kind of narrowness was especially exemplified in the French school, but neither of the others was entirely free from it. How slowly the work of even so brilliant a dermatologist as Hebra became known to the profession in other countries at a time comparatively recent is shown by the following passage from Professor White. Speaking of the middle of the fifties he says: "It was not until the intelligence began to spread, slowly borne by word of mouth from country to country, that in an Imperial city of Austria there was a man teaching skin diseases as they had never been taught before, with unlimited means of clinical illustration, with the keenest eye for observation, with an unbounded amount of information drawn from many years of experience, with a self-restraint which no desire for premature fame could tempt into hasty publication, and with a sound and logical mind, that the German school of dermatology some fifteen years ago began to be known and to advance to that pre-eminent position it now holds." Fame flies faster nowadays, but the very ease and rapidity with which the results of a man's work can be made known now lead to the publication of much that is inaccurate observation and immature speculation.

Progress in knowledge.—The most striking feature on the dermatology of today as compared with that of the beginning of the century is the knowledge of the nature and causes of skin diseases that has been gained. Willan and Bateman left little in the way of outward appearances for those who came after them to describe, but no real knowledge of pathologic processes was possible till the microscope and other modern methods of research were applied to the study. This is the special achievement of the German school. The attention directed to processes has led us to recognize that many conditions which used to be looked upon as distinct affections are really different stages in the evolution of one and the same disease. In this way dermatology has been greatly simplified.

Further simplification has resulted from our having learned to distinguish between the primary lesions which are notes of a particular disease and the lesions which result from secondary causes, such as injury from scratching or rubbing and the invasion of pyogenic micro-organisms. Much confusion and needless multiplication of types were caused in former days by mistaking the accidental for the essential in such affections as scabies, eczema, ringworm, impetigo and other conditions liable to complication by suppurative processes.

Pathologic research has done much to elucidate the nature of growths, benign and malignant, of the skin. The work of Jacob Warren, Hutchinson, Dubreuilh and Norman Walker in regard to rodent ulcer, and that of Kaposi in regard to sarcoma of the skin and xeroderma pigmentosum, mark distinct advances.

Real progress in the science of medicine, however, is measured by the increase in our knowledge of the causes of disease. In this respect it may, I think, be said that as much has been done in dermatology as in any branch of medicine. The etiology of a very considerable proportion of skin diseases is now accurately known. Among the causes whose operation has been clearly traced, a prominent place is occupied by inoculable viruses which infect the system, such as syphilis, tuberculosis, leprosy, etc. Ricord, Fournier, Sigmund and Hutchinson have shown how many and various are the cutaneous manifestations of syphilis and with what versatile mimicry it assumes the form of other diseases of the skin. Tuberculosis has been proved to be accountable not only for lupus, but for affections formerly classed under the heads of lichen and erythema and for the other forms of skin disease included under the general term scrofuloderma. The sorting out of the cutaneous affections due to these two causes alone has greatly reduced the region of the unknown in the map of dermatology.

The action of parasites.—Another direction in which the etiology of skin diseases has made decided progress is the recognition of the action of parasites. The idea that scabies is due to the irritation set up in the tissues by the animacule, and ringworm by the growth on the surface of the skin of a vegetable mould, is so familiar to us that it is not easy to realize how recently the truth of these doctrines has been definitely established, and with what incredulity the discoveries were for a long time received. The sarcoptes scabiei had been seen by Avenzoar in the twelfth century and later by Guy de Chauliac, Ambrose Paré and others; and in the seventeenth century it was distinctly indicated as being the cause of itch by Bonomo and Cestoni. It was rediscovered more than once afterward, but it was not till 1834 that Renucci, in Alibert's clinic, was able to show how it could always be found. Yet in 1850 Antony Todd Thomson is allowed to say, without a word of protest from his editor, Parkes, that itch is certainly "the result of a morbid poison, and the fluid of the vesicles or pustules is the agent transmitting the disease," and while awarding Wilson credit for his accurate description of the acarus, Thomson expresses his inability to "accord with him in attributing the disease to that insect." Still later we find a dermatologist like Devergie writing: "The acarus is a morbid product of the itch as the mycoderm is the morbid product of ringworm, as the insect of acne punctata is the morbid product of that disease, as the louse is the morbid product of pediculous prurigo. Ringworm is contagious through the medium of this mycoderm, not only from child to child, but from the head of a child to the bark of certain trees, and the lousy evil from person to person. Ringworm, acne punctata and the lousy evil, do they originate the less spontaneously on that account? The means that we use to destroy the acarus, are they not also suitable for curing the eruption of itch?" The fact that only forty years ago a dermatologist of the first rank could thus in one sweeping anathema condemn root and branch the doctrine of parasitism in skin diseases, is one of the most striking proofs of the youthfulness of scientific dermatology and of the progress which it has made.

The discovery of the vegetable fungi which cause ringworm, favus, tinea versicolor and erythrasma, unlike that of the itch mite, was not made in the Dark Ages, but almost in the full glare of the light of modern science; yet it was received with equally resolute disbelief by some of the leaders in dermatologic Israel.

Bacteria and skin diseases.—The influence of the great revolution in pathology brought about by the discoveries of Pasteur, Koch, and their disciples has been felt in the sphere of dermatology as in other departments of medicine, and we have learned to look for the causes of many diseases in the world of the infinitely little which bacteriology has revealed to us. Already lupus, leprosy, carbuncle, glanders, sycosis, furuncle, impetigo contagiosa have been proved to be the result of the mischievous activity of specific micro-organisms. It is practically certain that syphilis has a like origin, but the particular microbe responsible for its production is still "wanted" by our scientific police. Eczema is considered by Unna, who has done much for the recent advance of dermatology, to be of microbic origin. A similar causation is assigned to psoriasis, and by others to alopecia areata, acne, and certain forms of erythema. Quite recently Sabouraud has brought forward evidence which he thinks sufficient to prove that seborrhea and common baldness are of the bacterial family of diseases.

Other lines of advance.—The most important has been the increased attention bestowed on the relations of various forms of cutaneous affections to disorders of the nervous system. In this field the most notable workers have been Bärensprung, Weir Mitchell, Morvan, Schwimmer, Radcliffe Crocker, and above all Leloir, whose untimely death was a grievous loss to dermatology. A large number of skin diseases presenting the greatest diversity in their objective features have been shown to be dependent on lesion or functional disorder of some part of the nervous system. Many diseases, such as zoster, erythema, pemphigus, scleroderma, and various forms of cutaneous edema, hemorrhage and ulceration, which used to be called "idiopathic"—the medical equivalent for the "visitation of God" in the simple etiology of the British juryman—are now recognized to be consequences of vasomotor or trophic disturbance. We also know that defective innervation plays a considerable part as a predisposing cause, making the skin less able to resist harmful influences of any kind. In this way nervous disorder comes into play as a definite factor.

Another line along which we have advanced is the establishment of a definite relation between certain constitutional states and affections of the integument. The tendency of the French school to look to the general system for an explanation of every blotch and pimple led them away from the truth, no doubt, even to the invention of a diathesis when one was wanted; but some dermatologists have perhaps now gone a little too far in the opposite direction. It is well that with the all-conquering bacillus on every side extending the boundaries of his empire, we should not forget that other agencies have still to be taken into account.

The influence of auto-intoxication requires to be more thoroughly studied than it has yet been; the effects of ptomains should also be fully investigated. The serum treatment which is now being tried in diphtheria and other diseases is making us familiar with toxin rashes.

Progress in power.—Progress has been made in three ways: 1, We have got rid of some superstitions; 2, we know better where to direct our attack; 3, we have more effective weapons.

Among the superstitions that hindered progress one of the most pernicious was the notion that skin disease was a natural issue for the escape of peccant humors—a safety-valve for the constitution. Hence in many forms of skin affection, and particularly in the case of eczema, it was believed to be dangerous to cure the cutaneous lesions, because the disease was thus "driven in" upon the internal organs.

Increased precision in the direction of attack naturally arises from increase of knowledge as to the nature, and especially as to the causation, of cutaneous affections. Nowadays we at least do not, as Archbishop Whately said of the common run of preachers, "aim at nothing and hit it." The polypharmacy in which the older school of dermatologists delighted is almost a thing of the past, and patients are not physicked in the wholesale and indiscriminate manner that used to be thought necessary for the correction of their constitutional depravity. Internal medication is used only in response to definite indications, and we work the "miracle of cure," to use a too celebrated phrase, with the help of a simpler, pleasanter and more efficient pharmacy.

The administration of remedies by hypodermic injection may be mentioned as one of the most promising improvements in constitutional therapeusis; the use of mercury in this way in syphilis is becoming more and more common. The serum treatment has not yet established itself in dermatologic practice, but good results from it have been reported in a few cases of syphilis, lupus, leprosy, and one or two other affections. Tuberculin as first prepared by Koch has in my own hands and in those of some other observers, proved of distinct use as a preliminary to surgical treatment in lupus. The newer tuberculin gives promise of much greater usefulness, but it is too soon yet to pronounce a definitive judgment as to its real efficacy. Thyroid extract has a powerful immediate effect on the integument, but my own experience does not lead me to attach much value to it as a remedy in skin disease, and that opinion is confirmed by the experience of several other dermatologists.

But it is in our means of local treatment that the improvement of our weapons is most marked. The application of the parasitic doctrine to skin diseases has led to the introduction of a large and constantly increasing list of parasiticides; in carbolic acid, boric acid, salicylic acid, resorcin, creolin, thymol, salol, dermatol, ichthyol, chrysarobin, to mention only a few, we have powerful agents that the mid-century dermatologists knew not of. Then both the preparations and the methods of applying them are cleanlier and more effective. The pastes, plaster mulls, varnishes, soaps, sticks, and other devices for the application of remedies which we owe to the ingenuity of Pick, Unna, Lassar, Brooke, and others have revolutionized the local treatment of skin disease. Our surgical methods and appliances, our antiseptics, our cauteries, etc., are also immensely superior to those in use twenty years ago.

We are altogether milder in our methods than the dermatologists of a former day; we soothe instead of irritating; we strengthen instead of depleting; we leave Nature to herself instead of thwarting and teasing her into active rebellion.

The future of dermatology.—Whether the newer medication with serums and organic extracts holds in it much promise for the treatment of skin disease it is of course impossible to say; I am, however, inclined to think that in this direction, and in that of increase of power of dealing with parasitic affections lies the path of development in dermatologic therapeutics likely to lead to the best results. It will be long before a complete classification of diseases of the skin is possible, but this is of no great practical importance. A real stumbling block, however, is the confusion of terminology that still exists: It would be a very real help to progress if a nomenclature at once simple, precise and yet descriptive, and inter [illegible] uld b devised.

ORIGINAL ARTICLES.

LIGATION OF THE COMMON CAROTID ARTERY FOR TRIFACIAL NEURALGIA WITH EXPERIMENTS AND OBSERVATIONS UPON DOGS.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY B. MERRILL RICKETTS, PH.B., M.D.
CINCINNATI, OHIO.

The frequency, severity and want of remedial relief from trifacial neuralgia has prompted a most extended research, not only into the literature but also the pathologic conditions of the minute structures involved, as determined from an experimental point of view; and as a report of the case operated upon by myself in July, 1896, was made within several weeks of the operation, I will make but casual mention of the condition found within those few weeks. It is, however, gratifying to state that the good results derived from that operation have been permanent.

Before entering upon the experimental feature it is necessary to understand that the anatomy of the dog is practically the same as that of the human being. Especially is this so in reference to the arterial and nervous system of the head and neck, and even the sympathetic system in this region is but little, if at all, dissimilar to that in man. Literature is not wanting in evidence that the common carotid artery may be ligated in almost any pathologic condition with impunity, but recorded observations are few concerning this procedure as a means of relieving neuralgia of the fifth nerve.

English, German and French investigators have each contributed comments that are highly interesting.

Trousseau did the operation, but Nussbaum was the first, losing the case on the third day by hemorrhage, while *case 2.*—(March 9, 1862, F., aged 22), recovered with slight paresis in the affected side, which disappeared on the fourth day with return of pulsation; he does not say whether this case again experienced pain.

Case 3.—Male aged 40 years, duration many years, was operated on October 30, 1862. Stupor lasted for eight days, then sudden return to consciousness without pain. Complete paralysis occurred on the side operated on within twelve hours, lasting four weeks, when sensation returned, followed slowly by motion, relief from pain being constant.

Case 4.—F., aged 38 years, duration nine years, had operation November 8, 1862; no result.

Case 5.—F., aged 60 years, was of several years' duration. Various other operations had been made. Ligation resulted in cure. Atheroma at bifurcation.

Case 7.—Female, five children, operation September 14, 1865. Cured. Died 1876; no return.

Case 8.—Male, aged 45 years, ten years' duration. Ligation June 30, 1877. This is the third time this case has been reported cured (Fowler).

Case 9.—Male, aged 41 years, operation keratitis; lost eye.

Case 10.—Young, hyperemia of side of face. Ligation; instant relief. No recurrence sixteen years later.

Case 11.—Female, aged 32 years, right side, hyperemia of face and scalp; ligation; immediate and permanent cure.

Case 12.—F., aged 63 years; ligation; cure.

Case 13.—Only temporary relief even after dividing nerve at foramen rotundum.

Case 14.—Male, relief eleven months, then divided at foramen rotundum with complete cure.

Case 15.—A monk, eight years' duration, hyperemia and burning right side of face, head and neck. Died with erysipelas.

Case 16.—Male, aged 49 years, thirty years' duration; ligation; no relief.

Case 17.—Male, aged 64 years. Ligation, then neurectomy of inferior dental nerve; permanent cure.

Case 18.—Parotid tumor removed without relief. The scar pressure gave occasional relief. Ligation of common carotid gave complete cure.

The ophthalmic is the branch most frequently the seat of pain, and the superior maxillary next in frequency. The origin may be either central or peripheral or both.

Causes.—While anemia has been ascribed as being perhaps the most common factor in producing pain in this lot of nerves as in others, it must be remembered that any degree of anemia from any cause may exist without pain in any part of the body. Congestion is also a most potent factor in causing pain, and why not in connection with this ganglion and its branches? The right ganglion is the most frequently affected.

These conclusions are derived from my personal observations. However, there are no apparent reasons why one should be affected more frequently than the other, their anatomic relations being identical.

The first branch passes through a bony canal, and makes its exit through a hole or fissure, which fact creates a reasonable probability that the channel may often be narrowed by exostoses or thickening of the periosteum, either of which would cause pain. To meningeal adhesions it is also an easy matter to assign the cause of trifacial neuralgia, and especially may this be so in circumscribed meningitis about the ganglion. Lying as it does between the dura and the bony ridge and the petrous bone beneath the dura, it is readily conceived that adhesions to the dura or adhesions of the dura to the bone would probably produce pain. Then, too, the weight of the brain pressing upon the ganglion which rests upon a bony foundation, may be found to add to the environments conducive to pain. This is the only ganglion which rests upon bone. Middle ear inflammation and fracture of bones associated with the ganglion and nerves may produce either anemia or congestion sufficient to give rise to pain.

Experiments and operations on dogs.—Assisted by Drs. P. C. Logue and P. M. Ashburn. Before entering upon these cases it may be well to give a brief description of the vessels and nerves in the neck, head and face of the dog.

The analogy existing between man and dog as respects these structures is very striking indeed. The carotid artery in the right side arises from the innominate, and on the left side from the arch of the aorta as in the human subject, and pursues a very similar course, inclosed in its sheath and accompanied by the internal jugular vein and pneumogastric nerve. The size of the vessel is very much smaller in proportion to the size of the animal possessing it than would be expected, and bifurcation takes place at a much higher level than in man. After division the external carotid gives off its branches, position and distribution very similar to the external carotid in man. The internal carotid is also given off at a higher level and appears more as a branch of the external carotid than as a bifurcation of that vessel. It arises from the external carotid at about the level of the hyoid bone, and after passing upward and backward deeply seated beneath the muscles of the neck, enters the carotid canal in the petrous portion of the temporal bone to reach the cranial cavity. The only portion of the vessel that is of very great interest as respects these experiments is the intracranial portion. After entrance into the cranial cavity the artery passes close to the inner side of and below the Gasserian ganglion, giving off one or two and in some cases three delicate twigs to supply it. The middle meningeal branch of the internal maxillary also passes to the inner side of the ganglion and supplies it with arterial blood.

After ligation of the common carotid artery it was hoped that there would be some possible diminution in the size of the vessels, especially those supplying the ganglion above the point of ligation, but this was only apparent in two cases out of the six operated on.

Enough has been said about the gross anatomy of the arteries, and with a brief description of the fifth nerve and its ganglion, I will close this part of the subject. The origin, course, division and distribution of the fifth nerve in the dog is so very like that in man that only light mention will be made of it. The deep portion of the nerve passes over the superior border of the apex of the petrous bone to form the Gasserian ganglion, after which the three branches are given off and make their exit from the skull through their respective foramina. The Gasserian ganglion lies at the apex of the petrous bone on its anterior surface external to the dura and is exceedingly large, even in dogs of small size.

The technique of the operation was as follows: After etherization (dogs tolerate this anesthetic much better than chloroform) an incision was made in the line of the common carotid, the sternoclidomastoid muscle affording an easy guide to the position of the vessel. After exposure the artery was ligated with silk-worm gut and the skin incision closed by a running suture of the same material. No antiseptic precautions were taken, and in all cases primary union was secured. Apparently the animals suffered but the slightest shock from the operation, as they were up and about a few moments afterward. The time they were allowed to live after the ligation varied from two to eight weeks. The injection used for dissection, with a few modifications by Dr. Layne, my house surgeon, who made the dissections, was given me by Professor Lewis, Professor of Anatomy in the Cincinnati College of Medicine and Surgery, to whom I am indebted for this valuable and novel procedure. The basis of the injection is ordinary corn starch in the proportion of a pound of starch to a pint of water, to which is added anilin in sufficient quantity to give the desired tint. Instead of using water alone, alcohol and water in equal parts was substituted and found to be more efficacious, as the alcohol does away with the necessity of a preservative and it is also possible to throw a larger quantity into the vessels and thereby secure a more perfect injection of the subject. The alcohol is taken up much more quickly by the tissues than is the water, and in a very short time (ten minutes) the starch has hardened sufficiently for work. The injection secured by this method is the best I know of, the smallest capillaries being readily permeated by the fluid starch, an end which is not easily attained with parafin, wax, etc. Dissection was begun as soon as the injection had hardened, and the following observations noted:

Experiment 1.—Ligation of the common carotid of two weeks' duration; vessel obliterated for a short distance above and below the ligation, no apparent alteration in size of trunk or branches above this point; brain beautifully injected on both sides.

Experiment 2.—Dissection at the end of three weeks; vessel occluded at point of ligation; no change different from Case 1.

Experiment 3.—Dissection on the twenty-fifth day; no noticeable alteration in size of vessel above point of occlusion.

Experiment 4.—Dissection on the thirtieth day; vessels on the side opposite the ligation manifestly enlarged, especially the infra-orbital branch of the internal maxillary.

Experiment 5.—Dissection at the end of the fifth week. No perceptible change in the size of the vessels on either side.

Experiment 6.—Dissection at end of eighth week; vessels on opposite side of ligation perceptibly enlarged.

It will be seen that nothing of value in so far as diminution of the size of the vessel is concerned was gained from the above experiment. This must be attributed to the free anastomosis that exists both inside and outside the cranial cavity in the dog. It was found that after ligation of both common carotid arteries the brain could be perfectly injected, the fluid readily passing through the cerebral arteries. The starvation theory is therefore not tenable, and something else must be sought as the cause of cure after ligation of the common carotid artery.

The microscopic examination of the ganglion of Gassa was made by Dr. D. I. Wolfstein, who writes the following:

May 30, 1897.

Dear Dr. Ricketts:—The specimens you gave me to examine, in which you wish to know whether there was any evidence of structural change or any difference in the appearances, were duly stained. The specimens were the Gasserian ganglia, the presumably abnormal one being tied with a piece of string. They were stained both with thionin and with hematoxylin and both showed perfectly normal ganglion cells. With thionin, the usual beautiful differention of chromato- and achromatophilic substance seemed identical in both. I am unable to find any difference whatever. D. I. Wolfstein.

Conclusions.—1. Ligation of the common carotid without pathologic conditions is attended with but little danger.

2. It is safer, more certain and attended with fewer serious consequences than any of the intercranial operations for trifacial neuralgia.

3. The causes seem to be either congestion or anemia.

4. When congestion, the relief is more certain by ligation.

5. The close proximity of the ganglion to the bone upon which it rests, and the weight of the brain upon it, together with localized meningitis, seem to explain in some degree the causes of anemia and congestion of the ganglion.

6. Cell structure of the ganglion is not changed by ligation of the carotid artery, and therefore can not be ascribed as the cause of relief from pain.

7. As the size of the blood vessels on the side ligated do not seem to be lessened at the end of eight weeks, the cause of relief evidently lies in the fact that the tension of blood is much lessened. The lessening of arterial tension in any congested area gives relief, and why not in this instance?

8. However uncertain the cause of pain or its relief may be, ligation of the common carotid for trifacial neuralgia is an established operation.

ON THE LOCAL ABSTRACTION OF BLOOD IN THE ARTHROSES OF THE EXTREMITIES.

Abstract of paper read in the Surgical Section at the Twelfth International Medical Congress, at Moscow, Russia, August 21, 1897.

BY THOMAS H. MANLEY, M.D.
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In a considereble number of joint lesions of the extremities dependent on trauma or various pathologic conditions, our resources are often taxed in an endeavor not only to relieve our patient as promptly as possible, but also to restore the full functional use of the limb. It is our aim, further, in our management of the case to be quite certain, whatever we do, not to leave a condition possibly worse than what we find.

Of late years the shibboleth has been "*rest, rest,*" immobilization and fixation, or the free and almost indiscriminate employment of the scalpel.

Rest, or the support of an injured joint is indispensable in a considerable number, but as the panacea some would have us believe, it is a fallacy. By surgical operations, the aid of anesthetics and aseptics very many limbs and lives have been saved which formerly were lost, though even here every unbiased observer must admit there is altogether too much cutting being done for joint lesions.

Our great aim in treatment should be to attempt the arrest of morbid processes before they have advanced to the point of destruction, or in other words, at an early date apply energetic prophylactic measures.

Among those in my own experience there is no single remedy so prompt, positive and potent in action as the local abstraction of blood, either by acupuncture, leeching, scarification or deep puncture.

Fashion rules in medicine as in the social world. Hahnemannism and the homeopathic school came and blood-letting went; not only that for constitutional maladies, but every phase of disease, so that it is difficult today to find a recent graduate in medicine capable of performing phlebotomy or wet-cupping a patient.

In order to recognize the class of cases appropriate for local depletion and have a proper appreciation of the morbid condition existing, a familiarity with the various pathologic phases of the lesion is necessary.

It is furthermore important to always bear in mind the fact that various states of the constitution influence local joint inflammation, which will early yield after those have been treated.

It may be briefly stated that the class of cases most appropriate for local exsanguination is that succeeding injury of the joints, those in which recovery is retarded by a hysteric element and many other conditions by no means well understood, nor is it necessary to employ it until other palliative measures have been thoroughly tested. It is immaterial whether inflammation be present or not. In fact, in some of the most rebellious cases the source of the greatest pain and degree of infirmity are in those joints entirely devoid of evidence of the presence of inflammation, nor is it any consideration whether the patient is anemic or plethoric. In the local abstraction of blood but a small quantity is removed. In any event what our patient in most cases needs is not more blood, but better. Relief from apprehension, restoration of sleep and use of the limb will soon stimulate nutritive energy of the system into renewed action. And furthermore, it is a well-known physiologic fact that the vessels always carry a surplus of blood, which if not discharged excessively is very soon regenerated.

Mode of procedure.—In all cases, having decided on the vascular depletion of a joint, it must be done thoroughly, with a free and firm hand. In many the leech alone or the scarification suffices, but in severe or chronic cases my own preference is for the long narrow-bladed bistoury, carrying the point down to and through the periosteum, the perichondrium, or even through the capsule. It is only necessary to be aseptic and to clear the main blood trunks. No anesthetic of any description should ever be employed, for the psychologic effects on the sensorium is undoubtedly the most potential element in relief; nor is it desirable to occupy time with detailed preliminaries lest the patient lose heart at the last moment and refuse operation.

By whatever means we proceed precision and rapidity are important. The parts are sensitive and the deep punctures painful, hence the demand for celerity of action. The blood should be permitted to flow as freely as possible and when it ceases simple dressings are to be applied, when the patient should be encouraged to use the limb as freely as possible. In certain cases it may be necessary to repeat the local exsanguination.

It may be remembered that it is only recommended as an adjuvant to other regular systematic treatment, but it is one of the most valuable. One has but to amply test it to be convinced of its efficacy in a class of arthroses often exceedingly trying to the patient and surgeon alike.

While recognizing the salutary influence of affecting the emotions in all cases, especially those in persons of a hysteric tendency, the *rationale* of this procedure may be further explained by the direct effects on the soft parts extrinsic to an articulation. There is generally in the greater number of the most painful cases a congested state of the capillaries, conjoined with a phlebitis which involves the subcutaneous, the subaponeurotic and deeper trunks. In the venous circulation of the extremities all the valves from within open toward the periphery, so that when the reticulated meshwork in the integument is freely opened all the deeper congested vessels are freely drained outward, tension is relieved and large territories of static over-congested vessels emptied.

In some cases wherein all the signs of inflammation are absent, except pain, the dominant pathologic change is evidently in the nerves and the absorbents. We have a multiple neuritis, with muscular spasm and hyperesthesia. In these cases surface or deep scarification with free vascular depletion is a remedy of the highest value.

There is nothing novel in the line of therapy here recommended. It is only a plea for a time-honored powerful remedy, which the writer is old-fashioned enough to recommend and which has no rival. It goes without saying, that all cases must be carefully studied and their nature well understood before submitting them to the plan of treatment described.

The above may not be regarded as progressive science, but we know that of late years the therapy of many infirmities and maladies as laid down by several authors is to do *nothing,* but wait and "*rest.*"

INTERESTING STONE CASES.

BY D. M. B. THOM, M.D.
MARDIN, TURKEY IN ASIA.

Case 192.—An Arab from the Plains, about 55 years of age, came to the hospital April 17, complaining of pain in urinating; had suffered for some time, as many scars of the hot iron over the region of the bladder testified. He was of good build, fairly nourished, but had a terrible dread of the knife, and would not listen to the operation by lithotomy. I explained to him that if the stone was sufficiently friable I could remove it without cutting, provided it was not too large to be grasped by the lithotrite. So on those conditions he became an inmate of the hospital, and the work of crushing began. The stone was found to be very large, but I was able to grasp and crush portions of it. After crushing as much as I thought advisable at one sitting, I proceeded to withdraw the lithotrite (Thompson's), which was accomplished with considerable difficulty, the female blade being so impacted as to make it impossible to screw the male blade home, causing some laceration of the mucous membrane of the urethra. I also had to enlarge the meatus in order to withdraw the instrument. It caused him but little inconvenience. He was ready for another sitting the second day. He had passed quite a number of pieces, and seemed very much encouraged. We had some five sittings, crushing a tremendous amount of stone, but each time experienced greater trouble in withdrawing the lithotrite, until I suggested completing the operation by lithotomy. He said he could not listen to that; as he was afraid that after cutting he would not be able to do horseback riding again, and that he would go to a friend's house in the city for a few days and see how he felt. That is the last I have seen of him. It is reported by his friend that he passed great quantities of débris, and that he was now fully recovered.

Case 196.—An Arab, about 60 years of age, a tall, lank, lean, gaunt-looking specimen of humanity, ill nourished, but possessing great nerve power and endurance. Some six years ago he presented himself complaining of pain in the bladder and difficulty in urination, but for some reason he disappeared, and did not show himself again until May 20 of this year. On again examining him I found he had a stone of large size. He confessed that he had been troubled with it for twenty years, and there was certainly proof enough over his abdomen that it had been there for some time. From the pubes to the ensiform cartilage there was not a spot as large as a silver dollar that had not been scarred by the red hot iron. He was informed that the stone was large, that its removal would be difficult; but he insisted on saying that it was not large, as he had measured it himself by passing his finger up the rectum. The same day he was examined he was present at an operation where a stone was removed measuring 9x10 centimeters; he said, "Mine is no larger than that." After trying the lithotrite and being unable to get it between the blades, I urged him to allow me to perform the suprapubic operation, but he would not listen to that; so on the following day, after making another ineffectual attempt to grasp and crush it, I cut down through the perineum, entering the bladder, and to my consternation found the organ full, a solid mass, immovable in any direction. My incision was as large as the parts would admit, expecting to meet with a large stone, but not a boulder. I took the large forceps applying it in different ways, hoping I might be able to move it, but to no purpose. I again tried the lithotrite, but the blades would not come near each other. So using the forceps as a fulcrum to press the stone up over the pubes, I cut down in the median line. Coming on the bladder I found it greatly thickened, resembling a muscle rather than the bladder. An incision fully three inches long had to be made before it could be extracted. Much of it was crumbled off in the effort to withdraw it, both above and below, but I succeeded in removing a solid mass weighing 80 drachms, measuring 9.5 by 7.5 inches. Fully 20 drachms of it was thus lost, so that we had the stone lying in the bladder, before touching it, weighing 12½ ounces. The upper wound was closed in the usual way, leaving the lower to do the draining, which to my mind, was what saved him, he being in the balance for a day or two. He began to show signs of gaining, and made a fairly good recovery, leaving the Hospital March 22 with only a small opening in the lower wound, which he had begged of me for a number of days to sew up as I had done the wound above.

Case 201.—June 19, 1897, a child three years of age was brought, complaining of pain in passing water; he was examined and found to have stone. He was at once operated on, and being anxious to remove the stone without introducing my finger, I entered the bladder all right, grasping the stone, which went to pieces under the forceps, I removed everything I could find with the instrument and washed out the bladder with great care, hoping, yet doubting, that all had been brought away. The child was making a fair recovery, yet the old symptoms were as prominent as ever, so in July he was again brought and examined,and there was stone still remaining. I enlarged the former wound, making it large enough this time to introduce my finger. I found the bladder in the form of an hour glass, with the stone in the upper half. Expanding it with an injection of water, I removed about twice as much as I did the first time, my finger being within the bladder. I could find nothing more, yet he is not free from the old symptoms. It is a nice operation, if the stone can be extracted whole, not to introduce the finger, but when the stone is crushed in the extraction, nothing can give the positive evidence that the bladder is free from all débris but the introduction of the finger.

Case 202.—Our misfortunes, or unfortunate cases, do not look as well in print as the more fortunate and brilliant ones do; but it is through the misfortunes of one that others learn to avoid them, and for that reason it is our duty to give them publicity with the same candor we do our more successful cases. For that reason I will close with two of what I call unfortunate cases. This last case was operated on yesterday, the second of the kind in 202 cases of calculus it has been my fortune—and some of my patients' misfortune—to operate on. A child of three or four years of age, well nourished and in fine health, was brought to the hospital some five or six days ago. The father, who was with him, says that for nearly a year he was troubled by spells of having pain in passing water. I examined him and at once got the click of the stone. Yesterday he came prepared for the operation. The father said that since he was examined he had been free from pain in passing water. On introducing the staff I again got the former click, and making the wound large enough to introduce my finger, imagine my surprise and utter chagrin on exploring the length and breadth of the bladder not to find a stone in it! The case is doing well, but what was it I mistook for a stone?

In looking back through my records I find Case No. 72, aged 3 years, Turk, a very delicate child. In sounding no audible click was heard, and for that reason was removed from the operating table. The symptoms continued the same. The parents insisted on my trying again, which I did, with the same result. The sound seemed to come in contact with something, but getting no clear sound I refused to operate. The child suffered so much from the pressure of water that the father insisted on my operating; I consented, giving it as my opinion that it was unwise to do so. On entering the bladder, no stone could be found! Inflammation set in, carrying off the little fellow in twenty-four hours.

All these, in fact all my operations, are done without any assistance, except as my servants help.

July 8, 1897.

THE TREATMENT OF HEMORRHOIDS BY THE INJECTION METHOD.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4. 1897.

BY LEWIS H. ADLER, Jr., M.D.

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PHILADELPHIA, PA.

I am sure that my experience is by no means unique, in that the majority of patients with hemorrhoidal troubles come to me greatly prejudiced against any operative procedure involving the employment of general anesthesia, and especially the use of the knife. These objections have been raised not only by the laity, but also by physicians who have been similarly affected. Such an argument should not and would not prove a factor in altering the character of advice to be given to a patient were I satisfied that only one plan of treatment could effect a cure; but where a choice of several methods exists for effecting the same or similar results it is not only our duty but a necessity for us to respect the patient's wishes.

In a number of instances, sufficient to convince me of the efficacy of the method and to enable me to place my opinion on record, I have treated internal hemorrhoids (in selected cases only) by the injection of carbolic acid. The results obtained in every instance have been entirely satisfactory to patient and myself.

I am thoroughly acquainted with the unsatisfactory experience and the unfavorable opinions expressed regarding this treatment by such authorities as Kelsey of New York, Mathews of Louisville, Ky., Allingham of London, and others of equal eminence, and I am, furthermore, free to confess that for a long time the weight of this evidence deterred me from giving the method a trial. On the other hand, I have diligently perused the literature, past and present, dealing with the other phase of the question, and after reading the excellent treatise on "Hemorrhoids and other Non-malignant Diseases of the Rectum," by W. P. Agnew, M.D. of San Francisco, I determined to test the merit of the treatment.

External hemorrhoids.—Agnew (*op. cit.*, p. 18) admits that the quickest, neatest, least painful and most desirable way of disposing of any form of external hemorrhoid, cutaneous tag or like redundant tissue is by excision, but employs the carbolic acid injection in those cases in which the patient is averse to being treated by any plan involving the use of the knife or scissors. He claims that this method effects a cure, to which such persons will readily submit, although informed that a longer time is required for the complete eradication of a tumor thus treated and that more pain and inconvenience may be experienced from the effects of the operation than would result from that by excision.

Personally I have had no experience with this method of treating external hemorrhoids, preferring and always advising in operative cases the excision of such tumors.

According to the same authority (*op. cit.*, pp. 22, 23 and 24) and as the result of his observations the objections to the treatment of external hemorrhoids by carbolic acid injection pertain solely to the length of time required for the removal of the tumor, a period of three or four days, and the pain following the injection, which is not intense, but is at times more or less annoying; usually beginning within one or two hours after the operation and continuing for twelve or fourteen. Agnew advises against the employment of this method in the treatment of external hemorrhoids when inflamed and in a highly sensitive state. He especially notes the care that should be taken when operating on these tumors by injection to see that quite a considerable portion of the cutaneous surface, especially at the summit of the pile is affected by the solution applied just beneath the skin, otherwise the skin will become inflamed, in order to let out the interior coagulum, which he has often seen come out in three days, without suppuration or showing the appearance of much moisture and in one unbroken cystic-looking mass. The operation is to be performed with a view of cauterizing all the tissue to be removed, which can be governed only by the dictates of judgment and as a result of experience.

Internal hemorrhoids.—It is to the treatment of internal hemorrhoids by the injection of carbolic acid that I wish especially to invite your attention in the hope of eliciting a free discussion as to its merits or demerits based upon the actual experiences of those who have given the method a fair trial.

Formula.—The formula which I use is the one advocated by Agnew, and the method of its preparation is best detailed by a verbatim description as given in Dr. Agnew's work on diseases of the rectum (*op. cit.*, pp. 35 and 36):

"The solution of carbolic acid found to be uniformly successful in the treatment of hemorrhoids is prepared by first making a solution of the acetate of lead and borax in glycerin in the proportion of two drams each of the chemically pure salts to one ounce of Price's glycerin:

℞ Plumbi acetat.
sodii biborat. . . . . āā ʒ ij 8,00
Glycerinæ . . . . fl. ℥ j 32,00

"Mix in a graduate, pour into a two-ounce vial, and let it stand for twenty-four hours. The solution of the salts is hastened by placing the vial in a warm water bath and allowing it to remain there for fifteen or twenty minutes. The glycerin can be handled to a better advantage and its measurements more accurately made and retained by warming it as well as the graduate before it has been poured into the graduate and the chemicals have been added.

"Select Calvert's No. 1 crystallized carbolic acid and pour a sufficient quantity, liquefied by warmth, into a two-ounce graduate to measure one ounce and add two drams of distilled water. To this add enough of the glycerid of lead and borax previously made to make the combination measure exactly two ounces.

℞ Acid carbolic (crys.) . . . . ℥ j 32,00
Aquæ destillat . . . . fl. ʒ ij 8,00
Sodii biborat. et plumbi acetat. et glycerin. fl. ʒ vj 24,00
Misce et sig. Solution for hemorrhoids.

"The object of the formula is to lessen the syrup-like consistency of the preparation. Should equal parts of crystallized carbolic acid and the glycerid of lead and borax be combined, the solution will be found rather too heavy for convenience. It will not flow through the hemorrhoidal needle as freely nor take hold of the tissues when injected as quickly as does a solution containing a small proportion of water. Be particular in the weights and measurements and the purity of the ingredients entering into this preparation, as anything unnecessarily irritating should be scrupulously avoided. I have tried synthetic carbolic acid and found the odor of tar to be decidedly stronger, and believe it to be much more acrid and irritating than the commoner preparations; neither can I see that anything is gained in using vegetable glycerin.

"Some make no allowance in attempting to give the formula, for the increase in bulk of the glycerin occasioned by the addition of the one-half ounce of solids, and direct that the ounce of carbolic acid be added to the full amount of the glycerid of lead and borax when made. By this inadvertence not much over a 35 per cent. solution of carbolic acid is obtained. After trying the acid in varying strengths and watching its effects, I have concluded that not less than a 50 per cent. solution should be used. The addition to the solution of the acetate of lead is designed to restrict the action, and that of the borax to lessen the irritative properties of the acid. The acetate of lead not only keeps within limit the distribution of the acid at the time the solution is forced out of the hypodermic syringe, but of itself combines with a certain portion of the albumin of the blood and other tissues, forming the albuminate of lead. If I were to make a change in the formula it would be toward an increase rather than a diminution of the quantity of acid."

Preparatory treatment.—This includes a careful study of the patient's physical condition. I would advise against the employment of the injection treatment in cases predisposed to phthisis or already affected by this disease, and in diabetes or in chronic diseases of the liver, heart or kidneys.

During an acute inflammatory attack of hemorrhoids is not a favorable time to operate, on account of the engorged condition of the rectal vessels, and the irritability of the mucous membrane of the bowel. Such conditions should be relieved by local medication and by remedies directed toward regulating the bowels and increasing the activity of the liver.

Operation.—At the time of operation the hemorrhoids are exposed by inducing the patient to have a stool or to sit over hot water.

It is advisable to smear vaselin over the mucocutaneous surfaces prior to operating, as advised by Agnew (*op. cit.*, p. 34), in order to prevent the solution used for the injection coming in contact with the parts.

The patient should be placed in Sims' position and the hemorrhoid being sufficiently well exposed, it is be punctured at its most accessible point, preferably about midway between its base and apex, and the point of the needle passed to about the center of the growth. Care must be exercised that the needle's point is inserted beyond the proximal end of its opening, as otherwise the preparation will be injected on the outside of the tumor. In a large growth eight or ten punctures may be found necessary.

The injection is to be inserted slowly, several drops at first, then drop by drop, watching the action of the solution as shown by the change of color that creeps over the surface of the pile. This change of color, Agnew states, is quite marked with hemorrhoids of a delicate coloring, less so with those possessed of more fibrous coats. The needle should be held in position for a short time, and if the quantity injected appears to be less than needed, more of the solution should be used. Agnew states that the solution takes effect slowly by virtue of its astringency and syrup-like consistency, and no doubt extends some farther than is always apparent at the time of operating. If the hemorrhoid be large and its cavities filled with blood exhibiting strong arterial pressure, more time will be occupied in performing the operation than is generally supposed, as many as twenty or thirty minutes occasionally being required. The time is taken up in such cases, by holding the needle in place until assured that sufficient of the solution has been used to effect the desired result. If the part feels doughy or springs up under the finger like an elastic ball when pressed, or blood flows freely through the place of puncture after the needle has been withdrawn, either enough time has not been allowed for the preparation to take effect or a sufficient quantity has not been injected.

After the entire cavity of the tumor has been thoroughly reached by the injection, and in a large tumor, a few drops have been deposited on the surface of the pile, so as to be sure of thoroughly cauterizing the more dense tissue of the integument, which Agnew states might otherwise inflame and create unnecessary pain and suffering, the hemorrhoid is to be thoroughly dried and covered with carbolized vaselin and returned within the bowel. Several tumors may be treated in this manner at one operation and I have seen no bad results ensue, although I have used several drams of the solution in a single treatment. No speculum is required, as a rule, in this method of treating hemorrhoids.

The needle required for the hypodermic syringe employed in giving these injections should have a little larger bore than the needle employed for ordinary hypodermic use, so as to permit the fluid to flow through readily, which the smaller needle prevents owing to the consistency of the injection fluid.

After-effects and treatment following operation.—In some cases pain is experienced several hours after the operation, but is usually controlled by suppositories of the aqueous extract of opium, ¼ grain, and extract of belladonna, ⅛ grain, used *pro re nata.* Difficulty in urination may occur and is usually relieved by a hot-water bag applied above the pubes, or by a sitz bath. Catheterization is seldom required. A desire to have the bowels move can be allayed by the use of the suppositories and by hot water compresses applied to the anus.

I do not endeavor to confine the bowels for any definite period after this operation; usually the patient's fear of having a movement effectually restrains such a desire, and on the third day I am in the habit of ordering fractional doses of calomel and soda, followed by a saline. Just preceding the time the bowels act I order a rectal injection of 8 ounces of carbolized oil (2 per cent. carbolic acid) or an injection of slippery-elm tea or of borax water (a dessertspoonful to the pint of water). A peculiar odor sometimes noted when the coagulum is being thrown off, should not be interpreted as indicating suppuration.

Agnew states that to effect a safe, speedy and radical cure of a case of hemorrhoids, it is desirable to get rid of the tumor bodily, not by shrinkage or contraction, leaving a hard or indurated prominence subject to resuscitation and a return of the old malady, nor by inflammatory destruction, but by a separation of the spongy and vascular growth from the normal tissue of the body, the same as if it were dissected from its remotest attachments. This is obtained by putting a sufficient quantity of the preparation recommended just where it is required, and such results will invariably follow. My experience with the treatment thus far leads me to endorse most heartily Dr. Agnew's strong commendation of the method which he has so successfully employed for a long time. Personally, I can not speak authoritatively regarding the permanency of the cure effected by the carbolic acid injection in hemorrhoids, for I have not had an opportunity of observing cases treated by this method for a longer period than two years, but from my observations I am inclined to believe that it is a radical procedure.

Regarding the dangerous results following this treatment—of carbolic acid poisoning, embolism, sloughing and ulceration, or their sequelæ, abscesses or fistulæ, I have not witnessed any such results and am loath to believe that they do occur if the operation be performed carefully and skilfully and with a proper observance of aseptic principles.

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DISCUSSION.

Dr. BROWN of Indian Territory—I have operated on more than one hundred cases. Upon injecting carbolic acid I found the pain was increased, but when we used the chemically pure acid the pain was mitigated more than by any other. We also found that in this way there was no pain after the first few seconds, unless we happened to get the acid around the outside. We have much less chance of its being absorbed. By injecting one hemorrhoid the whole mass will disappear, and one application is usually sufficient. I do not know exactly from what cause these results ensue, but the disappearance of the whole amount of hemorrhoids showed that the acid had been absorbed.

Salicylate of Methyl in Rheumatic Arthropathy.—The benefits of local applications of salicylate of methyl in arthralgia accompanying infective disease have recently been proclaimed, and a similarly beneficial effect has been observed in the arthropathy of subacute or chronic rheumatism after about 3 grams have been applied to the articulation. The secret of success is to enclose the joint afterward hermetically. For this purpose it is laid on a piece of rubber tissue, the salicylate of methyl rubbed in and the rubber tissue drawn up tight around it, enclosing the whole hand or foot as the case may be. Cotton may or may not be used inside.—*Presse Médicale*, July 28.

CICATRICIAL STENOSIS AND VALVE FORMATION AS A CAUSE OF PYLORIC OBSTRUCTION, WITH A REPORT OF FIVE CASES RELIEVED BY OPERATION.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at *Philadelphia, June 1-4, 1897.*

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Non-malignant forms of pyloric obstruction are not infrequent and have, I believe, been commonly confused with cancerous disease and, with some exceptions, allowed to die without surgical intervention. When the stenosis results from the cicatrization of an ulcer which had existed years previously the patient may be in middle life or later before the obstruction becomes marked and the cachexia of chronic starvation closely simulates that of malignant disease.

Now and then cases operated upon by such masters as Senn, Lange, Weir and others have appeared in American literature. European operators have been more advanced in this respect and have furnished many important contributions to the subject.

Stricture of the pylorus following upon the healing of gastric ulcer is the most common form of non-malignant obstruction and four out of five cases upon which I have operated have been of this variety. The site of previous ulceration in these cases was along the lesser curvature and anterior surface of the stomach, and in two the cicatrix was very extensive, a prolongation extending downward in the the pyloric region and causing great distortion of the canal. In two of the remaining cases the strictured area was narrow and circular in form, one with its origin in a cicatrix along the anterior wall and the other having no apparent cause. In these two cases the dilatation of the stomach was extreme, although the mechanical obstacles to its emptying were not so great as in the three cases in which the scar tissue was more extensive. In one of these two cases the pylorus was held up very high by a short gastrohepatic omentum, and in both cases the downward sagging of the stomach produced a well-marked kinking or valve formation at the pylorus, which evidently was obstructive in its nature.

In a case which died from chronic starvation, supposed to be due to pyloric obstruction of a cancerous form and therefore not subjected to operation, the postmortem showed a large fibrous hypertrophy, such as described by Greig Smith, with obstruction not of a malignant nature.

The pylorus was stenosed, yet not to a marked degree, the strictured portion easily admitting a lead pencil. There was no evidence of previous ulceration. Here again this valve formation was well marked.

Some observation of the two cases operated upon and experiments made with the postmortem findings just referred to leads me to believe that a pylorus somewhat rigidly held upward by a short gastrohepatic omentum, or one in which a certain amount of mechanical obstruction is present will permit sagging of the stomach and valve formation of the pylorus, with consequent obstruction.

It is possible that this condition may exist in many cases of chronic gastric catarrh and dilatation without producing sufficient trouble as to cause death or require operation.

The production of valve formation at the pylorus is similar to the valve formation of the ureter at the pelvis of the kidney as a cause of hydro- and pyonephrosis so graphically portrayed by Christian Fenger.

Enteroptosis favors such obstruction, as the greater the sagging of the intestines and the greater the downward displacement of the stomach the more perfect are the mechanical conditions which tend to valve formation.

One year ago I read a paper before this Section on a similar subject and referred to valve formation as a possible cause of the difficulty at the outlet of the stomach, and I am now still more confirmed in the belief then expressed. It certainly explains many of the changes incident to the causation of obstructive symptoms without previous local disease.

Kussmaul, on the cadaver, has been able to produce a rotation obstruction which is evidently similar in nature. A few cases of congenital stricture have been reported by Landerer and Maier.

It is altogether questionable whether movable kidney can produce mechanicel pyloric obstruction, although this conclusion has been drawn as to the relief of gastric symptoms supposed to be given by nephrorrhaphy in neurasthenic women.

The diagnosis of marked pyloric obstruction and the consequent dilation of the stomach is not difficult, in fact the vomiting of large quantities of ingested material or its removal by the stomach-tube is of itself significant. After inflating the stomach with atmospheric air, by means of an ordinary valve syringe and a stomach-tube, its outline can be rendered evident to the usual methods of physical diagnosis, inspection, palpation, percussion and auscultation. The gastroscope and the gastrodiaphanoscope have little practical value to the surgeon. The differentiation between the malignant and the non-malignant forms of obstruction is often difficult and may be impossible without exploratory incision. The examination of the stomach contents has perhaps some value. When the test meal of Ewald and Boas shows an absence of free hydrochloric acid with Gunsburg's test and at the same develops lactic acid by Uffelmann's method of examination the indications are for cancer; yet prolonged non-malignant obstruction may cause such disease of the mucous membrane as to mislead the observer. In a considerable number of such examinations made for me by Dr. Christopher Graham the conclusions of Rosenheim have usually obtained, but these tests are far from reliable in character and at best are only confirmatory.

In two of my cases of obstruction from former ulceration the cicatricial mass could be plainly felt through the abdominal walls, so much so as to lead to a fear of malignant tumor.

After all, the chief factors in the differential diagnosis will be obtained from a careful examination into the personal history of the patient, especially as to previous ulceration and from the length of time the obstruction has existed. In this respect the occasional cases wherein the scar tissue of previous ulceration has degenerated into malignancy are of interest.

I wish to call attention to the significance of enlarged glands in the greater and lesser omenta as evidence of malignancy.

I have three times seen enlarged glands having all the appearance of malignant disease in non-malignant pyloric obstruction, evidently due to chronic sepsis from the absorption into the lymphatics of decomposing stomach contents.

Fenger speaks of this septic glandular enlargement about the head of the pancreas in his writing on "The Floating Stone in the Common Duct," as nowise malignant. I have found it in one case in the axilla in a non-malignant tumor of the breast and in the deep lymphatics in a case of sloughing uterine fibroids.

Bull says that 50 per cent. of pyloric cancer cases die of starvation before glandular infection takes place.

Maylard, in his work on "The Surgery of the Alimentary Canal," speaks of the large fibrous stricture of the pylorus as having only fibrous structure, but says that if epithelial elements be found in the enlarged glands malignancy is established. I think that the accuracy of statements as to the absolute malignancy of any case in which the proof is enlarged glands, which have not been microscopically examined, can be questioned.

OPERATIONS FOR THE RELIEF OF PYLORIC OBSTRUCTION

The median abdominal incision between the ensiform cartilage and the umbilicus has proved to be the most satisfactory in giving easy access to the field of operation. This can be enlarged by a transverse cut across the rectus muscle if necessary for free exposure.

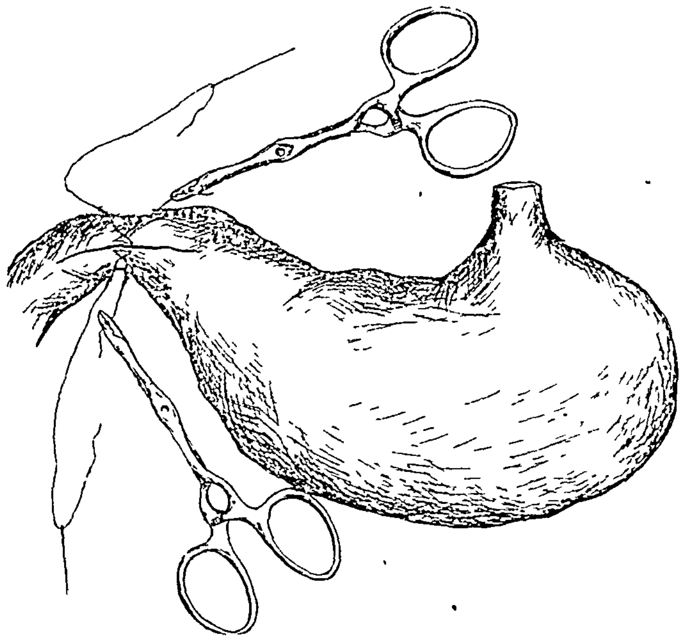

FIG. 1 shows the manner in which the first two stitches are applied. The forceps serve as retractors to hold the wound apart as shown in Fig. 2. These stitches are inserted before the incision is made.

Pyloroplasty, devised by Heineke and Mikulicz, is the operation of choice and in narrow strictures is easy and certain in its results. As much of the incision as possible should be in the healthy rather than the scar tissue, as the latter is stiff and does not nicely coapt and has the disadvantage of all scar tissue that necrosis is apt to be the result of the suture pressure. If the contracted portion is very long the duodenum can be folded or knuckled upon the stomach after the *adossement* method of the French authors. This latter plan worked admirably in the second operation on my fifth case. As pyloroplasty can not be readily performed in severe cases in which the scar tissue is very extensive or the pylorus bound down by adhesions to a degree which renders the operation hazardous, the mortality should not be great—about 10 per cent. Out of five cases I was able to do pyloroplasty in only two.

Gastrorrhapy, introduced by Bircher, may be a good operation in valve formation, but cases which are suitable to this procedure could be relieved by pyloroplasty.

Loreta's operation of divulsion has a mortality of 40 per cent. and fails in a large proportion of the cases, making a primary recovery to yield a permanent cure. Greig Smith, however, believes that it has a field in the large fibrous form of obstruction.

Pylorectomy will seldom be done for non-malignant stricture. I can understand how a surgeon could commence a pyloroplasty and finding this method unsuitable be forced to make a pylorectomy as the only way out of the difficulty, but the mortality of 50 per cent. is too high when contrasted with other methods of relief for general adoption. Weir, Meyer and others have done the operation successfully in this class of cases.

Gastro-enterostomy for non-malignant disease is an operation of expediency and not of choice. Circumstances often compel its use, however, as extensive contracture of the pylorus or the presence of tissue unsuitable for the security of suture union.

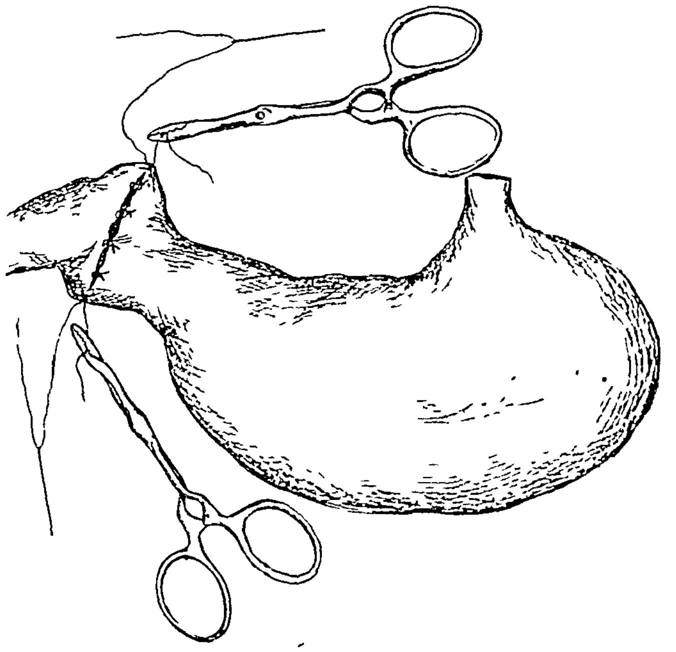

FIG. 2 shows the wound drawn transversely with a few interrupted sutures in place.

Inaccessibility of the field of operation, by reason of the presence of dense adhesions to important structures, is also an important indication. For one or more of these reasons, three of my five cases were relieved by gastro-enterostomy.

This operation by the suture methods, according to McGill, gives about 50 per cent. mortality and, with mechanical aids, about 23 per cent. The best mechanical device is, undoubtedly, the Murphy button. The greatest drawback to its use is the liability of the button dropping backward into the stomach upon separation. This happened in three out of eight gastro-enterostomies which I have made by its use. A year ago I suggested the tying of a string to the intestinal side of the button with the end in a double bow knot eight inches away, thinking that intestinal action at that distance from the site of the adhesions would act as a kite tail guide or tractor. In three cases the action was admirable. In a fourth case, I regret to say, the button had not appeared when the patient left the hospital and I presume it is in the stomach.

Great care should be exercised to secure the jejunum at its origin and form a coil as close as possible to the proximal end. Rockwitz says that the union should be made so that the intestinal and gastric peristalsis will be in the same direction to prevent impaction of the unused portion of the bowel. Braun advises entero-anastomosis to empty the duodenum more perfectly, and Kocher makes a right-angled attachment of the bowel to the stomach in order that gravity may aid the downward passage of the gastric contents. In all operations in this region the omentum can be readily fastened with a few sutures in such a position as to add greatly to the security of union. The unequal thickness of the stomach and intestine is a source of weakness in this operation.

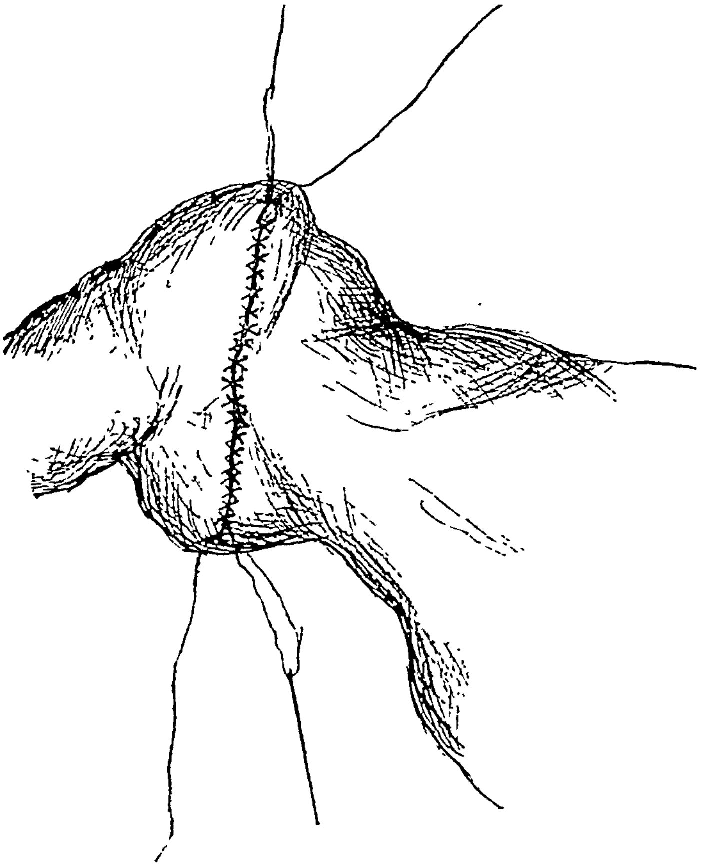

Fig. 3 shows the wound as closed by two rows of continuous Lembert sutures by means of the needles and threads used in the original sutures, the unthreaded end of the sutures having served as retractors as well as for the purpose of indicating the extent of the suturing necessary.

It should be borne in mind that a stomach with a normal capacity of three pints dilated to two or three times this extent at the time of operation, will certainly contract after relief of the obstruction, and that this contraction will effect the opening and correspondingly reduce its size to the same extent, and that such harmful contraction may not necessarily be due to the scar tissue forming the margins of the fistula. In this lies the uncertainty of gastro-enterostomy as a permanent opening.

Taking all of these facts into consideration, the suture method of Wolfler offers the fewest objections, as the opening can be of sufficient length to provide for future contraction and, with the improving technique of modern methods of suturing, the mortality will steadily diminish.

In operations on the stomach the emptying of this viscus should be carefully attended to previous to operation, to prevent contamination of the wound by escaping contents. A preliminary hypodermic of morphia with chloroform anesthesia has, in our hands, best controlled the tendency to retching so annoying in operations of this character. The after-treatment has been simple; morphia, if needed, to prevent peristalsis, and rectal feeding for three or four days, with strychnia hypodermically and stimulants per rectum as needed.

Case 1.—Stricture and valve formation. Pylorplasty.—M. M., male, aged 46, American, admitted to St. Mary's Hospital Jan. 10, 1895, with a history of gastric symptoms extending over a period of seven years. For the past two years he has vomited large quantities of partially digested or decomposing food, once or twice in twenty-four hours. He has grown weaker and lost about one hundred pounds in weight. Early in his illness he vomited blood a few times and suffered severe pain after taking food.

Physical examination.—Patient very much emaciated, heart's action feeble, with dilatation of the right ventricle. With the stomach-tube a large quantity of gastric contents was removed. Dilating the stomach with air, it was found to extend downward and to the left, to a point on a line with the anterior superior spine of the ilium. The pylorus was plainly felt on a level with, and to the right of, the umbilicus. Free hydrochloric acid was present in the test meal.

Operation.—Jan. 13, 1895. A small cicatrix was found on the anterior wall of the pylorus and from this a band encircled the pylorus producing a stenosis of about the caliber of a goose-quill. The sagging of the stomach was very marked, producing a *kinking or valve formation just at the stenosed area.* Enlarged glands were found in the mesentery, having the usual appearance of malignant disease. Pyloroplasty was done and the patient discharged February 15, cured. When seen six months later he had gained seventy pounds in weight and was doing his work on a farm.

Case 2.—Cicatricial stenosis. Gastro-enterostomy.—W. G., male, aged 53, German, admitted to St. Mary's Hospital May 26, 1896, with a history of ulcer of the stomach which had caused severe trouble for nine years. During this time he had been unable to work and was more or less constantly under treatment. For three years he had been unable to take solid food and at intervals of from eighteen to thirty hours vomited up *great quantities of material from his stomach.*

Physical examination.—Patient extremely emaciated and so weak as to be unable to walk without assistance. On dilating the stomach with air, it filled almost the whole of the left side of the abdomen. Examinations of stomach contents were contradictory and uncertain. To the right of the umbilicus a thickened area amounting almost to a tumor, could be felt.

Operation.—May 29. A very extensive board like cicatrix was found on the lesser curvature of the stomach and extending into the pyloric region. The strictured area was extensive, bound down by dense adhesions, and showed practically no tissue which would be safe to suture. Gastro-enterostomy was done with a Murphy button and string guide. Button passed on the thirteenth day; patient discharged June 19. When seen two months later he had gained thirty pounds in weight and was completely relieved of his trouble. When seen last (ten months after the operation) patient looked fat and well, but exhibited some symptoms of possible contraction of the *opening. Should these symptoms* become sufficiently marked I shall enlarge the gastro enterostomy opening, by an operation similar to pyloroplasty.

Case 3.—Cicatricial stenosis. Gastro-enterostomy.—Mrs. J. E., aged 55, Irish, admitted to St. Mary's Hospital July 6, 1896, with a history of chronic stomach trouble extending over a period of fifteen years. She had been unable to eat solid food for several years, and vomited large quantities once or twice in twenty-four hours.

Physical examination.—An enlargement felt to the right of the umbilicus. The abdomen protuberant and distended with gas. On examination this distention found to be due to an enormously dilated stomach. Examination of stomach contents shows free hydrochloric acid, but the tests were not very satisfactory. Patient very much emaciated.

Operation.—July 10, 1896. An extensive cicatrix found on the lesser curvature and in the *pyloric region.* The pylorus was contracted extensively and felt like cartilage. Enlarged glands were found in the omentum. Extensive adhesions rendered the field inaccessible, and the stiffness and extent of the stenosis made gastro-enterostomy expedient. This was readily done with the Murphy button. Imperfect preliminary removal of gastric contents made the operation difficult on account of escaping fluids after the stomach was opened. Uneventful recovery with rapid gain in both strength and weight.

Case 4.—Cicatricial stricture. Pyloroplasty.—(Three months after *adossement* for recontraction.) M. St. G., aged 50, Irish, admitted to St. Mary's Hospital Jan. 18, 1897, with a history of chronic gastric disease for twenty years. At times there would be complete relief of symptoms for some months, until about three years ago, since which time he has been in constant distress. He is unable to eat solid food and for a year has vomited a large percentage of the food taken. *Examination.* An emaciated man with a greatly dilated stomach which contained much of the food taken twenty-four hours before. Test meals show free hydrochloric acid. *Operation*, Jan. 21, 1897. A pyloric obstruction due to stricture, having its origin in an ulcer. Adhesions to the liver and gall bladder rendered elevation into the wound difficult. Pyloroplasty was done, some of the sutures being necessarily placed in the scar tissue. Patient discharged in good condition February 15. When seen April 1 he had gained twenty-five pounds in weight and said he could eat anything.

April 15. Was readmitted to hospital suffering from frequent vomiting and symptoms of acute obstruction at the pylorus, which had come on suddenly ten days previously.

April 16. The abdomen was opened in the middle line and as the pyloric mass lay to the right, the rectus muscle on this side was cut across just above the umbilicus, giving free exposure. Adhesions to the gall bladder and liver rendered inspection of the strictured area a matter of great difficulty and during the separation the pylorus at the seat of the stricture was opened widely, one wall being composed of the liver. It could now be seen that the sutures in the scar tissue had given way and adhesions to the liver had prevented leakage at the time, but these adhesions had been largely responsible for the recontraction. A long incision was made with its center at the opening in pylorus and the stomach folded over the nearly immovable duodenum after the fashion of *adossement* as described by Pilcher in his able article on "Fecal Fistula" in the Dennis System of Surgery. Over this the neighboring tissues were carefully drawn. The patient made an uninterrupted recovery.

Case 5.—Stricture and valve formation. Gastro-enterostomy.—B. K., male, aged 44, German, admitted to St. Mary's Hospital March 22, 1897, with a history of stomach trouble for five years during which time he had lost eighty pounds in weight. He does not vomit but for three years has used a stomach tube and removes by this means a large quantity of partially digested food from the stomach once or twice a day. *Examination.* On distending the stomach with air it fills the whole left side of the abdomen and extends across into the right hypochondrium. Test meals show free hpdrochloric acid. *Operation*, March 22, 1897. Pylorus held high by a short gastro-hepatic omentum. A circular stricture and marked valve formation was made out. Enlarged glands were found in the omentum. The field of operation lay well under the liver, in a situation which precluded a safe suture operation. Gastro-enterostomy was done with a Murphy button and string guide. Button had not passed when patient left the hospital April 20, otherwise he had made an uninterrupted recovery with entire relief of symptoms and steady gain in weight and strength.

DISCUSSION.

Dr. J. M. Barton of Philadelphia—Undoubtedly many patients are perishing from unrecognized pyloric obstruction. As recently as March of this year there was an article in the *Medical Record* mentioning the death of a patient from this condition. One reason for this is that the symptoms and history are misleading. The history should be a history of distinct gastric ulcer or a healed ulcer and then a history of obstruction, but such a history is quite rare. In hunting among the histories of reported cases but few of them have a distinct history of gastric ulcer, but symptoms are usually those of an ordinary dyspepsia. The headache, nausea, acid eructations after the taking of ordinary articles of food, and the sleeplessness and vomiting, which vomiting first occurs after meals and does not call attention to any obstructive symptoms. Ultimately these symptoms glide into symptoms of obstruction. We would expect, where there has been a long history of chronic catarrh, that the symptoms should be divided into two portions, those of obstruction and those associated with dyspepsia. If we operate, the symptoms of obstruction would be relieved, but the other symptoms would continue. I have been surprised to find that immediately after operation the symptoms would disappear. Where the patient is run down and continues to run down we should operate, but there are certain cases in which we should operate at all times. I agree with the reader of the paper as to technique. Owing to the contraction of the stomach the operation may not be of service. The cases in which I have performed dilatation have remained all right for many months, but I do not regard this operation as favorably as I used to. I found that some of my patients had been doing well before I operated on this case, but I have reason to believe that there is a latent obstruction in many cases. In cases where the patients are exhausted I think an operation will do very well. Where the whole ulcer is on one side of the pylorus and the folds of the mucous membrane have come together, if they be separated there is quite a possibility of the case getting well. I remember two cases, one eight years and the other two years ago. These patients had suffered many years, had lavage performed ten years ago and had symptoms of dyspepsia. After operation they made rapid recoveries and were able to eat and digest everything. One patient had no stomach symptoms for seventeen months after operation, but from that time he began to vomit and since then has vomited about ten times. He gained many pounds of flesh after operation but is now losing. His condition is such that if another operation is necessary I shall do pyloroplasty. With regard to the other case on which I operated the patient remained well without further symptoms and gained twenty-two pounds. She was able to act as station agent for four years, but recontraction has now occurred and she is losing weight. I intended to perform another operation but she declined to have it done.

Dr. Donald Maclean of Detroit—Dr. Mayo spoke of the diagnostic value of the microscope as deciding between benign and malignant growths. So far as my experience goes I have come to endorse the opinion, which I heard my old teacher express many years ago, that if you have a tumor you should cut it out, and if it does not come back it is benign, while if it does return it is malignant. I have submitted many tumors to histologists and I have had this sort of experience: "The tumor that you sent me is a round-celled sarcoma, exceedingly malignant and will soon kill your patient." The patient is still alive. On the other hand I have had just the opposite experience. I wish to ask whether there is a microscopic or a histologic standard established now by which we can judge whether a growth is malignant or benign; if so, I would like to know it. I have watched with the intense and critical observation of a father watching his son the work of my former pupil, Dr, Mayo, and I admire it very much indeed.

Dr. John B. Murphy of Chicago—Just because there is a tumor and some vomiting we are not justified in concluding that the case is one of carcinoma. Even if it kills the patient we are not justified. In a large percentage of cases occurring in people under 40 we find that this induration which is called a malignant tumor is not a carcinoma, and Dr. Mayo's paper brings this point out very well. In the class of cases where malignancy is suspected we must endeavor to make a positive diagnosis by an examination of the contents of the stomach, although even that is not sufficient to justify the diagnosis of carcinoma. The method of operating by Dr. Mayo is the best. Where a pyloroplasty is possible that is the operation to do. If a cicatrix is produced and this operation be rendered impossible we must do a gastro-enterostomy. The contraction will be in proportion to the amount of cicatricial tissue, to the entire size of the stomach and to the area of the sinus which is established. The first is the most important point. We find in anastomosis of the intestines that we have no great degree of cicatricial deposit and, therefore, less cicatricial contraction. The encouragement to operate on these cases in contrast to the very discouraging results produced in malignant disease is something to appreciate. The important point is to make a differential diagnosis. I believe that gastro-enterostomy in malignant disease is being relegated to the past as the mortality is enormous and the improvement very slight. Besides, patients who live through the operation are not benefited much. We have contractions of the stomach which make pyloroplasty impossible. If you examine a gastric ulcer at the end of the third week you will find a thickened mucous membrane in the neighborhood, and this cicatricial tissue is what you must endeavor to avoid in the operation of repair. An operation some distance from the pylorus is the more favorable I think.

Dr. Somberger of New York—It has been said that there is probably a contraction after the operation of gastro-enterostomy and I would like to ask if this has been proven. It seems to me that there is but little more probability of contraction there than in anastomosis of the bowel. The case I will refer to I saw in the Cook County Hospital and Dr. Murphy operated. It was an operation for fecal fistula. In opening the abdomen the lumen of the bowel was somewhat larger than normal instead of being smaller. If the atrophy caused by this button is such that we do not get contraction by anastomosis, why should we expect to find it?

Dr. A. J. Ochsner of Chicago—This Section is fortunate in receiving the reports of Dr. Mayo's cases, as he is situated where he can have an enormous amount of material. In many cases the cicatricial stenosis occurring in acute conditions has not been overcome and there is still a certain amount of irritation there which is the cause of considerable tenderness. Whenever there is tenderness over any point of the abdominal cavity the muscles over this point will contract and one will therefore find a distinct tumor in many cases, simply from the contraction of the muscle. In a number of instances I have seen tumors diagnosed absolutely, before the anesthetizing of the patient, which could not be distiguished after the muscles had been relaxed, notwithstanding that the technique of the examination was as perfect as possible. We should not therefore make a positive diagnosis of carcinoma.

SOME ADDITIONAL FACTS RELATING TO SKIN GRAFTING.

Read in the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY Z. J. LUSK, M.D.
WARSAW, N. Y.

At the meeting of the New York State Medical Association, held Oct. 15 and 17, 1896, I read a paper the title of which was "The Vitality of Cutaneous Epithelium After Its Separation from the Body." Believing the subject of great surgical importance, and having additional testimony of interest, I decided to briefly submit my experience at this meeting.

The question of the "limit of vitality" of skin separated from the body has been the subject of a great deal of experimentation. The longest period of which I can find record is ninety-six hours, or four days.[1]

Experiments have been made[2] to ascertain the vitality of skin removed from the cadaver. Skin grafting has been successfully done with epidermis removed from the thigh six hours after death. Skin taken from amputated[3] limbs has been found to make good material. After numerous trials, thirty-six hours was found to be the limit of vitality. These experiments are of importance no farther than demonstrating that cutaneous epithelium possesses great vitality, but beyond this fact, they are of no practical value with "the limit of vitality" terminating at thirty-six or even ninety-six hours.

The cuticle or external layer of the skin removed so that it includes *only* the *epidermis* and *Malpighian* layer is the material used in skin grafting, and I have found that their viability depends not upon the low temperature nor confined air, but *solely* and *absolutely* upon the elimination of all moisture. This discovery renders the foregoing experiments of value, offering a source whence material could be obtained. Great care is, under these circumstances, necessary in separating the cuticle. I would prefer the epidermis obtained by vesication with cantharis to any other method, as the cuticle is more perfectly separated, requiring only from two to four hours, more often about three hours, drying quickly at ordinary temperature after its removal; and if kept free from moisture it will retain its vitality for an indefinite period, being always ready for use. I shall briefly refer to cases of which a full description can be found in various periodicals giving[4] technique, etc., considering in this paper only the dates of operating, illustrating length of time intervening between dates of removal of cuticle and their successful employment in skin-grafting.

An important change in the manner of applying grafts has been made which simplifies the operation and removes the cause which may have led to failure by applying the wrong surface of the graft. Grafts are now applied *dry* and *not moistened* before using on account of the curling up of the edges, making it difficult of planting, failure resulting from applying the wrong surface of graft to granulation. By the method above described, equally good results follow and this danger is avoided. The following cases are given without history or detail, but only to show the date of injury, skin-grafting, and of recovery.

Case 1.—E. S., saltlifter, injured by falling into a pan of boiling brine, Jan. 14, 1895. Nearly eight hundred square inches of raw granulating surface on body. I began skin-grafting February 16, using the dried epidermis, separated by vesication, adhering by one edge to body. He did nicely, whole surface healed and he was able to be up and about by April 1.

Case 2.—M. C., scalded Dec. 3, 1895. December 26 I began skin grafting, using dried skin which had been separated twenty-three days from cutis by vesication. At date of skin-grafting I removed several pieces of the dried skin, placed them between sterilized gauze and borated cotton, careful to note surface, tucked into envelope, labeled with date of separation from cutis, Dec. 3, 1895, and placed in office desk.

Case 3.—F. H., raw granulating surface two by two and one-half inches on dorsal surface of foot. Did skin-grafting with the dried skin which was removed as stated, Dec. 3, 1895; grafts took nicely and patient was up and about February 5.

Case 4.—J. O., switchman, hand crushed between drawheads April 2. Did skin-grafting May 15. There was a large granulating surface on dorsal aspect of right hand. Used same material heretofore described. Development of grafts was vigorous and rapid so that one month later the surface had a good substantial epithelium covering.

Case 5.—July 20, Mrs. S., widow, aged 52, carcinoma of left breast, which was atrophied and adherent, while nipple appeared as if pushed up; it was large and indurated. Commencing above the nipple there was an ulcerated surface extending upward and inward two and one-half inches and one and three-fourths inches. Commenced using mixed toxins with no perceptible change for three months, when she began to improve in general health, gained in flesh and spirits, and by January, 1897, the ulcerated surface appeared more like healthy granulation, and had slightly diminished in size.

On February 9, Dr. Mann assisting, I used the remainder of material separated now over one year, and skin-grafted. Did not disturb proximal dressing for ten days, at which date there was no discharge. Dressings were moistened with balsam, peru mixture and six days later all the dressings were removed. To my surprise grafts had taken well and were doing nicely, except at lower surface where no evidence of epithelium appeared; ten days later, except a surface one-fourth inch square, all was doing nicely and covered with skin, which at each examination appeared more vigorous. About the month of March she was seized with a severe attack of rheumatism and was unable to leave her bed. I was obliged to suspend treatment. Two weeks later, April 1, the lower granulating surface began to extend its boundaries, destroying the new skin.

The longest period that the cuticle has been made to live and grow after removal from the body was ninety-six hours, or four days. This was an experiment made by Georges Martin, who believed that the prolonged vitality was due to the low temperature and confined air at which it was kept. I am of the opinion that its vitality was due to its being dry, or so nearly so as to prevent molecular change.

The cases reported by me show that in case No. 1 the material used had been separated from the cutis forty-eight days. In No. 2 it was separated twenty-three days. In No. 3 the skin was taken from No. 2, separated by vesication from scalding, and sterilized on December 26, then covered with borated cotton and laid away in an office desk, when skin-grafting was done Jan. 12, 1896, forty days after separation from the cutis. No. 4 was with the same material, 164 days. No. 5 was the same as No. 3 and 4, grafts revitalized, showing as rapid and vigorous growth as in any of preceding cases, 418 days after its separation from cutis.

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[1] Encyclopedia of Surgery, Vol. I, p. 513.

[2] Medical Record, Vol. xx, p. 110.

[3] Medical Record, Vol. xxi, p. 483.

[4] Medical Record: Journal American Medical Association; International Journal of Surgery.

To conclude then this method should supersede all others because of the following facts:

1. The surgeon can always have an abundance of material ready for immediate use, and the artificial skin produced is more firm and elastic than that produced by any other method.
2. The cuticle when first removed should be sterilized, when it will soon become dry at ordinary temperature, care being taken to remove all folds or wrinkles and that it be kept entirely free from moisture.
3. The granulating surface should be thoroughly irrigated with warm normal salt or boric acid solution before applying grafts.
4. Grafts should not be moistened before being used, but should be dry, and great care should be taken that the proper surface be applied. Operator catching skin with common artery forceps, a piece can be clipped off one-twelfth inch wide and one inch in length, out of which twelve grafts should be made not more than one-half inch apart.
5. The grafted surface should be covered with sterilized gauze saturated with a mixture of balsam peru and castor oil, one drachm to one ounce, over which should be laid sterilized borated cotton, three to four layers.
6. Proximate dressing should not be disturbed under ten to fifteen days, unless pus is being formed, when it should be removed and carefully irrigated with boric acid solution, and new dressings applied.

DISCUSSION.

Dr. GEORGE M. STERNBERG of Washington—I would like to ask if Dr. Lusk ever used the skin from a blister produced by heat. It is very remarkable that the heat does not destroy the cuticle, and I think it would be important to determine the death point of the epithelial cells. I would suggest that if practicable some one might make this experiment.

Dr. R. H. SAYRE of New York—I am somewhat surprised at the vitality of living tissues exposed to dry hot air. In the treatment of chronic arthritis, in exposing joints to a high grade of air the skin will endure from 350 to 400 degrees F., and I did not suppose this possible. Some persons can not stand more than 180 to 220 degrees. It occasionally happens, however, that after the lapse of a few days you will find ulcerated spots on the skin which look like a blister. Apparently this intense heat will at certain spots cause sloughing of the tissues, which is very slow in regenerating.

Dr. THOMAS H. MANLEY of New York—I hope we do not understand Dr. Lusk to say that this species of grafting was recommended to supplant skin-grafting proper, as this is really epidermal grafting. I presume he intends this method for superficial destruction of the layers of the integument. He would not recommend it, I should think, in that class of cases where the skin is entirely swept away. This method is similar to the Thiersch method and the only questions that will arise are as to how durable it is and as to whether there is any tendency to the scar formation which is so common in the Thiersch method. In parts of the body covered by the garments, where there is not much motion, I can understand that the plan suggested by Dr. Lusk is probably better than any other. It is most extraordinary to conceive of the simplicity of it, and the fact that we are able to keep the tissues so long renders it one of the most valuable methods of skin-grafting that we have. How far can this layer of the epidermis supply this loss of skin is the point. In extensive injuries to limbs there are two important questions: First, what can we do in the destructiod of bone; and second, what can we do where there is not much destruction of bone, but there is much destruction of the skin. I would like to ask if, where there has been an extensive area of gangrene of the integument, this method would apply.

Dr. LUSK—Dr. Manley may be right, but his method would be called plastic surgery. In all the works that I have consulted skin grafting is the only term used. I do not know of any heat that will hurt the skin except the heat that destroys the entire skin, such as boiling in a salt solution. My own experience was with a man who had plunged head first into a bin containing boiling brine. Four weeks after the accident I decided to commence skin-grafting and it was successful in every way. Dr. Roswell Park saw it and paid me a very high compliment for the discovery. The legs, arms, and a part of the body were skinned, and from seven to eight hundred inches were necessary to do the operation. I soaked the material in a peroxid solution and then applied it. So far as cicatricial contraction is concerned there were only a few corrugated bands. There were two ulcers, due to a slough, which healed entirely.

DIAGNOSIS OF MINOR PHYSICAL INJURIES AND THEIR RELATION TO ACCIDENT INSURANCE ASSOCIATIONS (WITH ILLUSTRATIONS OF CASES).

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY LISTON H. MONTGOMERY, M.D.
CHICAGO.

Accident insurance and personal injuries to policyholders, are subjects to which I have devoted some thought and attention during the past few years, and I am a staunch advocate of the former. As a rule, the reasonableness of its cost should commend itself to every worthy male adult subject who is eligible to avail himself of the privilege of procuring a certificate of membership in some one or more of the various substantial insurance associations throughout the country.

The business of accident insurance companies is mainly conducted by the secretary and a board of directors, and in the matter of claims, by the claims committee aided by the wisdom and advice of the surgeon, the medical director or medical examiner. The office that the surgeon fulfils is a most important one; one whose motive power and influence usually commands great respect from his business associates. To him is oftentimes referred questions that are more or less intricate on account of their not being understood by the board of directors or claims committee, and this, according to my experience, is much more frequently the case when, as the title of this paper suggests, the injuries appear to be trivial or insignificant in character, notwithstanding the report of the attending physician or surgeon would indicate that just the opposite is the case.

Personal injuries are as varied in kind, character and degree as the kaleidoscopic changes in a man's lifetime and the causes producing them are as innumerable as it is possible to imagine. It is not to be wondered at, therefore, if a scientific descriptive report of an injury to a patient by the attending physician should require additional explanation or elucidation by the company's surgeon. In other words, without the aid or advice of a company's medical representative, it would not be possible to adjust and dispose of all cases of bodily injury in a satisfactory manner, and diplomacy of an honorable character is necessary in some instances to achieve this much desired result.

The declaration or blank form of application which a person is required to fill out before a policy is issued, stating name in full, age, birth-place, residence, occupation, etc., to enable the board or proper officer to decide which class of risk the person shall be placed in, in most instances contains the following: That the policy-holder shall "live up to" or agree to abide by the constitution and by-laws of the association not obligating it to pay for injuries received or which may happen while the policy-holder is under the influence of intoxicating liquors or in consequence thereof; nor where there is no visible mark on his body; nor for intentional injuries inflicted by himself; not while engaged in violating the law; nor from voluntary or involuntary taking of poison or any contact with poisonous substances; nor death due to suicide, whether sane or insane, or due to mental infirmity, hernia, medical or surgical treatment (except amputation of a limb necessitated solely by injuries sustained in accident); and the acceptance of the certificate of membership further absolves the company from being made a party to legal proceedings upon the basis and provisions herein stated, and lastly, the "insured" further agrees that the company's surgeon shall be privileged to make a physical examination of his alleged injuries as often as such official may deem necessary. And yet in the face of all these, and perhaps additional declarations, the policy-holder not infrequently will assail the reputation of our best companies and threaten their extermination by instituting unwarranted legal proceedings, particularly in these days when, singularly enough, cases are known where learned judicial decisions have been handed down which, it appears to me, were either a perversion or a disregard of the contract.

I have selected a few out of the many cases that have been referred to me for examination or which have come under my surveillance during the past year, showing what basis the claimants had to recover indemnity and what some persons actually believed they were entitled to, due to an occurrence, mishap or whatever term one sees fit to name it, even to calling it an accident in all that this term implies, and in none of these cases was there a supicion of any motive of deception being practiced.

The subjoined cases are non-exaggerated instances of descriptive reports from claimants and from very excellent physicians, that I have been called upon to explain for adjustment during the past year, although I disclaim any intention of stating that they were not scientifically accurate so far as diagnosis was concerned.

Mr. D., a resident in one of the suburbs of Chicago, had the misfortune to get his levator labii superioris alæque nasi muscle lacerated by being thrown from his buggy, and as a result was totally disabled for six weeks. Upon visiting this gentleman and carefully reviewing the case, a satisfactory adjustment of ten days was agreed on, inasmuch as no cicatrix or permanent deformity remained.

It may not be devoid of interest to cite the following case for the Section to deliberate and decide whether the injury was occasioned or caused by violent, external and accidental means: A gentleman occupying a chair at his hotel, with his right leg over the left in practically an extended position, smoked and conversed with a fellow-traveler. On attempting to rise from his chair he was suddenly attacked with severe pain in his right knee and could not walk up stairs to his room. He admitted that he had not strained any of the ligaments about his joints nor otherwise injured himself, and claimed never to have had rheumatism; and yet he was totally disabled for a period of seventeen days. This gentleman having been the subject of a similar experience about six months previously I was requested to investigate his case. My diagnosis was "floating bodies in his right knee joint" and that he was not entitled to indemnity according to the rules of the association in which he was insured. He demurred at this and threatened to bring suit against the association. The result was the amount of his claim was paid and his policy was canceled. Recently this gentleman has had a similar attack, just as I expected he would.

Here is another illustration of a so-called personal injury and description of an accident as different from the preceding case as one can well imagine. A gentleman while stopping at a small city in Michigan in July, 1896, proceeded to call on his patrons. He was quite active during the day, as he subsequently stated, and concluded his day's business in apparently his usual excellent state of health. He rested over the Sabbath and attended services at one of the churches. Monday morning at about 7 o'clock, without exertion on his part, while he was arranging his toilet he suddenly began to expectorate blood. During the ensuing four days (up to the following Thursday evening) he experienced not less than five similar attacks of this kind. He returned to Chicago and did not resume traveling for four weeks. He subsequently filed a claim for this period, claiming that his loss of time and total disability was induced by his over-exertion (which he called an accident) on the Saturday previously, or thirty-six to forty hours prior to his first hemorrhage.

The following somewhat unusual case may be deemed of sufficient importance to chronicle in this report, as to the writer's mind it is unique as well as a singular illustration of how the unexpected might happen. A gentleman was ill with indigestion or he had some other form of temporary stomach difficulty. He was being treated by his physician and after three or four days, although attending to his usual vocation, he began to feel the physiologic toxic effects of the remedy he was taking and was obliged to remain at home for another week before complete convalescence was established. This gentleman filed a claim for this length of time, claiming that his total disability was the result purely and simply of an accident.

During the past winter my attention was called to a case of phlegmon or small abscess located under the chin of a gentleman and caused, as the claimant stated, by his barber cutting him while being shaved, when he had as a result, blood poisoning for ten days(?). Upon careful examination it was clearly proved that the gentleman had an inverted or ingrowing hair. A minute pustular eruption had formed, and when the barber had called the attention of his patron to this he was requested to remove the offending hair, as also to evacuate the drop of pus that had been secreted. This slight traumatism resulting in what the attending physician called "sepsis," was the cause of this claimant filing a claim for the above length of time.

Cases of trimming a corn, bunion, wart, etc., have come under my observation within the past year, wherein a form of septicemia resulting in apparent total disability lasting from one to three weeks supervened, and the insured filed their claims for these various periods.

On Monday, during one of the early fall months of last year, a gentleman while riding in a railway coach near Clinton, Iowa, was reading his newspaper, holding same in his left hand. Simultaneously he had his right hand resting on the back of the seat in front of him. Suddenly he experienced a stinging or pricking in the dorsum of the little finger of his right hand. He examined his finger, but saw nothing unusual. After vigorously rubbing the spot he again proceeded to read, but the stinging sensation remained unabated (at least for the time being). In a little while he had occasion to look over into the seat on the back of which his hand had previously been resting when he noticed a black spider. He naturally concluded that the spider had stung him, and killed it. He continued to attend to his business until the following Monday morning, one week having elapsed, when his hand began to show evidence of infection. The result was he was totally disabled for ten days.

Cases of lame back due to a strain of some of the tissues about this portion of the body are probably as frequently met with as any other form of bodily injury, and are often puzzling in character, mainly because there is nothing to indicate this, discoloration being absent. No zones of anesthesia, areas of tenderness, hyperesthesia, edema nor other signs of inflammation are present; no constitutional disturbance is present, and other subjective symptoms are normal. Frequently a congeries of symptoms arise, complex in their nature, difficult of diagnosis as well as prognosis and probable duration of disability. Only last month I was summoned to a city some one hundred and sixty-five miles from Chicago to visit a case of this kind, due to an accident which occurred January 4, and was supposed at the time to be of a most trivial character. This case had during the past five months developed through reflex disturbances and other causes of a cognate character, all manner of complications or sequelæ of a most distressing kind, in which may be enumerated dysuria and tenesmus, pleuritic complications, most obstinate constipation, gastric disturbances, paralysis, as well as other cerebral and cerebro-spinal symptoms of the meninges and cord; so that for weeks the patient's life was despaired of. In other words, a diffused traumatic neurosis had followed an apparently slight physical injury.

A case was quite recently referred to me where a sparrow was flying through the air and darted toward a gentleman's face. Its bill came in contact with his left eye resulting in a puncture of the iris. This accident was a most singular one and the traumatism has resulted in multiple neuritis, difficult to prognosticate what the final result may be.

A gentleman, 28 years of age, who had a longstanding hernia and for which he wore a truss, was carrying a box weighing between forty and fifty pounds in an unguarded moment when he omitted to have his truss adjusted. Strangulation ensued. The case was treated during the first few days by taxis, applications of hot fomentations and anodynes, with negative results, and it was found necessary to perform an operation for the radical cure of his malady. He was totally disabled for weeks and filed his claim for this period. The result in this case was a decision that his was not a case for indemnity according to the by-laws of the association in which the gentleman was insured.

Bicycle accidents.—A word in this connection regarding the so-called bicycle accidents, wherein abrasions and contusions of the cuticle and injuries to various parts of the body may occur to a greater or a minor degree. In this connection, I have seen the following case: A cyclist fell from his wheel and sustained a trivial bruise or contusion over the region of the appendix vermiformis. In five or six days active symptoms of the inflammation of the appendix supervened and the gentleman was totally disabled for fifteen days. Naturally enough he attributed his disability to the violent manner in which he was thrown from his wheel, whereas it seemed to me, technically and correctly speaking, that this was coincident or incident to it, as at the time of his mishap the weather was inclement and there was a reasonable doubt that dampness and exposure and even other causes contributed to his attack. Suppose this man had died and an autopsy failed to reveal a foreign body in his vermiform appendix, the chances are that it would have cost the accident association in which he was insured $5,000.

At Oregon, Ill., on March 14, 1897, a gentleman was hunting. The weather was inclement and he wore a pair of rubber boots larger than he was accustomed to, with the result that he produced a minute abrasion on the fourth toe of his right foot. It was proved that the boots he wore were defective and his feet became very damp. What was diagnosed by the attending physician as septicemia supervened and the claimant filed a claim for four weeks' indemnity for total disability, accompanied by an affidavit from his physician, who stated that the abrasion and consequent infection was due to an accident. The claim was rejected.

The subjoined case explains itself as being directly opposite to the foregoing, which I did not personally investigate, though my attention was called to it on account of its recent occurrence and for other reasons. I refer to the noted "sore toe case" wherein it was decided that an accident insurance policy must be paid where death resulted from wearing a tight shoe. A judge of the United States Circuit Court sitting at St. Louis handed down a decision in the case of Smith v. The Western Commercial Travelers' Association (Dec. 16, 1896), giving the benficiary a judgment for $2,165. The plaintiff was the beneficiary and widow of a member of this association holding a policy for $5,000, payable in the event of death by "external violent accidental means." Up to August, 1895, Mr. Smith appeared to have been an exceptionally strong healthy man. About this time he commenced to "break in" a new pair of shoes. The friction caused an abrasion, although, from evidence that he gave, reasonable attention was paid to the inflamed surface; it grew worse, and by September septicemia supervened, and on October 3 he died from the latter cause. According to the learned judge, as the decision was handed down, death was the direct abrasion of the toe caused by the tight shoe, and the conclusion arrived at was that death was occasioned by immediate external, violent and accidental means within the true meaning of the policy, and why a judgment for $2,165 was given instead of for the full amount does not seem to have been explained.

Rules on mosquito bite.—The following is the latest ruling regarding this little animal, handed down by a Frankfort (Ky.) court May 22: The court of appeals in the case of Mrs. S. O. v. The United Stated Mutual

Accident Association, decided that the lower court was wrong and that she was entitled to $5,000, the amount of an accident policy carried by her husband, who died from a mosquito bite which he received while he was asleep; the court holding it to be an accident in the meaning of the law.

The last case that I desire to present may not be regarded as a minor physical injury in the strict sense that is usually implied, as it was a fracture of the left fibula and at the time of its occurrence and for upward of three weeks afterward no one, not even the patient nor his physician, believed but what a perfect cure would follow. On March 4, 1897, a gentlemen, 60 years of age, fell on a slippery sidewalk and fractured his left fibula about three inches above the ankle. It was not a Pott's fracture, and a dislocation or subluxation of the tibia at the ankle joint occurred. This gentleman lived ninety miles from Chicago, whither he was removed the day following his mishap. The fracture was reduced, a substantial plaster-of-paris dressing was applied and the patient progressed favorably until Sunday evening, March 28, twenty-four days after the accident. At about 8 o'clock he was suddenly seized with dyspnea, cold perspiration, flickering pulse, anxious facies; indeed, with all the symptoms of speedy dissolution. The attending physician, who had not deemed it necessary to visit his patient during the preceding three or four days, was summoned and found his patient in collapse. So rapid was his decline that death ensued at 2 o'clock the morning of the 29th. Here is a case where an unlooked-for fatal result occurred to a man who had always been known to be well and healthful, correct in his habits and who, on the Sunday preceding his death, sat up for five or six hours, dressed, reading and conversing with members of his family. He also ate a hearty noonday meal and luncheon at tea time. There was no neurotic or rheumatic history in the case nor anything to lead one to suspect that any pathologic change had occurred in his system, and yet, without apparent cause, this man rapidly sank and died in the manner I have just described. News of his death was telegraphed to the accident association of which I am chief medical examiner, and I visited the man's home and decided that an autopsy was necessary to decide the cause of death. This was held the next morning in the presence of six physicians, the attorney for the beneficiary, the undertaker and the secretary of the association which I represented. Every organ was found to be normal, including bladder, liver, kidneys, suprarenal capsules, mesentery, stomach, gall bladder, intestines, vermiform appendix, lungs, pulmonary vessels, the cavæ, the coronary arteries, the aorta, right and left sides of the heart, including the valves and columnæ carneæ and other structures of the heart: however, when investigating the left ventricle, a white fibrinous clot six inches in length was discovered. This extended up through the ascending aorta, and it was decided by the medical gentlemen present that the cause of death was due to the antemortem clot. No infarct nor embolus within the pulmonary tissue or pulmonary vessels could be detected. We were positive that the clot was antemortem, as it adhered to the papillæ of the tissues of the left ventricle. There was no lesion or anything else pathologic about the heart, except a weakened, flabby and softened condition of the cordæ tendinæ. What relation or connection this form of injury could possibly bear toward the surgical pathologic condition found in the heart of this man, I confess I am not able to explain, unless it was due to the weakened condition of the cordæ tendinæ. The case is now pending an adjustment.

I desire to refer again to so-called floating bodies in joints. Halstead (*Annals of Surgery*, September, 1895) draws the following conclusions:

1. That the etiology of some of these bodies is not fully understood, but that the condition described by König under the name of osteochondritis desiccans explains the most of those that are otherwise found in normal joints.
2. That few, if any, are the direct result of violence.
3. That the most pronounced symptom is the sudden onset of severe pain in the joint with locking of the joint, usually in a nearly extended position; this being followed by acute inflammatory processes in the joint involved.
4. That the lengthening of the femur (in movable bodies in the knee) may occur as a result of irritation produced by the pressure of these bodies.
5. That the only treatment for this condition is their removal by direct incision, preferably under cocain anesthesia, as soon as the diagnosis is made.

In conclusion.—In submitting this imperfect report I disclaim any intention of leaving the impression that in any of these cases was there existing collusion between patient and physician, or any motive of deceptive thought by any of the claimants or on the part of the attending physicians, but I simply wish to point out a few possible errors in judgment that creep in or are likely to do so in slight physical injuries where an accident policy is carried.

DISCUSSION.

Dr. Reyburn of Washington, D. C.—I would like to say a word with regard to physicians who have suffered from septic infection. I had a confinement case and soon afterward developed symptoms of infection which disabled me for seven weeks. The accident insurance company refused remuneration, and I would ask what is the use of physicians insuring in these companies unless they can be paid for expenses of this kind. I would like to ask if accident insurance companies can not be made to pay for accidents of this kind.

Dr. William T. Bishop of Harrisburg, Pa.—I have had experience both ways. One of the most essential difficulties as to an accident policy is the fact that when you eliminate the number of exceptions there is practically no risk left on their part, and they will beat you in every way. There is in many cases an exception in which a medical man can not antagonize the medical men of the country. The company will often find a traumatism which does not exist. We want to reconstruct insurance companies and ourselves. Cases of septic infection should certainly be included, and we should not waste our money in paying for insurance policies if this can not be done. If the medical man of the company was treated more fairly in many cases by medical men it would be beneficial.

Dr. Reginald H. Sayre of New York—My experience has been similar to that of Dr. Reyburn. When taking out my policy I asked if I could recover if I should break my arm or leg, and the agent told me that would not count at all as the clause would not operate in such a case. Some time after I broke my thumb and was prevented from operating for several weeks. I suffered pecuniary loss and put in my claim for damages against the company. I received a check for the amount with a letter stating that the company did not wish to insure me in the future. It is true, these companies do not pay claims if they can avoid it.

Dr. W. W. Keen of Philadelphia—I agree that insurance companies should be liable for septic infection during operations. It is as much an accident as falling from a bicycle, and even more so sometimes by sacrificing life. I have always insisted when taking out a policy that it should cover all cases of septic infection. Sometimes the companies demand a higher rate and I have paid it, although I saw no reason why I should pay it. However, we must be just with the companies and not expect them to do more than they agree.

Some of their policies state that there must be a total disability and they base their rates on this fact. In a case of partial disability we should not expect them to pay the full amount or to hold them liable. We must be just both ways, but I think they are unjust to physicians, and especially surgeons, in demanding an extra rate.

Dr. I. N. QUIMBY—I have been insured in accident companies for some time and I know of one or two New York companies who pay for partial disability. One company paid me one-half the weekly allowance. They make the claim that the physician is guilty of contributory negligence, and this they have no right to do. When they make this claim you can do nothing, for it is practically dishonesty.

Dr. ALLEN of New York City—This question of septic infection should be more understood by the physician. I remember a case of a physician dying from septic poisoning, and the question arose whether or not he had an abrasion on his finger when he operated. There was some doubt about this, but he may have had a hang-nail on this finger; and the company would not pay. There was considerable trouble on this point and finally the man was found to have had an abrasion. If it had not been for this fact the company would have paid for the accident. They have a number of fine printed clauses which we do not always read and are therefore not aware of.

Dr. DWIGHT—I am not connected with any accident company, but I do not see why the company should pay in a case of infection. The septic poisoning might just as well have been the result of some internal disturbance and may have resulted from within the mouth. There may be no relationship between the injury and the result, and may not have been due to the operation at all. This matter should be settled in some way satisfactory to the company and the insured.

Dr. L. H. MONTGOMERY—The circumstances alter the case. If there is nothing stated in the policy regarding sepsis, perhaps some companies would succeed in avoiding paying. I know of no company who will not pay indemnity for any accident that results in blood poisoning unless there is a clause inserted against it.

STATE MEDICINE TO THE PRESENT TIME.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

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State Medicine, the department of science and government pertaining to public sanitation and public health, is a development of modern times, is largely a product of the civilization of the latter half of the present century; yet in its rapid extension it has become nearly universal, has an important place in the state enactments of nearly all nations. Physicians were recognized by law in very early times, and were provided for in the armies and at the courts of kings. In the Middle Ages something was known of medical jurisprudence. Legal medicine is said to have been founded by one Paolo Zachias of Rome, at the beginning of the seventeenth century. What is mentioned as state medicine, taught in the German universities in the eighteenth century, was but the forensic medicine of the times relating to laws in medical jurisprudence. The establishment of state medicine in all countries follows much later than the development of medicine and surgery and the making of physicians.

The principle declared by the fathers of our nation, that life, liberty and the pursuit of happiness are the inalienable rights of all people, and the acknowledged fact that it is the province of government to ensure these rights by suitable laws, are at the foundation of what now exists in this department, as in others pertaining to the welfare of the human race.

The character of the advancement in state medicine and the standards of excellence attained are noticed as indicating the intelligence, culture and good government of a state or country. Greater difficulty has been experienced in some of our States than in others in the establishment of sanitation by law; but for contrasts in sanitary affairs and conditions, the differences between countries must be observed. The difference in government and a reason for want of progress in civilization appear in the following, which is mentioned as an illustrative case: France not long since proposed a reciprocity with Turkey for interchange of vital statistics. Blanks were sent to the heads of departments. One of these went to the Moslem magistrate of old Damascus. The information furnished by the Turk is as follows: 1. "What is the death rate of your city?" *Answer.*—"In Damascus every one must die at the command of Allah! Some die young and some die old, but every one must die." 2. "What is the rate of births?" *Answer.*—"I can not answer this question. Allah knows all that." 3. "How is the supply of drinking water?" *Answer.*—"Since time immemorial nobody died for want of water in the city of Damascus." Concerning the general sanitary condition, the learned magistrate's answer was, "Since Allah sent his prophet, Mohammed, into this world with fire and sword, things are better." This much for a defective civilization of antiquity continuing in modern times. Fortunately, not many such governments have survived to the present time.

The following concerning progress among our States is suggestive of important facts: In a certain State of the interior, the State Board of Health appealed to the legislature for the passage of a better State sanitary law, and addressed to the members a circular letter, from which the following are extracts: "There is annually lost in this State not less than $5,000,000 through unnecessary disease and unnecessary death." The State is urged to save this great annual loss by better sanitary laws properly executed. The circular, in its just and reasonable appeal, further gives the case as follows: "The major portion of the bill proposed has been drawn from the laws of Massachusetts, New York, Michigan and Pennsylvania. These States, through their health laws, have gained much wealth and power. . . . The old law of our State is not up-to-date. It does not take account of recent discoveries in sanitary science, and fails to meet many conditions necessary to accomplish thorough health work. It may be likened to an old, wheezy engine that coughs and groans as it hauls its insignificant load." It is supposed that the legislature came to time with the new law.

The question of first rank among the nations in the matter of state sanitation may be considered. State medicine in England is a little older than is that of the United States; the whole time of the former being a little more and the latter a little less than half a century. Moreover, the English system has an advantage, in that in its management and support it is national rather than local.

The English parliament became informed and interested in the subject of national sanitary improvement in 1844. Laws were passed, and state medicine became and has continued to be an important feature in the government. In the United States, state medicine properly began in the State of Massachusetts with the formation of the State Board of Health in 1869. Eight years were required for the making of the first ten boards in as many States. At the present time there are thirty-eight State boards in the forty-six

States. Laws governing these boards have been largely copied by the different States, but a want of complete uniformity in function and authority among all the States is found to exist. A more complete uniformity and its attendant advantages to the States, would result from the establishment of a National department of public health, with National enactments to which all State laws should conform. State medicine, in many of its features and functions, is necessarily National, and moreover has important relations with matters of international belonging and character. Regulations concerning seaboard notification of contagious diseases, State and seacoast quarantine, sanitation pertaining to railway transportation and laws pertaining to the pollution of streams illustrate, in small part, the many ways in which National rather than State legislation is demanded. A movement is on hand to secure, by international reciprocity, the inspection and detention by quarantine of infected vessels and passengers before the sailing, rather than before the landing on either side of the ocean. A vessel on an ocean voyage, laden with infection of disease, has come to be regarded as too much of a culture-tube for infection, to be a profitable importation to any country.

There has been a varied history in this country concerning the National supervision and control of quarantine, and concerning all that pertains to the general government in matters of public health. National legislation began in 1878. An act of Congress, approved April 29 of that year, conferred upon the Marine-Hospital Service certain duties, principally relating to quarantine against the introduction of contagious diseases into the country. The same year an epidemic of yellow fever occurred. This called general attention to the subject of a National health organization. Epidemics and the coming of pestilence have been useful in causing reforms and bringing to pass important preventive measures. It requires an occasional prevalence of smallpox to make the sale of vaccine virus profitable. At that early day i the history of its good work the American Public ealth Association, by its active interest, helped to ecure legislation. A bill was passed by Congress, and approved March 3, 1879, which created a National Board of Health. This Board consisted of seven members appointed by the President and confirmed by the Senate, and four members *ex officio*, one from each of the following departments: Medical Departments of the Army and Navy, the Marine-Hospital Service and the Department of Justice.

The Board organized, assigned work in different departments to different members. employed experts to make special investigations and studied conditions along the following lines and others: The collection of information with regard to sanitary condition of cities and towns; on methods of determining the character of organic matter in the air; on the adulteration of food and drugs; on the diseases of food-producing animals; on the flow of sewers in relation to their size and gradients; on the hygiene of the mercantile marine; on the influence of various soils upon sanitation. This was the undertaking, by the government, of practical sanitary work which, having been carried on in different States, has afforded splendid results, the benefit of which the Nation enjoys today.

In the first annual report of the National Board, together with the records of other important work, appears the following: The work of the Havana yellow fever commission; sanitary survey of Memphis, Tenn.; report of diphtheria in northern Vermont; sanitary regulations for quarantine stations, vessels, railroads, etc.

The following was written concerning the National Board in the second year of its existence:[1] "The experience of that season was of immense importance in the future efforts to protect the country from foreign pestilence. It was demonstrated, 1, that National, State and local health authorities could usefully coöperate in suppressing an epidemic, and in preventing its spread from one State into another; 2, that travel and commerce need not be seriously interfered with, provided a vigilant sanitary inspection is maintained." Other conclusions appeared concerning sanitary means for the suppression of yellow fever, in which work the efforts of the Board were largely directed at this time.

The further history of the National Board of Health is in brief as follows: In 1881 there began to be in Congress manifestations of hostility to the Board on the part of some members of the subcommittee on appropriations. The funds of the Board were diminished and made conditional. The end of the work of the Board was now approaching. The final sentence of death was pronounced when, concerning the appropriation made for the use of the Board in 1882, which was called the "epidemic fund," the President informed the Board that he had transferred his "discretion" in the use of the "fund" to the Secretary of the Treasury. An enactment had authorized such a transfer. Transactions of this kind and the necessary results of the same, led a writer in the *Sanitarian* to suggest that the country was in need of *political drainage* as a general sanitary measure.

Since the departure of the National Board, National control has been in the hands of the Marine-Hospital Service in the department of the Treasury. All matters of quarantine are in charge of this office. Reports, foreign and domestic, are made to it, including vital statistics, disease prevalence and weather reports. A weekly bulletin of public health reports is issued and distributed regularly to the health officers throughout the country. There can be no objection to what has been the service of this department in the scope of its work, but it is believed that the great enlargement of sanitary work of late years, and its extension into new fields because of modern discoveries and advances in science, call for the establishment of a National department of state medicine, which shall have for its subdivisions the different State organizations as well as that pertaining to the coast, the ocean and to foreign relations.

It has required less time to advance State medicine, to enact and maintain sanitary laws, and to find support for the same in the State, than it has in the Nation. Political obstacles in the way of what is mainly for the advantage of the whole people, are more and greater in the great country than in the smaller states, and time is required to meet the unworthy, conflicting interests in the larger field; but what is demanded in the majority of the States must eventually obtain in the Nation. There is a community of interests in what pertains to the lives as well as to the property in the common wealth of the Nation.

It is now asked that a National department of public health be established, with a secretary of the department, rather than a National board. A committee of the first and second Pan-American Congresses, held in 1893 and 1896, has urged National legislation for the establishment of this department. The AMERICAN MEDICAL ASSOCIATION, through an able committee of sanitarians, has caused a complete bill for this establishment to be placed before Congress. This bill carefully defines the province and duties of the proposed department, and covers the ground of legitimate sanitary work to be undertaken by the general government at the present time. It would seem that a proposed measure of such National importance as is the one in question, should receive the attention and support of the Nation's lawmakers and of the people. The writer desires to be understood as speaking from the standpoint of the State concerning the necessity of National unity and a National head, as an advantage to the individual States in the present of state medicine in this country. The State Board of Health which he has the honor to represent is one of the early State sanitary organizations of the country, and the experience and observation of a quarter of a century have been at least of some value.

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[1] Dr. Stephen Smith in the Sanitarian, December, 1883.

Among the functions of a National department of health may be the employment of scientists in the work of investigation in the present advanced work of sanitary science, and to inform State boards and co-operate with the same in practical sanitary work. It may respond to the calls of State boards for special services of experts in emergencies; it may direct in the establishment of new boards in new States and Territories; it would necessarily be the center for the collection and the Nation's school for the use of vital statistics; it would have as a department the whole system of National and interstate quarantine, and from its wide observation and experience, it would be able to advise Congress from time to time as to necessary legislation.

The general outlook may be regarded as satisfactory for the times. More then twenty years ago, when state medicine in this country was younger than it is now, Dr. Henry I. Bowditch, the eminent pioneer sanitarian in Massachusetts and first president of the State Board of Health of that State, spoke in prophetic words as follows: "We stand now at the very dawn of the grandest epoch yet seen in the history of medicine. While philosophically, accurately and with the most minute skill studying, by means of physiology, pathologic anatomy, chemistry, the microscope, and above all by careful observation, the natural history of disease and the effect of remedies, our art at the present time looks still higher, viz.: to the prevention as well as the cure of disease. And this is to be done by sanitary organizations throughout each State and the Nation. The laity and the profession heartily join hands in this noble cause." In this, the year of our Lord 1897, we find ourselves advanced quite near to the fulfilment of these anticipations. A few more State and Territorial organizations and a National department of public health at the head of all, would make the great sanitary working machine of the country quite complete. The modern vantage ground for work is found, among other things, in recent great discoveries in bacteriology, the means of immunization of the body to disease, the prevention of the passage of contagion, the cleansing of life surroundings by fire and water, the abolition so far as possible of disease cause, and the higher education of all the people in the means and conditions of physical life and purity. Well directed and well supported public service along these lines and with these means, belong to the present of state medicine in the United States.

THE PROGRESS OF THE INDIVIDUAL CUP MOVEMENT, ESPECIALLY AMONG CHURCHES.

Presented in the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

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"Prove all things; hold fast that which is good," is apostolic advice too often and incorrectly applied to good things that are old; whereas, its obvious application is to things that are new. Not, indeed, should it be inferred that beneficent things ought to be despised, neglected, or indifferently treated because they are old, but, with a growing spirit of liberty and progressiveness of thought and effort so characteristically evident, that all things should be proved, good things should be held fast, while those which are bad should be cast away. Instinct and automatism avail nothing here.

The Pauline exhortation has fittingly been followed in the approach of our theme to its present point in several ways: principles, facts and figures constitute a substantial tripod for the support of a growing sanitary triumph wherever they may be accepted and utilized for their worth and adaptability.

The promiscuous and common use of a cup or other drinking-vessel has much about it that is traditional, conventional and customary; it is seen in public and in private; in institutions both sacred and secular; at ceremonies of a solemn or sentimental, jovial, lively or boisterous nature. But, is it consistent with the preservation and improvement of personal and public health under present day conditions? We believe not.

> "The best critics in the world are they
> Who, along with that which they gainsay,
> Suggest another and a better way."

Is there "another and a better way," along with which all that is essential in spirit and symbol may still be retained undisturbed, unmixed and untainted? We believe there is. It is realized practically, now, in the individual cup idea and movement; as a movement, however, it is yet in its infancy—but a few years old. Let us prove it; weigh it; consider it; hold fast to it and push it along if it is good, efficient and valuable, or reject it if it is bad, inadequate and useless.

The individual cup idea and the individual cup movement are the logical outcome of modern sanitary science. Clear and cogent reasons have led to the conception of the one; a consistent, courageous and practical spirit, to the birth and growth of the other. In the attainment of our present knowledge of the causes, modes of spread and means of prevention of the communicable diseases, in the development of the antiseptic and aseptic era in which we live, there has arisen simultaneously, intuitively almost, a more or less general and rational condemnation of the public use of a drinking-vessel in common under any circumstances. That this custom should be discouraged and prevented as speedily and universally as possible is an idea that must have originated independently in more minds than one.

The writer can testify to a distinct and forcible impression in this regard, about nine years ago, while participating in the communion service of a church of which he was then a member, and which was the first in Philadelphia to adopt individual communion cups (September, 1894). Doubtless many have experienced similar aversions to the common cup, in secular life more than in sacred ceremony, from perfectly natural thoughts of preserving one's self from that which is manifestly unclean, unsanitary, unnecessary, unmannerly and unchristian.

Then arose the question of the feasibility of the individual cup. Was it practicable? And finally, has actual use determined the individual cup to be practical and satisfactory, safe and successful?

It would be an essay of supererogation to elaborate the scientific argument in favor of the general use of individual cups before public-spirited hygienists and medical sanitarians. The logical circle of induction and deduction, of direct bacteriologic and analogous clinical evidence, and of well-established, almost axiomatic principles of hygiene, will probably be completed in your minds before this sentence is completed.

The purpose of this paper is to show from the history, progress and present status of the individual cup movement, particularly among churches, its timeliness, reasonableness, usefulness, efficiency and urgency; also, the need of personal and, perhaps, organized or official efforts by medical practitioners and sanitarians in furthering its beneficence still more widely than now obtains, gratifying though this is.

It is but a little more than three years since the sanitary agitation for individual communion cups or chalices began to demonstrate their feasibility in churches which were not opposed to their adoption for traditional, ecclesiastic, ritualistic or other reasons. In so short a time, the truth about so important an innovation has not reached all sections of the country; discussion—free, calm, unbiased and deliberate—elicits the truth, and helps to disseminate and establish it. Hence, while we have on several previous occasions attempted to awaken local interest and activity in this matter (Phila. Co. Med. Soc., September 1894; Baptist Ministers' Conference, January 1895; Med. Soc. State of Penn., May 1895), the occasion seems opportune and fitting to present it to this representative national body of medical men devoted to the interests of the public health; and we appreciate this privilege at the same time that we recognize the duties attached to it.

Our topic suggests at once a three-fold question: 1. Should common communion cups be abolished, from a hygienic standpoint? 2. If so, would individual cups be adequate and practicable substitutes therefor? 3. Again, if so, would their adoption conflict with any essential biblical teachings or practices in the Christian churches of today?

Let us review the main features of these points *seriatim*. Let the historic reveal and develop the rational. The first and second questions have a medical bearing strictly; the last question must be settled by bible historians, exegetes and critics, and the pastors of the various churches.

1. *The progress of the individual communion cup reform does show that the common cup is unhygienic and should be avoided and abolished.* In the first place, for years, the possible and occasionally probable transmission of disease by the common use of a drinking-cup has been recognized by physicians and by intelligent and thoughtful people generally. Its uncleanliness is a matter of common sense. So far as we know, Dr. Terry of Utica, N. Y., was the first physician to advocate, publicly,[1] a change in the ordinary mode of administering the communion wine. But no actual microscopic or bacteriologic investigation of the communion wine before and after service, with common cups in use, was made until early in 1894, by Dr. Chas. Forbes (U. S. M.-H. S.) of Rochester, N. Y. He presented a report, on March 7, to "a joint meeting of the session and trustees" of the Central Presbyterian Church of that city, in which attention was called to the uncleanly and unsanitary communion cup passed from lip to lip; and in which a small individual tumbler or cup, "about sixty of which could be placed on a tray of convenient size" was recommended. In a report to the Rochester Pathologic Society in April, he stated having found in the dregs of the ordinary cup, contamination from both the mouth and clothing; from the former, epithelial cells, mucus, and various bacteria and spores; from the latter, fibrous material. Control experiments showed the unused wine to be practically sterile.

In June of the same year, in seconding here in Philadelphia the conclusions and suggestions of Dr. Forbes, my own investigations, assisted by Dr. Furbush, were fortified by the discovery of tubercle bacilli in two out of five specimens from the dregs of a common communion cup, besides some pus staphylococci, pus, and oral epithelial cells. Such facts and their inference showed the probable dangers of disease transmission, and the vital and far-reaching importance of substituting individual cups, if feasible, since millions of communicants habitually participate in this sacred, symbolic memorial of our Lord's Supper.

The fountain-head of this sanitary but not sacrilegious agitation and reform, so far as conjoint, official and energetic endeavor on the part of medical men is concerned, certainly is Rochester, N. Y., with Philadelphia a close second. Even before Dr. Forbes' scientific report and design of an individual communion cup outfit, the Rochester Pathologic Society held a meeting (Dec. 7, 1893) at which, after general discussion on the question of the "Danger Attending the Prevalent Custom of Passing the Cup," introduced by request of Rev. Dr. Stebbins and Dr. W. S. Ely, a resolution was adopted unanimously recommending "that the communion ordinance of churches should be so modified as to lessen the liability to the transmission of contagious diseases which . . . attaches to the prevalent method of observance. . ."

After a paper read by the writer,[2] in which the historic, rational and practical argument in favor of individual communion cups was outlined, the Philadelphia County Medical Society also passed a resolution recommending "an individual cup method or system of administering communion in all churches. . . ; where the common communion cup is now in use;" and believing that the individual cups would afford a clean, safe and reliable means of preventing the spread of communicable diseases "from such a source as may reside in the ordinary chalice."

Evidence is not wanting then to prove, inductively, the dangers of a communion cup in common use. By analogy, the common drinking-cup having been clearly and justly proven a menace to the general health, as in schools, railway stations and cars, public fountains, etc., it is reasonable to believe that disease may be so transmitted in churches, though less frequently perhaps. Dr. Forbes referred to an epidemic of diphtheria which occurred among twenty-four persons in Rochester, and which was traced unmistakably to a common drinking-cup which all of the sick had used. All successful reforms of true and solid merit usually pass through three stages with the public: first, that of ridicule, indifference, or blind and prejudiced opposition; then, that of free discussion and the unveiling of the truth; lastly, that of ready, progressive and widespread acceptance and adoption, with beneficent consequences. The sanitary communion cup reform is no exception to this course.

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[1] Oneida Co. Med. Soc., N. Y., January 1887.

[2] "Prophylaxis in Churches needed by the Adoption of Individual Communion Chalices or Cups." Trans. Phila. Co. Med. Soc., 1894.

Seemingly an unwarranted invasion of a sacred Christian ordinance, the movement was regarded at first by some of the clergy and a few of the laity with mingled expressions of horror, surprise, resentment and animosity. Condemned before it was considered fairly, the individual communion cup was treated contemptuously as based upon an imaginary menace to the health of Christian communicants and, therefore, merely a sensation or "fad." Calm, alert, frank and thoughtful ministers and church members, however, soon saw that the time was opportune for this sanitary and not revolutionary, reverential and not sensational, improvement in serving the sacramental wine. The lines became drawn for a while, and scattering shots occasionally, effective volleys not at all, were directed against the reform for a year or more,[3] with good results by increasing the interest all the more widely and deeply.

In reviewing the progress of events relating to this subject for the past three years, we may see that less emphasis has come to be placed upon the necessity of obtaining veritable evidence of actual disease transmission from an infected common communion cup or cups, in order that the demand for a change should be justified. Thus, right here we have the supreme value of established sanitary principles so applicable to the question at issue, that the importance of modifying the common mode of serving the communion wine is obviously a matter of logical deduction. Two fundamental principles supporting this movement are the security to health from cleanliness, and the preventability of contagious diseases, for they are preventable. Cleanliness is *not* next to godliness in the common communion chalice; it is far from it. If there is a real danger of disease being transmitted from mouth to mouth, at a common cup's rim, what diseases and of what gravity are they? Have any cases of disease thus arisen? Early objectors to individual communion cups were quick to put these and similar, as they thought, keen and critical questions to the advocates of a sanitary communion. We know of not one *bona fide* instance of disease contracted from a common communion cup. Let it be admitted candidly that it is manifestly difficult to prove as much; though this is not true of drinking-cups used for other purposes, simply because observation has been directed more closely to the latter as sources of infection. But, in the light of what evidence we have, and especially of the basic principles of preventive medicine, it is not at all necessary to show the report of any case to prove that our position is sound and tenable.

But who will say that many an innocent person may not have acquired disease from the common communion cup? Woeful consequences are statistically unknown and untraceable. It is probable that they have been produced, and even now may exist somewhere, knowing as we do that certain affections which may be present in those able to partake of the communion wine, are mediately communicable by the common cup. But we protest, is it reasonable, is it right, is it safe, is it Christian, to expose an hundred, a score, nay, even one, to the possibilities of disease, however mild, in the celebration of the Lord's Supper? It is not nearly so safe or sensible to have hundreds of persons whose condition of health and cleanly (or uncleanly) habits of mouth are unknown, drink out of a common chalice, as to have a goblet passed from mouth to mouth at our home tables; and that is not a common or consistent custom, even without favored guests to grace our hospitality. Nor is it likely, rather the reverse, that spiritual devotion or meditation will be encouraged by diverting thoughts and fears of physical contamination. We contend further that where no aversion to a common cup exists, apathy and that blissful (?) ignorance of hygiene because of which most of the world suffers, is to blame.

Among the maladies which may be carried from mouth to mouth by a common cup are syphilis, cancer, tuberculosis, diphtheria, scarlatina, influenza, tonsillitis, whooping cough, and others; the greatest of these is tuberculosis, the "Great White Plague," which, like the poor, we have always with us, principally because, not occurring in acute and alarming epidemic form, as do smallpox, diphtheria, cholera, etc., the fact of its contagiousness in insidious ways is not recognized generally by the public. Dentists urge strongly the importance of avoiding the common cup, because so many mouths are in an uncleanly, if not an unhealthy condition; neglected teeth, vitiated oral secretions, diseased gums, alveolar abscesses, pyorrhea, may be mentioned. "Sanitas," of London, writes: "In 1894–5, when influenza was very prevalent in England, the spread of it was noticed and put down to the same cause (common communion cup), in several of the church and other papers."

Some petty objections by sentimentalists against individual communion cups have been made, based upon the fallacious idea that vinous alcohol is a germicide. But this is not true, especially of the germs of some of the most prevalent, most contagious and gravest affections, even with pure, absolute alcohol; still less is it true with wine, where the percentage of alcohol is small. Furthermore, there are thousands of churches in which unfermented wine (grape juice) is used; and this is certainly consistent with another principle of hygiene—avoiding the temptation and disease and wretchedness of alcoholism—the "Great Red Plague,"—second only to tuberculosis in its destructive ravages. We know of a case where a reformed drunkard had his latent passion for intoxicants fired by partaking of alcoholic communion wine, and he ended in the gutter.

The medical testimony for individual cups which accumulated during the past two years is copious, convincing and pointed. Throughout the whole the "ounce of prevention" principle has grown to weigh pounds of potency. In Rochester, N. Y., where the first general agitation for a sanitary communion cup was instituted (December, 1893), in a definite, scientific and effectual manner, the advisors of a change embraced the majority of local physicians. Besides Drs. Ely and Forbes, already mentioned, were Prof. Dodge, biologist of Rochester University, Drs. Darrow, Barber, Mallery, and others. The writer desires to express his gratitude for public and private encouragement received from Philadelphia physicians "too numerous to mention." Dr. E. J. Howe, of Newark, N. J., has done earnest, effective and self-sacrificing work for the individual communion cup movement in that city and vicinity, aiding his personal efforts greatly by publishing a pamphlet for gratuitous distribution, in which numerous testimonials favoring this reform are given. Among the names are such sanitary authorities as Surgeon-General Sternberg, U. S. A., John B. Hamilton, Victor C. Vaughan and W. B. Atkinson; State Board of Health officers, as Drs. Probst of Ohio, Groff of Pennsylvania, Quine of Illinois, Caverly of Vermont, Baker of Michigan, Howell of Georgia, Cokenower of Iowa, and others, besides many local health officers, sanitarians and physicians. The progress of the sanitary argument for individual communion cups is well seen in the clear and forcible statements made. Drs. Hasbrouck of Brooklyn, Butler of Boston, Borland of Pittsburg, and Law of Oakland, Cal., also deserve credit for their able and enthusiastic advocacy of clean, untainted communion wine by means of individual cups. Medical journalistic commendation has also been pretty general. One editor writes as follows: "Notwithstanding the pooh-poohing of this movement by people who can see no danger in anything that is not sure death, it is steadily gaining ground." The London *Lancet*, of March 23, 1895, dwells upon the fearlessness of the modern reformer in warring against possible sources of infection, whereas before, criticism was little less than sacrilege. It then goes on to say that avoiding historic and religious aspects, we do not neglect the latter, nor are callous regarding pain given that there is even any idea of danger in the communion cup. "Moses, that prince of health officers, would probably not have sanctioned our present ritual." We may add reverently, that still less would Jesus Christ have sanctioned it. Progressive clergymen have argued against the common cup as being opposed to common courtesy, good manners, cleanliness, healthfulness, decency and convenience, as well as scriptural and early church history.

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[3] "Present Status of the Sanitary Movement for the Adoption of the Individual Communion Cup." Penn. State Med. Soc., May, 1895.

Let us conclude this branch of our subject with a few characteristic quotations from physicians and pastors. "It is not pleasant to take the cup after it has been used by a sufferer from catarrh, decayed teeth, sore gums or tongue, or a tobacco chewer. The condition of many men's mustaches as they touch the wine is very repulsive to think of; . . . the wine is filthy and should not be used by others." "A practice which is not for a moment tolerated in civilized households, is doubly reprehensible under the conditions of this religious rite." "Esthetically it (the common communion cup) is nasty; from a sanitary standpoint, unsafe." "To drink after those we know is distasteful and unclean; to partake of the common cup at communion is unsanitary and disgusting." "The question seems to resolve itself into two propositions: one, the ethics of religion; the other, the ethics of hygiene." "Cleanliness is not sacrilege." "We are taking measures in our health board to prevent the sputa of the infected from poisoning the air, but we view calmly the passage of the cup from the diseased to others, and fear to call a halt lest we trespass upon the traditions of the dim past." "We do not need to confess squeamishness when we say that we do not have that spiritual relish for the communion cup which has passed five hundred lips before reaching our own." "It is not fastidiousness which causes people to abhor a drinking-vessel used promiscuously. . . . This fact of uncleanliness detracts greatly from the beauty, attractiveness, solemnity and effectiveness of the communion service." In its directions for the "communion of the sick" the Protestant Episcopal Church recognizes the danger of spreading known disease by the common cup. Would it not be equally wise, sensible and prudent to guard its rectors and parishioners against unknown but often lurking disease? Candor compels us to ask whether it is a true, intelligent, wholesome or refined sentiment that is willing to swallow the breath-blown, saliva-tainted, mustache-dipped and often tobacco-fouled wine of a cup that has passed the lips of fifty or one hundred or more good people? Does it not savor rather of sentimentalism and sickness, than of sincerity, security and spirituality? Dr. Butler, of Boston, in a very judicious opinion favorable to individual communion cups, writes that even if "illustrative examples were lacking as respects the risk involved in the use of the common cup, I should still advocate its abandonment, basing my action on the principle, when of two equally appropriate and practicable courses of action one is attended with a possible, even though a remote, danger of disease transmission, and the other is absolutely devoid of such danger, it is the part of wisdom to pursue the latter rather than the former."

2. *The progress of the individual communion cup movement shows that it is practical and permanent; and that individual cups are adequate sanitary substitutes for common cups.* At the outset the demonstration that common communion cups were uncleanly, unsanitary, illogical and inappropriate to the best, broadest and most benevolent spirit of the times, was presumptive evidence of the practicability of individual communion cups. A little ingenuity, industry, enterprise and adaptability would surely accomplish the desired results; and prove that the individual, in contradistinction to the common, customary method would be satisfactory and safe. Indeed, hardly had the need of reform taken definite and rational shape before individual communion cups were put into practical operation.

So far as our knowledge extends, the first church to use individual communion cups for sanitary reasons was the First Congregational Church of Saco, Maine, in November, 1893. It may be of interest to quote from a deacon's letter to us: "Having officiated at the communion service for many years and observing the mustaches, sore and tobacco-stained lips, the idea suggested itself to me that there must be some better way. Then, too, the hurried manner in which the cup was passed from one to another took from the solemnity of the occasion and I thought if each one could have a cup of his own more time would be given for meditation and prayer and it would be of greater benefit to each communicant; and, as at our tea-table we have individual cups, why not at our communion-table! The change has been very satisfactory." But the first extensive use of individual communion cups was made in Rochester, N.Y., where on the first Sunday in May, 1894, the Central Presbyterian Church used the outfit designed by Dr. Forbes, a member, for its 1,800 communicants; although on the Sunday previous the outfit was first put to practical test in the North Baptist Church, with its 240 communicants. It seems that the Baptists and Presbyterians had the courage, liberty, adaptability and foresight to unite on this question, if not on questions of doctrine and polity. Other churches of the same and various other denominations in Rochester soon followed in adopting individual communion cups, so that within one month fourteen had them in use and six signified their intention of adopting them. In July, 1894, a Congregational Church in Lima, Ohio, adopted the individual cups invented by Rev. J. G. Thomas of that city. In September, 1894, after our study of the common cup dregs, the Fourth Baptist Church of Philadelphia, of which the able, popular and scholarly Rev. J. B. Gough Pidge, D.D., is pastor, voted in favor of the change, largely through the enlightened activity of one of its members, W. E. Tolan, Esq., editor of *The Worker*, the church paper. A half-dozen other churches, Methodist, Presbyterian, Reformed and Congregational fell into line before long, and several other Philadelphia churches are now contemplating using individual cups.

In some localities the people are more conservative than in others, prejudice is difficult to overcome and ministerial indifference and the obstinate opposition of eccentric authority retards progress. Generally speaking, the laity of the churches are quicker to see the need of sanitary communion reform and the good features of the individual cups than are the pastors. It is a matter of education in most places, and who are more competent to teach the principles and energize the facts underlying the movement to the force of penetration than the physicians, who are really very near to the hearts of the people?

Statistic accuracy in the study of the individual communion cup movement is difficult, owing to the desire of many churches to avoid a publicity which might be sensational. But the figures obtained below show that during the little more than three years of progress considerable gain has been made. Indeed, the very quietness, but steadiness of the advance is good evidence of its stability and worth and that the movement is not a "fad." Our facts have been gleaned from personal knowledge, religious and secular newspapers, individual communion cup manufacturers and jewelry firms. Perhaps the number of churches now using individual cups is greater by half a score or more than we have learned of, as replies from some sources have not been received.

We may summarize as follows: *According to denominations:* Congregational churches 65; Baptist 42; Presbyterian 33; Methodist Episcopal 20; Lutheran 5; Reformed 4; Protestant Episcopal 2; Universalist 1; Disciples of Christ 1; Welsh Calvinistic 1; unknown denominations 50. Total 224. *According to States:* New York 33 churches; Massachusetts 39; Ohio 25; Pennsylvania 23; California 23; New Jersey 18; Connecticut 11; Wisconsin 9; New Hampshire 8; Maine 7; Illinois 5; Vermont 4; Michigan 4; Indiana 3; Iowa 3; Rhode Island, North Carolina, Maryland, Colorada, Texas, New Mexico, Oregon, Nova Scotia and Japan, each 1.

The number of communicants in the various churches range from 36 to 2,000. The approximate average number of communicants is about 450 to a church; about 100,000 altogether.

One needs but to see an individual communion outfit in practical use to believe in it. It is beautiful, simple, cleanly, sanitary, easily worked and handled by both pastor and people, adds harmony, dignity, impressiveness and devotion to the service. The individual cups are made of silver, plated ware, aluminum or glass. They vary from one and one-half to two inches in height, are made with heavy bases about three-fourths of an inch in diameter, toward which the sides taper in either straight or gently curved lines from the tops, which are from one to one and one-fourth inches in diameter, so that they are somewhat beaker-shaped; while others, again, may be shorter, with handles like small teacups, or even goblet-shaped. The cups (holding about one ounce) are served on hardwood or light polished metallic racks or trays, holding from forty-eight to sixty cups; the rack may have two or three tiers of twenty cups each set in shallow, round openings; covers to exclude dust may be raised and lowered over the cups. The cups are filled, partly only, from a tankard or fountain supported over the tray. It has twenty or thirty small spouts diverging from under its bottom, each spout corresponding to the position of a cup underneath. Or there may be a half-gallon bottle, with tubing, stopcock and metal pipe, from the under side of which are a number of small, short tubes corresponding to the number of cups in the row to be filled. According to the particular custom, after the communicant has been served—at the altar or in the pew—the cup is replaced on the tray or rack (tapering cups are easily telescoped in a small pile), or in pew rings, or in small racks holding five or six cups, to be collected after the service. The cups are cleansed first in warm, soapy water, with a sponge or swab, and then being placed in wire baskets, are immersed in boiling water for a few minutes. They are then dried, replaced in the chalice holders and put away in dust-proof cabinets until the next communion service.

Rev. V. M. Law, M.D., an Episcopal rector in California for the last ten years, prior to which he was a practicing physician and analytic chemist, has devised an ingenious, single sanitary cup with scalloped rim. It was designed to meet the requirements of a "one cup" ritual, but is not so simple in arrangement or strictly sanitary as the individual cup method. The scallops are used in succession by the communicants, each scallop receiving a sufficient quantity from a reservoir holding ten ounces, fixed within the chalice and so constructed that when the latter is tipped in the act of drinking, a bubble of air enters below so as to force out another supply of wine for the next communicant. During the past fifteen months Dr. Law has made a sturdy, single-handed and successful fight for a sanitary communion in his locality (Oakland, Cal.), and many churches are now using individual cups in consequence.

Wherever individual communion cups have been adopted, the testimony of pastor and people has been expressive of the utmost satisfaction. They would not be persuaded to return to the old method. There is a sense of relief in using a clean, sanitary cup, devotion is promoted, the ceremony reverenced. Ministers say that individual cups are more convenient, and that there is less time occupied in serving them, and without any confusion, than by using common cups. Again, from nearly all churches now using the individual cups come replies stating that the number of church-members who attend communion service has increased, and in some instances greatly so; in one Reformed church in New York the number of communicants was doubled; in a Presbyterian church "about 200 more communicants," and in another church 80 per cent. instead of 40 per cent. attend the service. One pastor writes that he has found "that the sanitary safety of the individual chalice appeals to the intelligence, removes all the objections of the sensitive and makes the service of the Lord's Supper more largely attended." . . . *The Congregationalist*, Dec. 26, 1895, speaking of nearly forty congregations which at that time had introduced individual cups, says: "Not an intimation of regret has been heard by us from churches now using the individual cup." Also, in a previous issue (April 18, 1895): "Nor is it a question concerning which the opinion of this or that man, who looks at it purely from a theoretic point of view, counts as much as the conviction of those who have had a chance to watch the practical operation of the system proposed."

3. *The progress of the individual communion cup movement shows that there are no valid objections to the use of individual chalices on scriptural, historic or present practice grounds.* This is a matter for the clerical profession to decide. Many more ministers, theologians, church historians, Biblical exegetes and critics ("higher or lower") than are associated with the churches now using individual communion cups, have pronounced a favorable opinion of the latter from their respective standpoints. Until fair consideration was given to the subject, the first feelings of most clergymen were those of resentment; but, as with exceedingly few exceptions they are intelligent and benevolent men, a little dispassionate and unprejudiced examination on their part usually results in reversing their positions of opposition to those of advocacy. There is a natural and, generally, wise conservatism which checks too hasty a change in religious customs. This conservatism is transformed into an equally wise and wholesome progressiveness, when the proposed change is seen not to encroach upon the spirit or essential doctrine of the custom.

The principal objection raised against individual cups has been that Christ used but one cup when He instituted the Supper. But the reply has been from many prominent ministers and theologians of all the various denominations that this can not be proved to be true; that He may have held in His hand one of many cups; that the Jews at that time used individual cups; that it is not stated definitely that His cup was passed around; that many churches in the past and at present use more than one cup, for convenience, in large congregations; and indeed, that the early Roman Catholic church used a tube or *fistula* for suction from the cup, and that a spoon was used by the early Greek church, and that objectors are inconsistent in stickling for "arithmetical and physical identity," since they ought also to conform to the first Supper in using unleavened barley bread, reclining at the table, etc. Certainly, if more than one cup is used, as is the practice in many Protestant churches, any number more than one may be used. It is no more unscriptural to use six hundred than to use six: on the contrary, it is more sanitary, logical, cleanly and commendable. And after all, there is danger of magnifying the letter and killing the spirit of the ordinance in bickering and hair-splitting about "the cup," since this is a minor detail as to significance, if any were intended; the *wine*, and not the cup, being elemental or symbolic.

"In essentials, unity; in non-essentials, liberty; in all things, charity."

Some have objected to the individual communion cup because they thought it destroyed the "feeling of fellowship," the unity of Christian brotherhood, and that it gave a "mistaken concession to the too prevalent tendency toward cleavage on personal or class lines." This seems like an imaginary and baseless sociologic sentiment. If it is discourteous to ask guests at our home tables to use a common cup, still more so is it to do so at the Lord's table, and surely, discourtesy is not conducive to good fellow feeling. "It should not be that social custom is in advance of religious custom." "It is hardly fair to read into this movement that which does not belong there. It is not an effort to emphasize social distinctions or to cater to the whims of the ultrafastidious, any more than good manners at the family table can be charged with breeding selfishness."[4] Common cups are not in accord with common sense, common courtesy or common sympathy.

In conclusion, what as to the future of this movement? Rev. V. M. Law of California, believes that "the strong tide setting in its favor shows that it must come or we will have depopulated communion tables." He thinks (himself an Episcopalian) that Episcopal clergymen need some pronunciamento on the subject from boards of health and medical societies, since it is not likely that they would heed personal professional appeals. But it is not probable that health boards will take any action, for fear of interfering with religious matters. Our own AMERICAN MEDICAL ASSOCIATION would certainly give great impetus to this sanitary reform by giving it official sanction and recommendation.

The trend toward individualizing drinking cups in general is so apparent and positive, though not yet so prominent and pervasive as we might wish, that it may not be too extravagant to express the belief that this particular hygienic reform may prove to be a "red letter" event in the history and development of sanitary science.

It is appropriate that the church, in its work of Christian beneficence, should be a leader in the application of sanitary principle wherever indicated, as in the administration of the communion wine. Not, let us hasten to say, because the evils of uncleanliness and possible contagion are greater than in other directions, as in schools, on railways, etc.—they are probably much less—but because of the unique and exemplary influence of the church. Furthermore, the province of the church of Christ includes largely an oversight of the physical, as well as the spiritual, intellectual and social welfare of humanity. "It stands for progress, and its example should always be on the side of the highest, most refined civilization." The individual cup and the "institutional church" have large futures for good before them—respectively, we may predict; conjointly, let us hope and strive for.

Compulsory Life Insurance.—From Berlin we learn that the government is preparing bills providing for compulsory life insurance throughout the whole empire, and for old-age insurance for the laboring classes. Delegates of the central insurance bureau have been asked to advise the government in this matter.

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[4] The Congregationalist.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

(*Continued from page 745.*)

XIV.—INFLAMMATION AND WOUNDS.

German theories on inflammation; J. Hunter's teachings on the finer precedency of curing inflammation and wounds; Treatment; Lumbar abscesses; Misuse of the sound and plugging of the wounds; Lint, poultice, cold water, lead preparations, etc.; Bloody suture; Fresh air, baths in fever; Cold showers in typhoid; Arresting hemorrhage, thrombosis; Ligature of the arteries; Compression, agaric; Early attempts at subcutaneous surgery.

If one conceives inflammation as the center of all pathology, because the ideas concerning the nature of morbid processes were strongly influenced by the prevailing conception of its development, he can only timidly enter into German science. No system sprang up which did not impress a certain stamp upon the theory of inflammation. In the beginning of the century the doctrine of Boerhaave prevailed almost everywhere in Europe. It consisted in a stoppage of the blood in the smallest arteries, which came about either because the blood had become thick and viscous through causes which removed the thinner parts (diarrhea, perspiration, etc.) or because different large drops of blood entered into the vessels in which they did not belong and obstructed them. The ideas of Boerhaave were modified variously. Hoffmann considered that the blood in stagnation had a tendency to putrefy; Stahl, that a congestion precedes the obstruction, etc. Haller was the first who without entirely denying the obstruction, believed that the blood exudes directly into the cellular tissue and that the seat of inflammation is there and not in the smallest arteries. All these theories, based upon false conceptions of the composition of the blood and of the blood vessels, were buried along with the systems. German surgeons also accepted them Heister placed inflammation in the same category with cancer and white swelling, and described them as heated swellings. Among external causes belong various injuries in which the blood vessels are lacerated, squeezed or so wrenched that the blood can not flow freely through them; as internal causes, all kinds of acridity which occasion a constriction of the blood vessels, and also too plentiful and too thick blood. In short, everything which constricts the blood vessels and makes them narrower, or so thickens the blood that it can not pass into the smallest capillaries was said to cause the obstruction and inflammation. The view of many surgeons, that the souring or fermentation ("Gierung") was the exclusive or in any way the principal cause of inflammation Heister considered as entirely erroneous. As the results of inflammation, he recognized the gradual dispersion of a disease, suppuration, mortification and scirrhus. A. F. Pallas and Brambilla considered the irritation of the nerves as the cause of the obstruction of the circulation in the finer arteries. E. Platner, together with Haller, placed the seat of inflammation in the cellular tissue. Richter opposed this opinion. He clung to the theory involving the smaller arteries and argued that the causes of inflammation lay "in the cramped tension, increased constriction and oscillation of the sensitive and irritable capillaries and blood vessels, in an increased flow of the fluid and a quicker movement of the same through the inflamed part."

Enough of these worthless theories of our countrymen. Our attention is drawn to *John Hunter*, whose work on inflammation and wounds was ridiculed by his contemporaries as a whimsical innovation, but has become the starting point of modern investigations and still forms the basis of present opinions. Hunter's great intellectual strength and the ample order of his ideas appear in these researches, if anywhere. They are rich in experiments upon animals, by which, in connection with microscopic investigations, Hunter sought to explain every striking natural phenomenon unfamiliar to him. He studied the heat of inflamed parts, the development of new vessels, the prima intentio, the formation of scars, etc., and in respect to those processes accomplished everything which could be done before the discovery of cells. Let us follow him! Since inflammation is not only a cause of disease, but is often also a method of cure, it is raised by this extended circle of effects to a main principle of surgery. Hunter divided inflammations, according to their outcome, into adhesive, suppurative and ulcerative. As a rule, adhesive inflammation precedes the suppurative; in very severe cases the suppurative inflammation can begin at once and pass over the adhesive stage. *Adhesive inflammation* arises first at one point, from which it spreads gradually; it is most severe at that point and weakens as it spreads. Next it appears to be an increased activity in the smallest vessels, based upon a distension of the arteries. It forces red blood into the vessels which otherwise contain only transparent fluids, so that the inflamed part through which now a greater quantity of blood flows appears to have more vessels. The extended vessels excrete upon the inflamed surfaces a coagulable lymph in which new vessels originate, whose increase and ramification the elder Hunter often saw quite clearly. In this way the dark red color and the swelling are explained, and into the neighboring cellular tissue the lymph exudes and thus causes the hardness of the swelling. It coheres and transforms itself into an almost organic part. In the adhesive period the new vessels serve to give the newly formed substance the power of activity and in suppuration tend to prevent the formation of a vascular granulation, while in the suppurative period they help to build such a formation. Inflammation affects the blood, and its components separate very readily. While the lymph coagulates more firmly, but more slowly, the red part has time to sink, by virtue of its weight, so that the lymph appears as a white membrane on the surface.

Suppuration never arises without previous inflammation, although it is not always in consequence of severe inflammation, since very slight inflammations are sometimes transformed into not very severe suppurations. The same vessels which previously excreted coagulable lymph into the cellular tissue gradually change their contents and excrete pus; therein consists the only difference between suppuration and adhesive inflammation. Yet the pus is not present in the blood, but arises first out of it without lacerating the vessels, as a product of a secretion analogous to the other excretions in the body. Richter considered these assertions of Hunter as too absolute, and believed with B. Bell that the pus, made chiefly out of the serum, but not completely formed and removed from the blood vessels into the abscess as [illegible] said. Hunter att[illegible] to [illegible]ree ca[illegible] ties which distinguish it from other animal fluids; it consists of globules, that float in a fluid which curdles a solution of sal ammoniac, and is the result of inflammation. Although Senac first mentions the pus globules, yet they were first investigated in Hunter's school. Home calls attention to the fact that by the red globules blood is distinguished from pus which contains whitish opaque balls in a watery transparent fluid, but that chyle has small spherules, and those in milk are just as large as in pus but more numerous. Everywhere people took great pains to distinguish pus from mucus; they found that the pus sinks to the bottom in spirits of vitriol and water, but that mucus floats; the former gives the water a cloudy, pale color, the latter generates in it floating filaments (Darwin), etc. Another discarded that distinction (Michaelis) and considered it of no practical value (Ford). When an absorption is combined with suppuration it is called by Hunter *ulceration.* The lymphatic vessels absorb either single constituents (chyle, fat and earthy substances of the bones) or actual parts of the body by which a wasting or a complete decay of the part follows. The latter is more apt to be the case with ulcers. In this absorption the principal effect occurs, probably from out the mouths of the absorbing vessels. Hunter denied that pus had the capacity to disintegrate the solid parts and transform them into pus. One effect of suppuration is *granulation.* This does not always presuppose a separation of the parts; only when internal surfaces are involved in suppuration must such be the case if they become granulated. Usually the contact of the outer air is a necessary condition, hence abscesses seldom granulate before they are opened. Granulation arises from the coagulable lymph which exudes and is transformed into a new substance; in it not only the old vessels extend themselves, but new ones arise. The granulations continue to excrete pus and have a tendency to unite with one another probably in the same manner as in the case of adhesive inflammation. When they approach each other the orifices of their absorbing vessels come in contact and coalesce. Like plants, which always grow from the center of the earth toward the surface, they strive to approach the skin. By another party the cell matter was regarded as the basis of granulation (Bichat: "Zellige Bläschen") and the formation of new substance was denied (Fabre, Louis). *Cicatrization* follows granulation. The hitherto separated parts are drawn together, especially at the edges, and it is a certain evidence of imminent healing when the skin in the region of the ulcer becomes smooth and white. At the surfaces of the granulations arises the epidermis, which one can regard as a new substance or as an altered surface of a granulation. Usually the new skin develops almost as an extension from the edge of the old, but not always. As in old ulcers, the new skin at first looks like small islands. While the new skin is not so flexible and elastic as the old, the parts around the ulcer thicken and harden in consequence of the exuded lymph. The German surgeons knew nothing of all these finer processes of the formation of granulations and cicatrization.

The effect of suppurative inflammation on the constitution Hunter designated as *symptomatic fever.* He said, "it is to be noticed that every local disease of any importance, or every disease which consists of a considerable and ready activity, even if it covers no great surface, affects the constitution more or less and produces appearances which, taken together, are generally called syptomatic fever. The symptoms of this are the expression of the sympathy of the constitution with a local disease or injury, and in consequence a number of conditions differ among themselves. They vary according to the nature of the constitution, which occasions very great differences. The modifications which age causes are included among these. They vary according to the tendency of the part in a diseased condition, and from this also arise great diversities: They vary according to the amount and kind of pain suffered, the way in which it was produced in the body; according as it is of a nature that immediately produces inflammation, as in cases of wounds, or less directly as when a part has become mortified; they vary in similar parts according to the situation of the diseased parts of the body; they vary according to the period of the disease." These views were shared by most surgeons till recently without receiving any actual accessions. The typical course of inflammatory processes and of the fever connected with them, was also announced by Hunter: "I will remark that every local or constitutional disease which possesses the power of bringing itself to a close usually shows a regular course and definite periods. . . . Since the regularity in the method of action of diseases leads to a final issue, it is something very desirable when the variations in the action of a disease show a repression of it either for a little time or permanently." Pyemic fevers had also become known. A. Paré had mentioned this fever which, dependent on the absorption of pus, is indicated by a shivering chill from twelve to fourteen days after the injury; he even saw the metastatic pus particles in the spleen, the lungs and other internal organs. F. Würtz likewise represented it as a "great vulnerary disease, vulnerary gall, and condition of unrest, which we now describe as pyemia." Hunter opposed the view, so very popular in the last century, that "hectic fever" is to be ascribed to pus absorbed from an abscess or ulcer, since he could not concede the admission of pus into the circulation as the cause of so great mischief as is usually attributed to it. Many surgeons deduced wound fever from absorption. Richter also admitted the absorption of pus, but said that healthy pus did little harm by its presence in the blood, while unhealthy pus, on the contrary, gave rise to very serious results. He distinguished inflammatory fever from wound fever, which follows injuries and operations and is not only inflammatory but also of a bilious nature. The German investigations in wound fevers have begun in our time at the point where Hunter left off.

The German surgeons held the same low point of view in the theory of *wounds* as in inflammation. The actual process of the healing of wounds was entirely unknown to them, and if they spoke of the rapid union and taught means to that end, yet no one knew in what it actually consisted. Into this darkness Hunter first brought light. He knew that there are a great number of injuries which need no treatment at all; for while diseases induce a defective action, injuries on the contrary always have a tendency toward restoration. He divided injuries into those which do not communicate with the outer world and the reverse. In the latter and in extravasations the escaping blood first coagulates and the coagulum becomes, as it were, the basis of restoration. Either vessels are formed in this, or they push out the originally contiguous surfaces of the severed parts and form extensions as in granulations. Hunter thought it possible to produce by injection the beginning of a new formation of vessels in the coagulum, where no vessels whatever could be drawn from the surrounding parts. Nerves also appear to generate in the coagulum. The second point in the healing of the extravasation is the closing of the lacerated vessels, whereupon, after a little time, the absorption of the superfluous discharged blood follows. It becomes a band between the severed parts so that the one does not unite directly with the other, but each with the blood on its own side. The healing *per primam intentionem* then consists in the organization of extravasated blood. By this the junction usually follows so closely after the injury that one could note it momentarily; when the blood has coagulated it adheres to the two severed surfaces, which it holds together; then the *prima intentio* has actually begun. The rapidity depends in part upon the amount of escaped blood. If it is great, then the blood does not become vascular in its entire extent, but only at the surface which is in contact with the surroundings, and the rest is absorbed. On the contrary, if the amount is small, as in slight wounds without laceration, and if all the parts are brought into absolute contact, the junction by *prima intentio* can be fixed after twenty-four hours. One sees this in head wounds and after the operation for harelip, although in the latter perhaps forty-eight hours are necessary to be sure of a perfect junction. Wounds often heal just as lesions which do not communicate with the outer air. Also simple wounds, as many resulting from operations, admit a *prima intentio*, but no bruises or wounds containing foreign bodies. This kind of cure was hardly known among the German barbers, but with the better surgeons soon came into extensive use. If one has such a method in view, it is in many cases not necessary to remove with great care the blood which covers both the wound surfaces for the purpose of bringing them into perfect contact, since the blood itself already establishes the connection. The orifices of the vessels soon close, the red part of the blood is absorbed, the coagulated lymph remains behind, becomes the actual means of holding the parts together, and later receives vessels and nerves. If *prima intentio* is impossible, inflammation ensues as a secondary action, and if this also fails granulations form. If the severed parts are left to themselves inflammation inevitably follows, which effects the exudation of lymph. This Hunter called "adhesive inflammation," and maintained that the adhesion comes about through the plastic lymph, which he considered necessary in every organic tissue. This inflammation requires about the same time for a junction as the *prima intentio*, which he distinguished from the former, while today they are regarded as essentially one and the same process. If the parts remain separated too long, suppuration is unavoidable. The old principle that a wound with loss of substance through granulation heals by "young flesh," came to be much doubted until, by experiments on animals, the old truth was again established. Hunter taught still another kind of healing, to which James Moore had already called attention in his prize essay on the healing of wounds (1789), that through *scab formation*. Nature effects this process without the aid of art, when the edges of the wound which are not in contact, so that *prima intentio* is impossible, become connected by means of a scab. The blood which flows from the separated parts coagulates in part and dries up of itself, or is absorbed by dry lint into a scab which covers the whole wound, and thus prevents suppuration. Formerly too little attention was given to this process, because the surgeons imagined themselves in possession of more powerful remedies than nature has, transformed every simple wound into a suppurating wound, and endeavored to prevent the formation of barks and crusts. Since the scab always needs a surface, it can form only on superficial wounds and on the surfaces of deep wounds, and therefore it must be prevented in gunshot wounds and wounds in which foreign bodies have penetrated. If such a cure does not take place the wound suppurates and no further harm is done. In many deep wounds the union beneath is more successful if a scab forms over the surface; hence many complicated fractures should be so treated, especially if the external wound is very small. How far one can carry these methods is not yet determined, but an everyday experience teaches that small wounds heal very well in this way, and in large ones there is no danger in making the attempt. If a slight suppuration follows, the scab can be opened a little so that the pus can flow out and all is well. If, in the meantime, the inflammation makes progress, the scab must be softened with poultices in order to loosen it. For burns by fire or boiling liquids this is the best method of treatment. While in English surgery the theory of scab formation was transmitted traditionally, Hunter's observations were so little regarded in Germany, where people were still submerged in their salves and plasters, that the literature of the first half of this century has almost nothing concerning them, and only after seventy years has the present generation taken them up actively (Volkmann, 1862)! We will leave Hunter's investigations, which are so similar to those of the present time that one could regard the one as the direct continuation of the other.

In the *treatment of inflammation* bloodletting, especially locally, stood foremost in Germany. Next to this, opium, which Richter considered the greatest antiphlogistic remedy, was given in England in large doses and preferably with calomel (Hamilton) or with ipecacuanha as a Dover's powder; then neutral salts, emetics and purgatives. Among the latter, castor oil was much less known to the German physicians than to the English; even in the year 1777 Theden knew nothing of it. In respect to external remedies Heister made a distinction between ardent and phlegmatic temperament, using poultices of vinegar for the former and for the latter brandy or spirits of camphor, always some heating agency. Richter determined accurate indications for irritant and emollient remedies according as to whether the inflammation was occasioned by weakness or irritation. He also made the assertion that by means of the application of the tourniquet to the extremities he could prevent or moderate a congestion of the fluids and the consequent inflammation ("Chir. Bibl.," i, c. 135). This idea, which as it appears he later abandoned, first gave rise to a practical result when Vanzetti in the year 1858 introduced indirect digital compression to the arteries for the treatment of inflammation. The *abscess* was opened in the middle by incision or, in case of patients who were afraid of the knife, by a corrosive (lunar caustic); if they opened spontaneously they were covered with a poultice. They were treated with lint covered with oil. In case of bubo, Sharp preferred caustic and taught that the abscess should neither be obstructed with plugs, syringed nor should be probed with the fingers nor probes; wounds should not be too scrupulously cleaned; the sore should never be wiped, but should only be dried with fine lint. He did not consider the influence of the air so injurious as was usually supposed, since large abscesses in the bodies of animals were observed to heal very well. As opposed to him, Richter insisted that the opening should never be made unnecessarily large, aside from the slanting sides of depressions; and then it were better to make counter-openings or to open the abscess by means of a seton recommended by B. Bell for preventing the admission of air. For enlarging he invented his curved scissors. The doctrine that all abscesses without distinction should be opened was already recognized as dangerous and it was recommended that those on the breast as well as suppurating bubo should be allowed to open spontaneously (Ford). Only on the most important parts of the body should they be opened early, and there is no surgical operation which demands a more accurate anatomic knowledge, since the abscess may arise anywhere on the body. For exactly this reason Richter had earnestly taught the young surgeons to be able to feel fluctuations, since nothing better revealed the skilled surgeon than the readiness with which he recognized deep-lying secretions of fluids, and a false diagnosis of this kind easily shook confidence in a surgeon. Up to this time the lancing of the little-understood renal abscesses had always proven fatal. Previous to 1780 David in Rouen make the observation that after their opening the pus which had at first been healthy soon became noxious, and he ascribed this change to the large incisions and the admission of air. He therefore pierced the abscess with a trocar and immediately applied a bandage. This method had only once proved successful and failed many times in his later experience. (Incidentally it should be noted that the trocar in its present form came into general use from France, after Petit had fashioned the feathered canula. Since then the name troisquart arose, *parce que sa pointe est triangulaire,* as La Faye says.) B. Bell also used the trocar for piercing, introduced a tube and employed a syringe; if the festering did not diminish after a few weeks he introduced a lead solution or lime-water. Abernethy first made the theory of the renal abscesses and their treatment generally known in surgery, through his work ("Surgical Essays," 1793), founded on several observations. According to him, if this abscess, which seldom has its seat in vertebral caries (frequently according to Ford), is opened and immediately closed, no inflammation ensues; the opening contracts and becomes perceptibly smaller. He did not believe that the admitted air was the cause of inflammation if all pus were carried away, any more than the absorption of pus caused fever. He recommended that the swelling be opened as soon as possible and he exchanged the trocar for the lancet, extracted in every case all of its pus and drew the opening together with adhesive plaster. He made a second puncture before the abscess had again reached its former extent, for the most part fourteen days after the first opening, and on one occasion cured a patient after five punctures.

In the *treatment of wounds* there prevailed, until the end of the eighteenth century, the dogma of the injurious effect of atmospheric air. According to Heister it was said to constrict and dessicate the small veins and to prevent the growth of the flesh; according to le Cat, it was said to cause suppuration in the obstructed blood vessels, the callous hardening of the wall of the wound, sores and the re-entrance of the pus into the blood. Heister recommended, therefore, that the air be excluded as much as possible by means of quick bandaging and that the wound should not be exposed before the bandage material lay ready and in shape. But instead of securing to the patient the advantages of fresh and pure air, he had the rooms fumigated several times each day with frankincense, mastich and the like. He knew nothing of ventilation. Pringle's views were adopted by Schaarschmidt, who also placed the wounded as far apart as possible and diligently attended to airing the wards. B. Bell also considered it of the highest importance in bandaging to avoid the evil and dreaded consequences of admitted air and therefore recommended, as did Richter, that every bandage be applied as quickly as possible and changed as seldom as cleanliness would permit. The frequent prize essays of the Académie de Chirurgie, already mentioned, show what value was attached to the treatment of wounds in the first half of the century. Richter adhered to the principle that nature alone accomplished the healing and the surgeon had nothing else to do but to remove accidental obstacles to the process and to moderate inflammation and suppuration. For simple knife wounds and cuts he recommended speedy conjunction. If among the great crowd of German surgeons there had ever insinuated itself a cardinal sin it was the *maltreatment of fresh wounds by probing them and filling them with lint.* How it is possible that for centuries the fundamental principles of surgery have been so ignored by the great mass and its eternal truths entirely forgotten it is difficult to conceive. Who will look down contemptuously upon literary studies, knowing that millions of human beings might have been spared so much pain and so much misery if the best teachings of our forefathers had been regarded. The abuse of sounding and the filling up of wounds can not be better described to German surgeons than by Felix Würtz in Basel in the year 1576! "With the explorer they probe, poke and stir in the wounds as if they had lost something there. . . . (Several physicians are present.) It is not enough that one should display his mercilessness with the probe, but after the first another also, and after him a third must seek for his lost penny and stir around in the wound, each one as rough and boisterous as the other. . . . But I do not know in the least how to characterize that practice, which is much in use, of filling all wounds, without distinction, with shreds, rags and other similar things and forcibly pressing them in. Medicines belong in the wounds and not such rags. . . . The pus is thereby obstructed and can not come out through the bolted door as it tends to do and as nature eagerly forces it." These abuses were not only thoroughly implanted among the Germans but in other nations also; they were handed down from one generation to another, although the best physicians of the time always protested against them. C. C. von Siebold wrote to Baldinger concerning the delicacy in probing and bandaging "without this quality in surgeons, surgery is beastliness." In the bandage-pouch which the German surgeon of Heister's time carried with him, were found in the case or "Sächlein" the following instruments: Small and large lances, straight and curved scissors, corn-tongues, razors, a straight, a curved and a two-edged knife, various probes ("Sucher"), a spatula, straight and curved needles. Besides these, a metal case contained several salves, plasters, vitriol, nitrate of silver, lint, ("carpey"), puff-ball and bandages. That in our day every evil has not been entirely eradicated is shown by the fact that only twenty years ago Stromeyer, in investigations of gunshot wounds, recommended the military physicians to throw away their probes; in the last Franco-Prussian war I myself heard, as an excuse for the squeezing out and filling of wounds, that they could not give the patients clean shirts every day. Ravaton spoke of the horrible manipulation of probes with which the breast and abdomen were torn up in cases of gunshot wounds, and he allowed them only for piercing a wound or to determine the presence of a foreign body. Bilguer also protested against much pressing and probing in gunshot wounds: "The indecisive and slow surgeons make an altogether superfluous and unnecessary use of the probe, which must be discontinued first of all; ten, even twenty. times they stick the probe into a wound, lay it away and use it just so again without reflecting that this probing is quite superfluous and injurious." Bilguer as well as Richter preferred to investigate with the finger in the region in which the part was injured because he could feel more nicely and irritated the wound less than with a probe, and he would rather widen the wound somewhat for the finger than to brobe it. J. Bell and J. Hunter likewise considered the finger the best sound for gunshot wounds. Bilguer had little need for a probe and thought it never should be used except in a few cases to determine the extent of the injury or to ascertain whether one touched a bone or a bullet. B. Bell insisted on the great importance of a free and unobstructed flow of pus and to that end recommended for deep wounds the adjustment of lead tubes instead of the easily obstructing pledget; this was drainage a hundred years ago! Silver tubes already applied to this purpose, which are resurrected in our own time by Hueter, he considered not so good because the lead ones were softer and more pliable. At that time the abuses were just as great in France, where in severe injuries blood-letting, recommended especially by Ravaton, and neglect of purgatives were practiced.

They applied pledgets with digestive salves to fresh wounds after the blood was stanched. Lint, and indeed dry, they used only at the beginning of suppuration; Hunter approved of it for the formation of scabs. At the end of the century, in France as well as in England, it was very much misused. Brambilla and the Frenchman Terras protested vigorously against it, and the latter recommended the curly lint above the long-fibered kind. In Desault's school it was applied very loosely; Wardenburg had learned that, and he said that whoever saves lint wastes the life of his patient. Pouteau recognized in it a frequent medium of contagion, when scraped by people who were impregnated with hospital air, and on that account he ordered that all the lint used in hospitals be prepared outside of them, and recommended, for the sake of economy, pledget paper instead of lint (It is well known that recently Roser endeavored to introduce blotting paper as a substitute for lint). Pelletan also attributed the rise of hospital gangrene to the fact that they had bound the wounds with lint which had for several years been stored in the Hôtel Dieu in the vicinity of the wards. For poultices they used all possible herbs, blossoms and roots boiled in water or milk. Indeed, it is interesting to know that our everyday cataplasm of linseed meal found its greatest advocate in J. Hunter; yet, every excellent gentleman who looks with contempt upon minor surgery, must remember that the greatest genius did not feel it beneath his dignity to give directions for the preparation of a poultice. Hunter thought the usual poultices too fluid and not thick enough to retain a proper form, and he considered the mixture of bread and milk too unstable. He recommended pouring on linseed meal a quantity of boiling water sufficient to make a paste of the right consistency, and adding some mild oil to a quantity of this mixture. He considered the poultice as the best means of bandaging in gunshot wounds and in most lacerated wounds. Later, that deep thinker, Abernethy, took the pains to instruct his countrymen in the preparation of poultices, and for thanks was derided as the "poultice crank." In France, where in the last decade of the century wounds were often so assiduously washed out that not a drop of pus remained, poultices were more in use than any other remedy. At the entrance of the hospital the attention was arrested by great tables with pans full of linseed meal and marshmallow water. Their frequent use was based upon the idea, very general in France, of a so-called "depot." If a little redness and swelling was formed, they did not inquire whether pus was already present, but whether it were yet formed, and they endeavored to soften the swelling.

Cold water must needs be discovered anew. In the seventeenth century it seemed too simple a remedy, they applied only salves and plasters to wounds. Although in the first half of the eighteenth century the Englishman Smith and the Frenchmen Lamorier and Chirac brought forward cold water again, still the methods seem to have been forgotten. Our Schmucker has the great honor of bringing it again into use in injuries and inflammations. In accordance with the physiologic views of the time he wished to have, for his patients with head injuries, a remedy "which would contract and strengthen the relaxed vessels, especially the tender lymphatic and serous ones, besides preventing a further exudation of lymph and hastening the absorption of that already discharged." He took cold water, since he could get no ice, which he would have decidedly preferred, and to increase its effectiveness made a mixture of forty pounds of water, four pounds of vinegar, sixteen ounces of saltpeter and eight ounces of sal ammoniac; he called this his fomentatio frigida. Theden followed him, and the Frenchmen Lombard and Percy. Richter had little to say of cold applications, nothing at all of ice; but Hunter, who valued it highly for inflammations, thought it was not so generally applicable as other remedies.

The *lead preparations*, introduced in 1760 by Goulard of Montpellier, made considerable sensation, especially acetate of lead. Without any indication the barbers and bathers applied lead preparations to most surgical diseases, insomuch that all other remedies were forced into the background. This enthusiasm lasted some twenty years, till Aitken in England, and then Hecker with us, assigned narrower limits to these remedies and taught a more guarded application of them. Desault, and B. Bell, who injected a weak solution of lead into wounds but as for the rest protested against powerful injections, and also Theden, were very partial to these remedies. In the second half of the century, in all countries, a reaction against the excessive use of salves and plasters began to prevail. Würtz had said in this connection, "that they cleansed wounds with rags saturated with oil and salve in the same way that a guard cleans out the barrel after he has shot off a gun, and the practice of treating all wounds with the same salves and plasters is just as senseless as it would be to fit all feet with the same shoes." The German surgeons in Heister's time bound small wounds with brandy or honey, oil of turpentine, Johannis oil; Peruvian or some other wound balsam; they preferred balsam and spirituous poultices for incisions because they dried the wound more quickly; oil and digestive salve for bruises because they hastened suppuration. When one reflects upon the simple, almost dry treatment of wounds of antiquity, he is disgusted with the enormous amount of salve-smearing of this time, which began with the decadence of medicine. Instead of the usual *bandages* of linen, B. Bell preferred flannel because it is elastic, fits firmly and yields to the swelling of the part. His countryman, Gooch, recommended laying a fresh *wax sheath* on the compress to protect the bandages from pus.

The *bloody suture* in wounds was almost entirely discarded during the eighteenth century. That was the same stand which F. Würtz took, who condemned the suture on account of the scar it leaves, of the tearing up of the filaments in a growing tumor and of the seizure by the suture of nerves in general. They preferred a ligature with adhesive plaster (or English plaster) in most cases. J. L. Petit and Hunter gave adhesive plaster the preference over bandages; the former because the bandage covers the whole wound, obstructs excretion and is adjusted sometimes too loose, sometimes too tight; the latter because the adhesive plaster induces neither inflammation, suppuration nor ulceration, which the bloody suture always does. Adhesive or English court-plaster is therefore best adapted to amputations, operations for harelip and the extirpation of tumors. Sharp, on the contrary, sutured all fresh incisions and found that sutures on the head were less injurious if they were carefully made. In Germany Heister preferred the so-called dry union and only when necessary, especially in large oblique and angular wounds, would they resort to the bloody suture, because it caused pain and new scars. Richter restricted the use of sutures as far as possible on account of irritation and inflammation, and gave the dry method preference without actually discarding the other. He made the suture with a curved needle and a thread which was composed of separate single strands, was waxed and resembled a small bandage. He had the stitches lie, for the most part, a thumb's breadth apart and two or three lines from the edge, and pass through the base of the wound; the threads were fastened with a simple knot and a noose.

Concerning the *treatment of fevers* we will select only one point which has special interest for our time. While from Hippocrates down heat was considered the pathognomonic symptom of fever, in the eighteenth century they laid the greatest stress upon the acceleration of the *pulse*. According to Hunter the regularity, irregularity and rapidity of the pulsations depend only on the heart, while the strength, the undulation, the fulness and weakness, the beating in two throbs pertains only to the arteries. He believed that the condition of the pulse is not easy to determine and that one can only learn to judge its weakness, strength and tremor with accuracy by experience. Many physicians never learn this, as for axample, William Hunter who could not feel the fine differences of the pulse. These can be perceived only through the soul, and it is just as in music, when much sounds inharmonious and unpleasant to the more sensitive ear which is not so to another. In England the use of a pulse-watch was highly esteemed as the only sure method of judging of the pulse, since even the most experienced practitioner deceives himself without such an instrument (Fordyce). Ignorant braggarts, on the contrary, sneered at the use of a second-watch, as Brambilla, for example. In this connection it must be remembered that in Germany, even in the middle of the century, the possession of a watch was frequently dispensed with. It is known, that Semler only obtained his silver watch when he was a professor, while about the year 1780 every master and student required one. Influenced by Pringle's ideas the English physicians laid great stress on *pure and cool air* in the treatment of fevers. Everywhere the ordinary man desired for the fever patient a narrow, hot, sometimes ill-smelling chamber. The patient lay buried in bed and was given special drinks to promote perspiration as much as possible; change of bed linen and shirt was strictly forbidden. Gregory in Edinburgh (1772), opposed these abuses sharply, let cool fresh air into the sick room, constrained the fever patient not to eat and drink, but allowed him as a drink all the cold water or thin beer that he would take. He also let the patient stretch his hands and feet out of bed at pleasure, and had the bed linen changed daily. Fordyce in London (1773), knew that the human body can be more quickly cooled by air cooler than itself than by internal medicines. He desired cool moist air, large rooms with fireplaces, roomy beds and a frequent change of bed linen and shirts. It surprised him very much that his German colleagues had their patients lie in rooms where the air was so extraordinarily hot and bad. And yet de Haën had already taught (1757) that excessive heat aggravates diseases and therefore a moderate temperature is necessary; he had his fever patients lie on the outside of the bed for a few hours, which refreshed them greatly and induced a gentle sleep afterward. By the misdirected care of stupid nurses, who avoided every draught, the disease was newly aggravated, indeed sometimes fatally. Hunter also valued fresh air as of the utmost importance in guarding against the so-called hospital fever, which arises chiefly through the abode of many persons in narrow rooms (as in prisons, ships and small dwellings of the poor), by which the air becomes infected (1785). Before all things he desired to create pure fresh air by ventilation in hospitals and dwellings, and on the other hand to banish all fumigations, since they only conceal the bad odor but do not improve the air. It was known that general *bathing* was of great use in fevers. Le Cat had patients who had been operated on for stone placed in a half bath after the operation. Boucher extolled baths for gunshot wounds; le Dran, after all surgical operations. Even in the field-hospitals Bilguer made baths possible, and in Nimes, where he had forty-one patients with putrid fever and dysentery under treatment, he had each one given a daily tub-bath with infusions of chamomile and other things. Incidentally let us notice internal medicine. In England they began to make use of cold water as an antipyretic remedy, especially *cold baths in typhoid.* The merit of having energetically developed this method belongs decidedly to the Prussian physicians, Siegmund Hahn, father and son, who used cold water extensively for both internal and external ailments. (J. S. Hahn Sohn, "Unterricht von Krafft und Würkung des Frischen Wassers in die Leiber der Menschen," u. s. w., 1738.) Currie first used baths in typhoid methodically. Wright showered his typhoid patients with cold water, the earlier the better (1799), while Gregory had his bathed in it twice a day, after which he observed a reduction of the fever and a decrease in the pulse from 110 to 80 beats. Baths were recommended by Scott, who had his typhoid patients afterward rubbed with rough flannel, put in bed and given warm wine; likewise Dimsdale, who inserted a thermometer under the tongue of the patient to ascertain the degrees of fever. Even during the first days after the baths, which he considered more effective than bathing with a sponge, he observed an abatement of the fever and headache, and discontinued them only in case of great exhaustion. (In intermittent fever the Englishman Kellie observed the chill to be relieved in a few minutes when a tourniquet was applied to the right arm and the left thigh; he found that the tourniquet, applied to himself in a healthy condition, at first increased the number of pulse-beats and then continually decreased it (1794).

We will pass to the *arrest of hemorrhages.* The question as to how nature can stop the flow of blood was first answered by J. L. Petit (1731), by the evidence of a thrombus, and he thereby gave occasion for much investigation and contention. His thrombus consisted of an external coagulum adhering to the orifice of the artery (*couvercle*) and an internal coagulum arising at the end of the blood vessel itself (*bouchon*). Morand agreed with this view in part and first demonstrated that the inner and middle coats of the arteries constrict themselves, and thus retain the thrombus. He attached the greatest importance to the fact that the severed vessels recoil and shorten, and thus the force of the blood flow is diminished and finally the opening of the artery contracts and at last closes. Other surgeons, as Aikin and Gooch, who thought the formation of a coagulum at the natural heat of the body impossible, regarded the obstruction which they found in the arteries upon dissection, as a product of death. Again, others maintained that the arrest of blood by an obstruction is untrue, because after a little time one finds the end of a severed artery entirely closed up to a certain length and changed into a ligament (B. Bell and Theden). A chief role was allowed to be played by the coagulation of the blood extravasated into the cellular tissue, which exerts a pressure upon the arteries and by the inflammation induced by the ligature, which results in the withering of the constricted part and the adhesive cicatrization of the end of the artery (J. Bell). White even considered the obstruction as an impediment to the closing of the artery, because it held the passage open, and he advised removing it with a sponge. Kirkland also regarded the coagulation of the blood as injurious and rejected Petit's views, because in many cases a swoon will very quickly staunch a hemorrhage of even the large arteries. Pouteau occupied a middle ground, in that he admitted the formation of an obstruction, but considered as the best means of closing the artery the swelling of its end and of the cellular tissue surrounding it, by which it is compressed; for he sometimes found the obstruction, sometimes not, and in the latter case observed that the end of the artery was closed by a solid callous scab; he therefore denied the necessity of the formation of a thrombus and declared against the retrocession of the blood vessels, because he often saw them extend beyond the surface of the wound. Richter also adhered to the double process, but at the same time to the retrocession; he maintained that opened arteries were closed either by a blood obstruction or by complete cicatrization, which usually extends to the next branch of the artery, in the latter way always in transverse incisions and *vice versa.* The demonstration of this double kind of arrest of hemorrhage he found in the fact that when the opening of the artery was closed by some external means, the blood behind stagnated and coagulated; but if close above the compressed or constricted point, a branch opened, the blood flowed there and consequently could not stagnate and form an obstruction. He doubted if this alone, in the first days after an injury, would contribute to the arrest of the hemorrhage of a large artery, because its force would soon expel the obstruction. Yet he did not doubt the existence of the thrombus, in general, and he added, as further evidence, the observation that in gunshot wounds one sometimes sees clots of blood float in the pus, which one must handle very carefully, because at its removal an excessive hemorrhage often arises. The dispute in regard to thrombosis entered upon a new stage when it was demonstrated that the thrombus organizes itself, and Jones published an excellent work in the year 1805, with the results of some fifty experiments on horses and dogs.

Surgeons were not united as to the various means of arresting hemorrhage, although the ablest of their time preferred the ligature, if in any way applicable, to compression or styptics. In flaming letters history teaches us how, in an inconceivable manner, one of the noblest treasures of surgery, *the ligature of blood vessels*, could lie buried for centuries; how, again brought to light, it was again forgotten for centuries; how, discovered for the third time, but bitterly contested, it was not forgotten from this time forward, but only after a long time was it accepted as one of the most precious gems belonging to surgery. The first period lay in antiquity; Hippocrates, Galen and Paul of Ægina used the ligature. The operation for aneurysm by the ancients, shows that they also bound up the main vessels with the needles. The Greek, Archigenes, is considered the discoverer of the ligature in amputation (97 A. D.); he said that the surgeon before amputating should bind up (*i. e.*, with strings) the blood vessels leading to the limb, and should then make them fast (*i.e.*, ligate them with the needle). If the ancients almost never employed the ligature in amputations it was not from ignorance of its manipulations, but because of the rarity of those operations at that time. They amputated only in cases of gangrene, and made it a principle in clean fresh wounds to bind up the blood vessels, but in putrescent wounds they arrested the flow of blood by cauterization. The ligature was forgotten and only in the twelfth century discovered by the Arabians, Albucasis and Avenzoar, and again used. By the former it was called "ligetur cum filo ligatione forti," by the latter, "ut primum liges extringendo caput ipsius venae quae est versus cor et postea incides," (Ullersberger).[1] And the Arabians were no further thought of.

For centuries the hot iron triumphed in general practice until, for the third time, Ambroise Paré, the surgeon of King Henry II., Francis II., Charles IX. and Henry III., in the sixteenth century, again brought the ligature to light. His great service consisted in defending ligature as the only safe method, in opposition to the barbarous method of his time, for stopping hemorrhage, the cruel burning of the amputated stump with a hot iron, amputating with redhot knives and inserting the stump into seething pitch and oil. As thanks for his operation, which, for a long time, was looked upon as a new discovery, it was decried and disparaged by the adherents of the hot iron. A contemporary, the envious Gourmellin, thus wrote of him: "An ignorant and at the same time rash man has lately, out of ignorance and pride. ventured to condemn the cauterization of the blood vessels with a hot iron after the amputation of limbs, a method which has been recommended by all the ancients without exception and has always been approved, and in its place has to introduce a new expedient, namely, the ligature of the blood vessels, something contrary to all the teachings of the ancient physicians, to all first principles, to all experience and to all sound reasoning. . . . Truly everyone who undergoes this butcher-like operation has reason to praise God if he comes out alive after this cruel and inquisitorial torture." Paré followed two principal methods. Most frequently he had his assistant draw out the arteries with his pincers (*bec de corbin*) and tie a thread around them, or he secured them with needle and thread if he could not readily isolate them. Some flesh was always bound in with the artery. It was no light task for Paré to abolish the hot iron, whereupon for justification of the ligature he based his claim upon Hippocrates, Galen and Avicenna. At the same time F. Würtz felt that the hot iron must be abandoned, when he said: "It is, in my opinion, such a horrible expedient that it should again be given over to murderers only. For I can readily believe that such an expedient was learned by hangmen's children." He had seen much pain and misery from the hot iron and permitted it for the most part only in thigh amputations, and in other cases he arrested the bleeding with alum. It must be admitted that Paré exacted a great deal of faith from his contemporaries, for he possessed but crude experience and was not in a position to demonstrate the effect of the ligature upon the blood vessels nor to establish its superiority over other methods; his technique itself was imperfect. Therefore, for a long time, general confidence was withheld and and the most celebrated surgeons of that time, such as Severin and Nuck, considered the ligature as very dangerous. Indeed, more than a hundred years must pass before it won the sovereignty over all other methods in surgery. The Germans learned to know its value earlier than did Paré's countrymen. Scultet and Fabricius of Hilden used it, the latter, however, only upon young and strong men. In France, Guillemeau, the pupil and friend of Paré, and Dionis were the only ones who, up to the end of the seventeenth century, knew how to appreciate it, and they did so only in a limited way, that is, they preferred it to the hot iron in amputating injured limbs. Wiseman performed the same service for English surgery. Nevertheless, during the first half of the eighteenth century in France, cauterization still prevailed and, in the Hôtel Dieu in Paris, was used exclusively in hemorrhages attending amputations.

(*To be continued.*)

Synopsis of the Report of the Surgeon-General.

War Department, Surgeon-General's Office,
Washington, D. C., Sept. 22, 1897.

Sir:—I have the honor to submit the following report of my administration of the duties pertaining to the office of the Surgeon-General of the Army.

Among the expenditures authorized by Congress for the fiscal year ended June 30, were those for artificial limbs, for surgical appliances and for trusses for persons disabled in the line of duty, for the Army Medical Museum, for the library of the Surgeon-General's Office, for the support and treatment of destitute patients in the city of Washington, D. C., for the construction and repair of army hospitals and for the support of the Medical Department of the Army.

Artificial limbs.—During the year ended June 30, 1897, there were furnished under the laws relating to artificial limbs 301 artificial legs, 7 arms, 4 feet and 1 apparatus; and the commuted value of an artificial leg was paid in 2,856 cases of amputated leg, of an artificial arm in 2,993 cases of amputated arm, and of an artificial foot in 69 cases of amputated foot. Commutation was paid also in 3,297 cases in which the use of a limb was lost. The money expended amounted to $555,347.51, of which $552,854.46 was from the current appropriation, $2,452.35 from the appropriation for 1896, and $40.70 from that for 1895.

Appliances.—The number of appliances issued during the year was 176, for which was disbursed the sum of $1,015.27 from the appropriation approved June 11, 1896, and 136.50 from that approved March 2, 1895, a total of $1,181.77.

Trusses.—There was expended in furnishing and fitting trusses to disabled soldiers under Sections 1176-78, Revised Statutes of the United States, and the Act of March 3, 1879, the sum of $7,268.80. The number of trusses issued and fitted during the year was 1,043.

The hospital corps.—The loss to the Corps during the year amounted to 273 men, but this was more than offset by a gain of 276 men by enlistment, re-enlistment, transfer, etc. The Act of March 16, 1896, reduced the number of hospital stewards, and fixed it thereafter at 100. There remained in service June 30, 1897, 98 hospital stewards, 99 acting hospital stewards and 513 privates, a total of 710 men.

The Hospital Company of Instruction at Washington Barracks and the smaller detachments in the Western departments contribute materially to the training of the men in their important duties, and serve also as depots from which vacancies in the respective departments are filled. The instruction given them includes nursing, cooking, first aid to the sick, litter and ambulance drill, pharmacy, assisting in operations and disinfection, taught both theoretically and practically, with field work as far as possible. The company at Washington Barracks received 46 men during the year, and from it 42 trained men were sent to other posts.

The appropriation for the support of the Corps for the fiscal year 1896 7 was $206,280. As this was more than sufficient, the appropriation for 1897-8 was reduced to $202,800.

Medical and hospital supplies.—The disbursements during the year ending June 30, 1897, from the appropriations made by Act of Congress approved March 16, 1896, for the expenses of the Medical Department of the Army, and from the balances of previous appropriations on hand at the beginning of the said fiscal year, amounted to $108,709.38.

Recently issued medical works and improved appliances of various kinds have been supplied to the hospitals during the year. A few of the principal posts have been provided with the Roentgen ray apparatus.

Therapeutic value of medicinal tablets.—During the year an investigation was made into the efficiency of the medicinal tablets issued from the medical supply depots. The results showed that the tablets do not suffer any more from deteriorating influences than other preparations of the same medicines. They are valuable in presenting to the medical officer accurately divided doses while occupying little space in the medical chests; but they are not in every instance to be regarded as pharmaceutic preparations ready for administration. Tablets of bromids, iodids, etc., would be highly irritant to the gastric mucous membrane if swallowed without previous solution and dilution, and those containing more or less insoluble substances such as phenacetin, salol, sulphonal, etc., would be slow to act or even inert unless thoroughly disintegrated before administration. The necessity for suitable preparation for use in each case should always be held in mind.

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[1] When Ullersberger made the reproach against our time (*Deutsche Zeitsch. f. Chir.*, II, S. 260, 1873) that it falsely ascribes priority in ligature to Paré, while it is exclusively the fully authorized property of those two Spanish Moors, by whom he maintains this precious jewel was discovered, he overlooked the fact that, in the previous century, the position of Albucasis as regards ligature was cited by E Platner ("Zusätze," I, 1776, S. 255) and this Arab is also mentioned by Sharp. Further, the accounts of Hippocrates and Archigenes were as well known to E. Platner as to Cocchius ("Graec. chir. libr.," 1754, p. 157), therefore the former does not ascribe the discovery of the ligature to the Frenchman Paré, but the great merit of reintroducing it. These things are not forgotten to the present time.

Hospitals at military posts.—Great improvement has been made during the past few years in the hospital accommodations at many of our military posts. At the present time new hospitals are in process of construction at six posts: Forts Hamilton and Wadsworth, N. Y., Fort Hancock, N. J., Fort Monroe, Va., Fort Custer, Mont., and Fort Spokane, Wash. In 1896 a hospital was completed at Fort Logan H. Roots, Ark. In 1895 new hospitals were erected at Fort Myer, Va., Fort McHenry, Md., Plattsburg Barracks, N. Y., Fort Meade, S. Dak., and Fort Harrison, Mont., and in 1894 at Washington Barracks, D.C.

These hospitals are of brick, with a two inch air space in the exterior and no furring on the inside, the plaster being applied direct to the brick work and finished with soapstone. Pressed steel ceilings are used on each floor above the basement. Each building is heated by hot water and ventilated through galvanized iron ducts and brick flues by direct-indirect radiation. The basement is concreted, well ventilated, and usually contains a boiler room, coal room, several store rooms, a vegetable cellar and a large room under the ward wing which is used as a drill room for the detachment of the hospital corps in bad weather.

Providence Hospital.—The Act of Congress approved June 11, 1896, appropriated $19,000 for the support and medical treatment of destitute patients in the city of Washington, D. C., under a contract to be made with the Providence Hospital by the Surgeon-General of the Army. The amount of relief afforded under this appropriation was equivalent to the treatment of 113 patients throughout the year.

Army and Navy General Hospital, Hot Springs, Ark.—Twenty-five officers and 106 enlisted men were treated in this hospital during the calendar year 1896. Of the former 19, and of the latter 56 were returned to duty or left the hospital very much improved. Reports received from the surgeons of the various posts six months after the 56 men had been returned to duty, showed that 39 were doing full duty with their companies, 5 had been discharged on expiration of term of service but were in good health at the time of their discharge, 2 had deserted and 10 had been discharged on account of a recurrence of their disease.

Almost every case sent to this hospital is a case for discharge on certificate of disability at a post. All the benefits to be derived from the treatment there have been unavailing, and but for the special facilities afforded for treating such cases at the Hot Springs many men who are now returned to duty would become pensioners of the Government for years.

On my recommendation, in May last, the President directed the amendment of the regulations governing admission to this hospital so as to admit to its benefits honorably discharged soldiers and sailors of the regular and volunteer Army and Navy of the United States when there are vacant beds in the hospital for their occupancy. Circular No. 1, May 8, 1897, from this office, published full information for the guidance of applicants for admission. Since then 13 individuals belonging to the classes mentioned have taken advantage of the privilege. When the authority for their admission for treatment becomes generally known there is no doubt that many veterans of the war disabled by rheumatism and other diseases which the waters of the Hot Springs have an established reputation in benefiting will become applicants for admission.

Army Medical Museum.—The amount expended during the year on behalf of the Army Medical Museum was $4,882.76. The number of specimens added to the Museum during the year was 3,156, making the number on hand June 30, 1897. 36,897.

Library of the Surgeon-General's office.—The amount expended during the year on behalf of the Library was $10,000. There are now in the Library 123,924 volumes and 210,152 medical theses and pamphlets, the additions during the year having consisted of 3,580 bound volumes and 11,612 pamphlets. Volume ii, second series, of the Index-Catalogue, includes the letter "B" and forms a volume of 954 pages. It will be ready for distribution at the regular time. The appropriation for Volume iii, second series, having been made, the manuscript is in course of preparation for the printer.

Medical officers.—There were 108 medical officers reported to this office as having been on duty with scouting parties and on other field service during the year.

Deaths. Two surgeons with the rank of major.

Retirements. On request, after thirty years' service, one assistant surgeon-general with the rank of colonel; one surgeon with the rank of major. For disability, two assistant surgeons with the rank of captain. By operation of law, one assistant surgeon-general with the rank of colonel; one surgeon with the rank of major.

Promotions. Two deputy surgeons general with the rank of lieutenant-colonel to be assistant surgeons general with the rank of colonel; two surgeons with the rank of major to be deputy surgeons-general with the rank of lieutenant-colonel; six assistant surgeons with the rank of captain to be surgeons with the rank of major; eleven assistant surgeons with the rank of first lieutenant to be assistant surgeons with the rank of captain.

Appointments. Eight assistant surgeons with the rank of first lieutenant. These were selected by a board convened in Washington, D. C., Sept. 23, 1896. Forty-seven candidates were invited to appear before the board; six failed to appear; twelve were rejected for physical disability; fourteen were found disqualified professionally; three were rejected at preliminary examination; four withdrew after partial examination. Eight were found qualified and were recommended for appointment.

Vacancies. There are now, June 30, 1897, five vacancies in the Medical Department.

The Army Medical School.—The report of the President of the Army Medical School on the work of the past year shows the earnest endeavors of the members of the Faculty to make the course of study one of the best of its kind with the facilities at command. The practical instruction in operative surgery is a valuable preparation for the responsibilities of service in the Army, where the surgeon has frequently to act for himself in cases which in civil life would be treated only after professional consultation. The laboratory work in bacteriology and sanitary chemistry is also of great importance. The teachers of these branches have reported as the result of their experience during the past three sessions that a course of four months does not give them time to deal with their subjects in a thorough and satisfactory manner. To enable them to do this G. O. 43, War Department, A. G. O., Washington, D. C., July 6, 1897, extended the course of instruction from four to five months, the session beginning as heretofore, on the first Monday in November.

The student officers during the past year are credited with having pursued the course with an interest which gave satisfaction to the Faculty. Nevertheless, it appears to me that better results would be obtained if the class standing of the students at the end of the session were to have weight in determining their relative rank. The work of a student whether good or bad, during the course of instruction, has no effect upon his relative rank, which is at present determined by competitive examination before entering the school. The passage of an Act of Congress giving weight to the course of instruction in determining the lineal rank of officers appointed on the same date would be of such benefit to the School and to the Medical Department of the Army.

Recruiting.—The total number of men examined for enlistment during the calender year was 14,659, of whom 8,654 or 590.35 per 1,000 were accepted, 5,448 or 371.65 per 1,000 were rejected on primary examination and 557 or 38.00 per 1,000 subsequently declined enlistment. The ratio of accepted men per 1,000 of those examined is considerably larger that the rates of previous years. In 1893 the rate was 433.35; in 1894, 451.04; and in 1895, 489.83. This must be regarded as meaning that better men physically are coming up as candidates for enlistment for examination. The rejections among the colored men were relatively somewhat more numerous than among the white candidates for enlistment; 379.00 as compared with 371.04 per 1,000 respectively. The report contains some interesting anthropometric data, showing that although the foreign born recruit has the advantage over the native white in weight and chest measurement, the latter is taller by half an inch.

Physical examination of cadets, United States' Military Academy.—The report of a medical examining board convened at West Point, N. Y., Aug. 20, 1894, indicated that ten cadets had become affected with heart disease while at the Military Academy. The usual character of the disease as reported was said to be aortic obstruction. The board found these cadets "physically disqualified," but recommendation was made that they be continued at the Academy on probation for six months, and Major George H. Torney was directed to make a careful investigation of the cases. As a result of continued observation the conclusion was reached "that in all except one case the murmur heard in each individual at the time of the examination of these cadets in 1894 was due to temporary irritability of the heart caused by the nervous excitement attending the ordeal of examination.

Identification of deserters and other undesirable men.—This system continues to be an excellent safeguard to the Army. There are now in the files of this office data sufficient for the identification of 12,640 men whose records show them to be undesirable associates for honorable young men serving in the ranks and who can be denied enlistment as soon as their cards are received from the recruiting office.

Medical Department of the National Guard.—No medical officer of the Army was on duty during the year with troops of the National Guard, but the meeting of the Association of Military Surgeons in Columbus, Ohio, afforded an opportunity to many of our medical officers of forming a professional and social acquaintance with delegates and others belonging to the Medical Staff of the National Guard of many of the States.

The second Pan-American Medical Congress was held in the City of Mexico, Nov. 16-19, 1896. Colonel Charles H. Alden, Assistant Surgeon-General, in his report of the meeting, gives a general view of the proceedings of this important medical congress and of the advantages derived from it. He pays a graceful tribute to the high standard of the medical profession in Mexico and makes brief but suggestive mention of the great sanitary improvement in progress and of the excellent condition and advanced equipment of its hospitals, schools, laboratories, etc.

Uniformity in medico-military statistics.—Embodied in the report are the data concerning recruiting and the movements of sick in our army, tabulated on the forms suggested by the International Commission which met at Buda-Pesth in 1894.

Health of the Army.—The health of the Army has been excellent during the calendar year 1896, the medical statistics of which are embodied in the present report. In the previous year all the rates that are usually considered by statisticians and health officers as throwing light on the physical condition of a community were lower than any former year of the history of our Army. Practically the rates of 1895 and 1896 are the same, but when accurate expression is given to them in figures those of 1895 continue to be the standard of comparison as the lowest recorded rates.

The admissions to sick report per 1,000 of strength were 1,110.39 as compared with 1,110.22 in the previous year, and with 1,037.73 in 1894, which was the lowest recorded admission rate for all causes; but it is to be observed that an excess of injuries in the past two years raised the total rate, while the admission rate for disease in both years was lower than in 1894, 65 during the past year, 837.53 in 1895 and 845.52 in 1894. average length of time each case was under treatment was 9 days, as compared with 11.14 in 1895 and 11.69 as the rage of the previous decade. The number of days lost on ount of sickness for each man in the Army was 12.43 days, compared with 12.37 in the previous year and 14.93 the average of the previous decade. The number constantly non-effective per 1,000 of strength was 33.97 as compared with 33.89 in 1895. The non-effective rate during the decade prior to 1895 averaged 40.92 per 1,000 of strength. The discharge rate for disability was 10.15 per 1,000 of strength, as against 9.15 the previous year; but that the lessened non-efficiency of recent years does not result from discharging men for disability is easily recognized when we observe that the discharge rate of the decade prior to 1895 was 21.77 per 1,000 of strength. In those ten years a higher non-efficient rate prevailed, notwithstanding the considerably larger number of men discharged from the ranks on account of persisting disability. The death rate from all causes constituted 5.44 per 1,000 of the strength, not much higher than that of the previous year and much lower than the average annual rate, 7.5 of the previous ten years. The corresponding rates from disease were 3.83, 3.55 and 5.10: from injury 1.62, 1.61 and 2.41.

It may be well to notice the great improvement that has taken place in the past few years in the sanitary condition of the colored troops, as manifested by their lessened rates of sickness, disability and death. The white troops have participated in the improvement, although their rates have not fallen so rapidly as those of the colored men. There was no doubt greater room for improvement in the sanitary status of the colored troops and the men may have responded with more earnestness to efforts in this direction. During the past year the total admission rate *for all causes among the colored troops* was 868.88 per 1,000 of strength, as compared with 1,132.49 among the whites for the same year, and as compared with 915.88 among themselves in the previous year, and with 1,368.61 their own annual average for the previous decade, the annual average of the white troops having been 1,284.95. The non-efficiency from all causes among the colored troops during the year was 25.75 per 1,000 of strength, as compared with 34.72 among the white troops. The colored soldier lost 9.42 days from disability during the year, the white soldier 12.71; and the average time of treatment of each case was among the colored troops 10.84 days, among the white 11.22 days. The causes of disability from which the colored men suffered less than the white troops were malarial fevers, venereal diseases, alcoholism, diarrhea and injuries; those from which they suffered more were neuralgia, rheumatism and myalgia, tonsillitis, colic and constipation, conjunctivitis and pneumonia.

Health of the Military Departments.—The admission rate varied in the different Military Departments from 1,246.37 per 1,000 of strength in the Department of the East to 762.18 in the Department of California. It was above the Army average in the Departments of the East, Texas and the Platte, the Colorado and the Missouri; but this was offset by lessened rates in the Departments of the Columbia, Dakota and California.

The rate of non-efficiency or constant disability was above the Army average of 33.97 per 1,000 of strength in three of the departments, the Missouri, Texas and the Platte, but the highest rate, that of the Department of the Missouri, was only 37.23. The rates in the Departments of the East and the Colorado were below the average, but above 30 per 1,000 of each command. Those of the Departments of Dakota, the Columbia and California were below 30 per 1,000, that of California, the lowest, being only 24.02.

The death rate in the Department of Texas, 9.28 per 1,000 of strength, was considerably higher than the average of the Army, 5.44. This rate in the Departments of the Missouri, the Colorado and the Platte was slightly above the average, while in the Departments of Dakota, the East, California and the Columbia it was below the average, the rate of the last mentioned department being only 2.01 per 1,000 of strength.

The rates of discharge for disability varied from 12.29 per 1,000 of strength in the Department of Dakota to 7.15 in the Department of California, as compared with the Army average of 10 15. In three of the other Departments, Texas, the Colorado and the Missouri, the rates were above the average; in the Departments of the Platte, the East and Columbia they were below the average.

Considering all the rates for the calendar year the Department of Texas had probably the worst record and the Department of California the best record among the military departments.

The highest and lowest rates at individual posts.—The largest admission rates for the year were reported from Washington Barracks, D. C., and Fort Myer, Va., 2,250.71 and 2,250.00 respectively per 1,000 of strength. These two posts have had high rates for a number of years. Malarial infection was the principal cause of these high rates. An investigation was made during the past year by Surgeon W. Reed, who concluded that the fevers at both posts were to be attributed to the marsh lands of the Potomac valley. His report was published in my last annual report, page 66. The malarial rate continued high at Washington Barracks during the past year, but the cases at Fort Myer were relatively not so numerous. These two posts, although heading the list of sickness as represented by frequency of admissions, take only the twelfth and fifteenth place respectively when the posts are arranged in order of non efficiency from sickness. Following Fort Myer in frequency of entries on the sick report are Fort Clark and Camp Eagle Pass, Texas, each with over 1,900 entries per 1,000 of strength; Fort Slocum, N. Y., and Fort D. A. Russell, Wyo., with over 1,600, and Fort Riley, Kansas, Fort Monroe, Va., Jefferson Barracks, Mo., Fort Wingate, N. M., and Fort Barrancas, Fla., with over 1,500. The causation of these rates are stated in discussing the health of the Departments. Jefferson Barracks, Mo., had the highest rate, 67.23, of constant sickness, although only ninth in frequency of admissions. This was owing to the prolonged duration of its fever cases, malarial and typhoid. Two other posts, Camp Eagle Pass and Fort McIntosh, Texas, had a constant sickness of over 60 per 1,000 of strength. *Three posts, Fort Barrancas, Fla., Fort Thomas,* Ky., and San Diego Barracks, Cal., had each over 5 per cent of constant non-efficiency. Following these in the order of diminishing rates, are Forts Clark and Brown, Texas, Fort Wingate, N. M., Fort Crook, Neb., Fort Monroe, Va., and Washington Barracks, D. C., the last with a rate of 41.51 for the year. Fort Yellowstone, Wyo., had the best medical record during the year, it having had the lowest admission and non-efficient rates, with no death and no discharge. Its admission rate was 393.15, with less than 1 per cent. of constant sickness, 9.59 per 1,000. Including this garrison there were eight posts which had an admission rate of less than 600: Alcatraz Island, Cal., 477.61, Fort Porter, N. Y., 586.96, Angel Island, Cal., 523.44, Fort Assiniboine, Mont., 540.60, Benicia Barracks, Cal., 540.67, Fort Trumbull, Conn., 558.82, and Fort Wayne, Michigan, 568.00. Sandy Hook Proving Ground, N. J., had less than 1 per cent. of constant sickness, 9.71 per 1,000; Benicia Barracks, Cal., had 13.96, and the large post, Fort Assiniboine, Mont., 1812.

Typhoid fever.—The admission rate for typhoid fever, 5.89 per 1,000 of strength, with a non-efficiency of .85, is an increase over the rates of the previous year, which were 4.32 and .67. The absolute number of cases was 148, of which 17 were fatal. The largest number of cases occurred at Fort Brady, Mich., 15, with 1 sent in from the field; 12 were reported from Fort Logan, Colo., 11 from Fort Sam Houston, Texas, 10 from Jefferson Barracks, Mo., 8 from Fort Sill, Okla., and 7 from Fort Custer, Mont. The remaining cases were scattered, one, two or more at each of forty-two different posts.

With the view of aiding in the diagnosis of doubtful febrile cases, and of determining at the same time the diagnostic value of the changes in the bacilli of typhoid fever when mixed with the blood of a typhoid fever patient, medical officers were requested to forward to this office samples of blood from cases of fever, together with a clinical record of each case to date, and to follow these with a special report of the further progress of the case on its completion. Microscopic slides in slide boxes were sent to each of the posts, with directions for obtaining and mailing the samples of blood. On the arrival of each sample at this office it was sent for examination to Dr. Walter Reed at the bacteriologic laboratory of the Army Medical Museum. The clinical records were not submitted to Dr. Reed, but were retained in this office for consideration in connection with the laboratory results reported. The diagnostic method adopted was that brought into practical use by Dr. Wyatt Johnston of the Provincial Board of Health of Quebec. This method depends on the action of a weak aqueous solution of the suspected dried blood upon a culture of the typhoid bacillus grown in a liquid medium. Observtions were made on the blood of 71 cases of disease. In 27 well-defined cases of typhoid fever positive results were obtained in 25. A negative result was furnished by one case, which gave positive results with serum of a blister. In one case incomplete were followed by negative reactions. In 19 cases of well defined diseases, not fevers, negative results were obtained. From the results in these 46 cases a positive reaction would be strongly suggestive of the presence of typhoid, while a negative reaction would require to be sustained and verified at a later date to show that typhoid was probably not present. There remained 25 febrile cases in which observations were made. In 19 of these the symptoms were not characteristic of typhoid fever. These were, with one exception, cases of so-called Florida fever and Texas fever; but each of these cases gave positive reactions in the laboratory, and it is extremely probable that they were in fact cases of typhoid infection. In 4 of the remaining cases the reactions were negative, but the clinical records were indefinite. The single remaining case, regarded clinically as a remittent fever, was the only case of fever probably not typhoid in which a doubtful reaction was obtained.

Malarial infections.—The admission rate for malarial infections for the year was 83.08 and the rate of nonefficiency 1.65, as compared with 82.56 and 1.70 in 1895, and with 96.67 and 2.48 as the average of the decade 1885-94. The total number of cases was 2,087, of which 1,771 were intermittents, 297 remittents and continued malarial fevers, 1 pernicious and 18 registered as malarial cachexia. One death and one discharge were occasioned by these diseases. The admission rate for the colored troops was 16.63, for the white troops 89.16.

The posts which had high rates were mostly Eastern posts, Washington Barracks, D. C., and Fort Myer, Va., being at the head of the list with 1,071.22 and 644.37 respectively, giving 9.82 and 5.83 of nonefficiency. Jefferson Barracks, Mo., followed with 356.52 and the high nonefficient rate of 16.05. Fort Sill was the only Western post that had a rate, 290.64, approaching those found at these Eastern stations. Forts Clark and McIntosh, Texas, which formerly had large rates, reported during the year only 13.48 and 16.81 admissions respectively per 1,000 of strength. Even Fort Brown had only 90.09 and Fort Ringgold 103.17.

Diarrheal diseases.—The admission rate for diarrheal diseases was 80.02, as compared with 85.14 during the previous year, and with 121.64 the annual average of the preceding decade. The colored troops have participated in this progressive relief from diarrheal attacks to a greater extent than the white troops, their rate for the past year having been only 48.93. Fifty-four cases of acute dysentery with no death, and three of chronic dysentery with one discharge for disability, are included in these diarrheal cases.

Venereal diseases.—The admission rate for these diseases, 78.08, was higher than in 1895, when it was 73.72, while the rate for the previous decade was 76.92. As the rates have been practically stationary for more than a dozen years, we may infer that the minimum prevalence of these diseases under existing conditions has been reached. The slight increase during the past year affected the white troops only. The rates for the colored troops fell from an average annual rate of 80.64 for the decade to 56.53 for the year.

Alcoholism.—The admission rate for alcoholism was 29.06 for the Army as a whole: 31.20 among the white, and 5.70 among the colored troops. Seven deaths among the whites were due directly to this cause. This is a slight improvement on the record of 1895, which shows 30.11 as the rate for the Army, with 32.16 and 6.47 for the white and colored respectively.

Rheumatic affections.—The admission rate for these affections, including rheumatic fever, muscular rheumatism and myalgia, and chronic rheumatic arthritis, was 59.68 per 1,000 of strength; the rate for the colored troops being 71.26, and for the white troops 58.61. The Army rate for 1895 was 61.08, and the average annual rate of the preceding decade 79.33, so that the past year compares favorably in this respect with former records.

Tuberculosis of the lungs.—During the year there were 40 cases of tuberculosis of the lung, resulting in 34 discharges for disability and 6 deaths. These gave an admission rate of 1.59. Among the white troops this rate was 1.52; among the colored troops 2.38, while the respective discharge rates were 1.08 and 3.17, and the death rates .20 and .45. This is an improvement on the previous year, when the admission rate was 2.42, and on the annual average of the previous ten years when it was 3.24.

Pneumonia and pleurisy.—Fifty cases of croupous pneumonia, 7 fatal, were admitted to sick report during the year, the average duration of each case being 29.1 days. Sixteen cases of catarrhal pneumonia, 2 fatal, were also recorded, their average duration 45.1 days. Thirty-seven cases of pleurisy, 2 of which resulted in discharge for disability were recorded during the year. This was a great improvement on the previous year, when 71 cases with 2 deaths and 2 discharges were reported.

Injuries.—The admissions for injuries during the year were equivalent to 279.75 per 1,000 of strength with 8.73 constantly disabled, 1.62 deaths and 2.02 discharges on account of permanent disability. These differed but little from the rates of the previous year. Admission 272.69; nonefficient 8.46; death 1.61; discharge 2.34.

More than one-half of the injuries consisted of contusions and sprains, giving a constant disability of 3.32 per 1,000 men. Ninety dislocations were reported and 193 fractures not gunshot; 7 of the latter were fatal and 8 were discharged for permanent disability. Fifty-three cases of gunshot wounds were reported, 14 of which died and 10 were discharged on surgeons' certificates. There were 93 cases of exhaustion from fatigue or exposure, 23 of sunstroke and 47 of frostbite; none of these were fatal. Seventy-six hernial cases occurred during the year, 16 of which were discharged for disability. Only 12 cases of suicide were reported as having occurred during the year as compared with 19 during the previous year.

Influence of age, arm of service, nativity and length of service on susceptibility to disease.—Table xvii of the report consolidates the medical statistics of the army for the past seven years 1890-96 inclusive, and gives under the various headings the mean annual rates for that period. The ratios are those of admission, constant sickness, discharge and death for officers and enlisted men separately. They are arranged for various diseases and classes of disabling causes, according 1st, to corps or arm of service; 2d, to age by periods of five years; 3d, to nativity, and 4th, to length of service. Many interesting points connected with the prevalence of disease are brought out by the study of this table.

Medical and surgical reports and operations.—The report gives lists of special reports on medical and surgical subjects, with extracts from some of those that are of general professional interest. Many valuable reports of surgical cases and operations are also submitted.

Radical cure of hernia.—During the past two years 79 cases have been operated on by army surgeons. The history of each case has been followed as far as possible to date with the development so far of three instances of recurrence. In one a second operation was performed with success; in the two others the men declined further operation and were discharged for disability. In both instances the phlebitis affected the left leg, the operation having been performed on the opposite side. In one the disease was mild and did not delay convalescence: in the other the phlebitis became developed afterward in the right internal saphenous vein and the man was discharged for disability about six months after the operation.

SANITARY CONDITION OF THE ARMY.

Quarters.—The quarters provided for the enlisted men of our Army at posts recently built are excellent in their sanitary arrangements. At some of the old posts the buildings are more or less in want of repair, some times over crowded, with inadequate ventilation and primitive methods for the removal of wastes. Every year, however, shows some improvement in the condition of these posts. It is to the credit of those concerned that when attention is called to remediable sanitary faults by the monthly reports of the medical officer, immediate action is taken by the commanding officer if it lies within his power, or by an allotment of money for the purpose by the Quartermaster's Department.

On account of the insanitary condition of the quarters occupied by married soldiers at many of our posts, I recommend a return so far to former methods as to provide public quarters for a limited number of married men in each organization, all others being strictly prohibited from having their families at the post. A provision of this kind would be regarded as a privilege awarded to deserving soldiers, and would permit the whole of the huts and shanties now occupied to be destroyed.

Drainage and sewerage.—Local defects in drainage with increase of malarial fevers, tonsillitis and catarrhal affections of the air passages, were reported from several posts. In most instances remedial measures were promptly instituted. Privy pits still continue in existence. Dry earth closets are being substituted for them at Fort Keogh, Mont. The dry earth system gives satisfaction at military posts, but the utmost care is needful in carrying out the details. Some faults in plumbing were discovered and remedied. Improvements in the systems of sewerage have been effected at many posts.

Water supplies.—The water supplies of our military posts have been carefully studied by medical officers with the view of preventing the occurrence of typhoid fever. It is not possible to indicate in a synopsis the many points of interest upon which reports have been submitted. Commanding officers have favorably endorsed the recommendations in the reports of their local medical officers, and the Quartermaster's Department has carried into effect many suggestions for improvement.

Food.—The rations of the men have been reported during the year as ample in quantity, well cooked and of excellent quality. The milk supply of two posts was criticised adversely, and the reports in these instances are suggestive of the possibility of similar conditions at other stations. The Emergency ration was tested by Surgeon Charles Smart on field service with Troop E, First Cavalry, in Oklahoma. A full report on the subject was submitted, showing the success of the expedition in proving the value of the ration in sustaining the men under conditions of emergency and recommending that troops should be accustomed to its use when out from their permanent stations on practice marches and field maneuvers.

Clothing.—The clothing issued appears to give general satisfaction. Greater care is suggested by one medical officer in fitting the men with shoes. His recommendation is that on the enlistment of a man the company shoemaker should measure the man's foot, that a record should be kept of this measurement and that on drawing shoes this measurement should be adhered to.

Personal cleanliness.—Much has been done in the past few years to improve the facilities of the men for bathing, so that during the past year only one post, Fort Du Chesne, Utah, has attracted attention in this regard. Respectfully submitted,

GEORGE M. STERNBERG,
HON. RUSSELL A. ALGER, Surgeon-General U. S. Army.
Secretary of War.

PRACTICAL NOTES.

Formalin in Herpes Tonsurans.—Vidal of Barcelona observed the commencement of a new growth of normal hair in a week with five local treatments with 40 per cent. formalin.—*Wien. Klin. Woch.*, August 5.

Ovarian Extract in Basedow's Disease.—Three cases of Basedow's disease evidently connected with ovarian atrophy or hypoplasia, rapidly improved by the ingestion of ovarian extract, are reported by L. Seeligmann, *Semaine Méd.*, August 4.

Effective Sterilization of Catgut and Silk with Sublimate and Ether.—A French army surgeon, Dr. Merlin, announces that a 1 per cent. solution of sublimate and ether renders catgut, silk and silkworm guts absolutely aseptic, while not detracting in the least from their flexibility or strength.—*Dauphine Méd.*, No. 7.

Iodized Peptone, Substitute for Iodoform.—The action of metallic iodin on peptone produces a brown soluble powder, powerful odorless antiseptic, and an efficient substitute for iodoform, according to V. P. Garmachew. It sterilizes pus in fifteen minutes, and kills anthrax cultures in an hour at the proportion of a tenth; favors cicatrization, etc.—*Semaine Méd.*, August 4.

Prevention and Curability of Deafnesss and Dumbness.—If the ear troubles of infants are not attended to promptly they may become chronic and terminate in total deafness, not recognized for a long while, as the infant is too young to talk. This is the etiology of many cases of deafness and dumbness, according to Verdos, which could have been prevented by local treatment in time.—*Archivos Latinos de Rhin.*, etc., No. 73, 1897, in *Presse Méd.*, August 12.

Iodoformed Ether in Hydrocele.—The technique of the injections of 10 per cent. iodoformed ether, with which Reclus has been so successful in hydrocele, is very simple. The hydrocele is first punctured or lanced and the serosity allowed to escape, after which he injects 3 to 8 c.c., with a Pravaz syringe of corresponding size. There is no pain and the patient can resume his usual life and occupations the same day.—*Presse Méd.* July 31.

Nutritive Value of Subcutaneous Injections of Oil.—It is reported from Turin that 30 to 200 grams of olive oil injected into the subcutaneous tissues are absorbed rapidly and effectively, serving as nutriment, as evidenced by the increase in weight and general well being. This method of alimentation is therefore recommended whenever rectal alimentation is necessary. It reduces the amount of nitrogen eliminated, and has proved especially effective in two cases of diabetes.—*Semaine Méd.* July 28.

Alkalines Required to Destroy the Pneumococcus.—The danger of infection of the meninges from ocular affections due to the pneumococcus is shown once more by a case reported by de Lapersonne, in which fatal meningitis followed enucleation of an eye on account of traumatism in a child. The pneumococcus is not destroyed by most antiseptics; sublimate, for instance, does not dissolve its capsule. He has found most effective a solution of chlorinated lime, 1 to 60, which he recommends for the purpose.—*Nord Méd.*, August 1.

Gastro-Jejunostomy for the Relief of Gastrectasis.—In a communication presented to the Missouri State Medical Society, Cordier (*Medical Record*, Sept. 25, 1897, p. 441) offers the following conclusions: 1, carcinoma of the pylorus, even though removed, returns quickly and always kills; 2, pylorectomy is attended with a high mortality and is not a justifiable surgical procedure in cases of advanced carcinoma of the pylorus; 3, gastrectatis due to malignant closure of the pylorus is best treated by gastro jejunostomy; 4, the operation advised by von Hacker best meets the indications; 5, it is not necessary to twist the bowel in making an anastomosis to prevent bile from entering the stomach; 6, the anastomotic opening in the stomach should be at the most dependent point of the dilated organ; 7, the operation is attended with a low mortality; 8, in all cases in which marked dilatation of the stomach exists and is accompanied by emaciation, pain and invalidity, the operation of gastro jejunostomy should be performed; 9, the relief of pain due to the effort of the stomach to relieve itself follows this procedure at once, the patient gains rapidly in weight, and if non-malignant disease be present his former good health is restored.

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SATURDAY, OCTOBER 16, 1897.

THE INFLUENCE OF THE SANITARIAN IN THE EXPLORATION AND COLONIZATION OF TROPICAL COUNTRIES.

The important rôle played by bacteriology and hygiene in the successful exploration, development and colonization of the tropic countries is a subject sometimes neglected in the literature from these regions. Side by side with the bold navigator, the intrepid explorer, and the persistent engineer, the sanitarian has worked to rescue the riches of the unknown tropics for the overcrowded and overworked inhabitants of civilization.

Reviewing the subject of colonization from its earliest times, we are struck with the comparative ease and freedom from danger with which the emigrant of today accustoms himself to his new surroundings. Before the dawn of scientific medicine the frightful mortality among the early colonists forbade all but those of the most reckless natures to leave their homes to face what seemed almost certain death. The substantial, purposeful emigrant, the true backbone of a successful colony, turned from the tropics to less profitable but more salubrious climates. There has been a recent disposition to credit the pioneers in engineering and road-building with the glory of having opened the dark continents to commerce and colonization, but without the knowledge and practical advice of the sanitarians they would have all been gathered to their fathers long before their plans were beginning actualities.

In the early days the few foreigners who were spared to live in the tropics were supposed to have undergone an especial adaptation or acclimatization; and it is interesting to study to what extent such immunity is possible. The atmospheric element of danger in the tropics can be partly overcome by prudence in early exposure and certain protective measures, and the system may become gradually habituated to its new physical environments by a species of adaptation in which the whole physiologic organization is modified. But with the first generation at least this acclimatization is very superficial and ephemeral, as any marked indiscretion or fatigue destroys the new equilibrium.

Turning to the consideration of the early means of protection against the pathologic elements of danger, we find that the only immunity was that acquired by recovery from a first attack of certain infections, such as yellow fever; but this immunity does not hold good for the great majority of tropical diseases; in fact the more common diseases are of a distinctly relapsing type. It is thus easy to see the shortcomings of the natural protection by acclimatization. It was only after frightful mortalities through several generations that a race was evolved adapted to its surroundings.

With our modern bacteriologic and hygienic knowledge we are supplied with the means of what, for all practical purposes, is the equivalent of an immediate adaptation. By observing the prophylactic laws of living evolved from a patient study of tropical hygiene, and by bacteriologic examination of the aliments and soils, the colonist is protected against a great number of tropical diseases. The mortality from dysentery has greatly diminished among colonists furnished with potable water. Defective alimentation is the cause of many colonists' diseases, such as scurvy and beri-beri, both of which may be prevented by dietary regulation. With modern means of transport insufficiency of the necessary variety of food is inexcusable. The first instructions of the tropical emigrant of today are in personal and public sanitation and the advice and services of the scientific sanitarian are the most valuable in the establishment of a tropical colony.

The struggle against malarial infections is the most difficult; but here again the sanitarian and therapeutist are slowly depriving this plague of its horrors. More healthful building sites are chosen, pure water supplied, stringent prophylactic measures instituted and abundant medicaments furnished. Extra care and intervals of rest are given to men working in recent excavations and in the malarious lowlands.

To one unfamiliar with the recent sanitary reforms in the tropics the good results therefrom are astonishing. According to statements made by M. FIRKET of Liége in the discussion of the colonization of the Congo Country, before the International Congress of Hygiene and Climatology, in Brussels, August, 1897, by the application of vigorous sanitary measures, the mortality in certain African colonies has fallen from 85 in 1,000 for the English and 170 in 1,000 for the

the University of St. Andrews. The Medical Departments of these Universities, St. Mungo's College, Glasgow. Anderson's College Medical School, Glasgow, and the University College, Dundee, are alone entitled to confer degrees in Scotland to men.

So far as the general statement that a patient with retention of the urine had a diagnosis made by somebody—of carcinoma of the stomach—and that the said patient was subsequently relieved by the passage of a catheter, is no particular argument in favor of osteopathy, because it is wholly irrelevant to the subject matter. We never denied it. We regard osteopathy as an unmitigated humbug and its practitioners as obtaining money under false pretenses. That is our opinion.

CORRESPONDENCE.

Pyrethrum.

Key West, Fla., Sept. 20, 1897.

To the Editor:—Will some reader of the Journal having the facilities, administer to dogs, etc., different doses of insect powder and report results? Through an accident to a child it was found to possess probably anthelmintic properties, and I would like to gain some idea of its dosage for *homo sapiens*, from trials on the lower animals. Insect powder consists of the flowers of Pyrethrum carneum and P. roseum, indigenous to the Caucasian Mountains, but now extensively cultivated in California. It is frequently adulterated and I would ask whoever undertakes this investigation to get a perfectly pure article. The fumes of the burning powder are not poisonous to man, though it causes some confusion of the head in those who sleep in closed rooms where it is used, and the writer has seen in the case of a man sleeping in an apartment completely closed and filled with the smoke considerable intoxication, numbness and severe itching in the upper and lower extremities, which persisted for several hours. In a patient who contracted the mange or acarus scabiei from a horse, dry insect powder applied to the skin afforded more relief and limited the spread of the insects better than a dozen other remedies previously employed.

In the dry state it destroys insects infecting man, beast, bedding, etc., and is used as a dressing for ulcers and wounds. According to the "U. S. D." the powder exhausted by alcohol is harmless to insects, its activity is therefore dependent on some principle whose nature has not positively been determined. Professor Riley, in a series of experiments, found the fumes of the burning powder very poisonous to insects and for certain purposes (mosquitoes, midges, sand flies, etc.) afforded a ready mode of application, but that generally a watery infusion was the best and cheapest preparation. Twenty-five grains stirred up in two quarts of water was sufficient to kill young cotton worms. The tincture (one part to four) has been especially recommended, diluted with ten times its bulk of water, by F. Jager to keep off vermin from the human body. According to Professor Maisch, it is capable of causing a vesicular eruption like that produced by poisoning. Pyrethrum is certainly a blessing in the tropics in combating the mosquito (sometimes written mosquita) a Spanish word signifying "little fly." G. R. Plummer, M.D.

Severe Epistaxis.

Thurber, Texas, Oct. 6, 1897.

To the Editor:—I wish to report in brief a severe case of epistaxis that occurred in my practice last week. I was called to see a young man aged 26, at 10 p.m., to stop a very severe nose-bleed from the right nostril. He has a large polypus in that nostril, which I judge to be the cause of the hemorrhage. With Dr. Chas. Binney, who was also called, I soon plugged the nose anteriorly and posteriorly with cotton, also insufflated tannic acid into the bleeding nostril and left, feeling satisfied that he would not be troubled any more that night. Dr. Binney sent for me at six in the morning and informed me that he had been with the patient nearly all night. He could stop the bleeding, but in a short time it would commence again by the blood flowing into the throat. During the day we used Monsel's solution, antipyrin, etc., but could not check the flow. At 3 o'clock in the afternoon, seventeen hours after the epistaxis commenced, our patient was pulseless and almost moribund. We decided at that time to try an oil on the cotton to prevent the oozing of blood through the cotton. We removed the plug, and supplied plugs posteriorly and anteriorly that had been previously saturated in liquid albolene and the hemorrhage stopped never to return. This idea at the time was entirely original with me. It may be known and practiced, but I am confident it is not generally known. I know of two deaths from epistaxis in which a specialist officiated and in neither was oil applied to the plugs. I have also examined eleven text-books on the subject and find only one mentions the use of an oil in the treatment of epistaxis. In the "System of Surgery," by Dennis, I find, "a tampon of cotton, lint, or sponge, saturated with vaselin, should have previously been prepared, etc." He does not say for what the vaselin is used and one would imagine it was merely to lubricate the tampon to facilitate its introduction. I think it important to saturate the cotton with albolene, vaselin or any light oil to prevent the blood from oozing through the tampon.

I do not write this with the idea of presenting anything new, but merely to impress it on those members of the profession who do not know, that they may not be so unfortunate as to lose a patient from nosebleed. T. M. Baird, M.D.

Underground Zoology and Legal Medicine.

Washington, D. C., Sept. 28, 1897.

To the Editor:—Will you allow me to correct, in several important particulars, the rather mixed report on page 616 of the current issue of the Journal of my paper on "Underground Zoology and Legal Medicine," read before the public medicine section of the British Medical Association on the 1st inst. The facts that "the subject is a new one and medicolegally interesting," if not important, warrant me, I feel, in seeking a correct statement of my observations.

1. I found the same species of mites, beetles and flies on cadavers buried for periods varying from two to ten and even twenty years. Thus showing that *under the conditions here observed*, these scavengers do not seek the buried cadaver in distinct "squads" nor at definite periods.

2. I found certain species of flies (other than the phoridæ) on cadavers buried in midwinter, as well as on those buried in midsummer. The conclusion, therefore, that the finding of dipterous remains on a cadaver is proof of burial during the summer months is not in all cases a safe one.

3. My studies made primarily to test for this locality, Megnin's application of entomology to legal medicine had little to do with the persistent vitality of pathogenic organisms. In one case of tetanus, however, the cadaver having been buried for ten years and seven months, a guinea pig inoculated with material from the coffin died, but *without* showing any symptoms of tetanus or any trace of the tetanus bacillus.

The main point to be noted is that the entomologic chronology of cadaveric history has not yet been clearly established; nor can it be without further extensive observations and comparison of results in different localities. This caution was well uttered by Johnston and Villeneuve in the *Montreal Medical Journal*, August, 1897.

Murray Galt Motter.

Suppressio Veri; Suggestio Falsi.

St. Louis, Mo., Oct. 9, 1897.

To the Editor:—In consideration of the above and the correspondence between Drs. Woodbridge and Upshur, I propose to give a brief sketch of my experience in typhoid fever in Missouri for over forty years.

In the fall of 1853 I had charge of a family of seventeen persons, in age ranging from 1 to 20 years (Dr. C's. family). Called in consultation Dr. McD., a graduate of a Philadelphia medical college. We diagnosed typhoid fever in case one. The patient was about 20 years of age, of sanguine temperament and good health up to that time. Treatment began with a purgative dose of calomel, hot turpentine stupes over the bowels (right iliac region), aromatic sulph. acid as a drink, and Dover's powder at night. The diarrhea was kept within reasonable bounds by the two latter, increasing or lessening the amount according to circumstances. After his bowels were moved from the first purgative, we gave from ½ to 2 grs. calomel every six hours. About the ninth day his tongue had cleaned and become moist. Tympanites and some pain subsided over bowels and he was convalescing rapidly, but contrary to orders he got up, dressed, and persisted in walking about his room. In the afternoon he was seized with a severe hemorrhage and within a period of about three hours died from perforation of the bowels (supposed). There is nothing out of the ordinary in this case. The unexpected termination, and the alarming condition of the remaining sixteen called for the most deliberate and philosophic consideration. All had diarrhea, some were in bed, others preparing to go, and all without exception presented unmistakable evidences of type with the case above.

I proposed calomel in small doses as a curative and prophylactic. It was opposed on the ground of its constitutional effects. I referred the other two doctors to the old axiom, "Abusus non tollit risum" and began by giving calomel ¼ to 2 grs. every four, six and eight hours, alternately with permanganate of pot. in similar doses. This treatment was given, with some variations, to the entire family of sixteen. All made good recoveries and in about three weeks were discharged.

In summing up the treatment which I have invariably practiced, I wish to emphasize calomel and permanganate potass. (or if preferred as a matter of choice, bichlorid hydr.) in minute doses as a preventive, abortive or curative. Of course the many adjuncts, such a turpentine, arom. sulph. acid, etc., should and ought to be considered in many cases. The constitutional effects of the first named agent should always be sought for as speedily as possible and held there until the patient is beyond all danger of relapse.

In all cases where the stools are particularly offensive (and all are) the permanganate potass. should be continued until the fetor, etc., are corrected and this change is evidence of the destruction of the germs, poison, in other words, typhoid bacillus. In diet: Liquid food, buttermilk, sweet milk, raw eggs beat up with spts. frumenti, soups, etc.

My success in typhoid fever has been so completely satisfactory that I am not disposed to change this described treatment of it for any other.

In this article I wish to place myself on record as endorsing the several articles in the Journal favorable to blood-letting (notably Dr.Todd, San Francisco) in pneumonia, puerpural convulsions, certain conditions of the brain and stomach, etc.

J. M. Foreman, M.D.

Wants the Discussion Continued.

Milton, Del., Oct. 9, 1897.

To the Editor:—We have been watching the controversy which has been going on between Drs. Woodbridge and Upshur, yet it has not been interesting or edifying to your readers for we have been looking for them to say something to confirm the abortive treatment of typhoid fever or *vice versa*. While we have not been able to indorse all that Dr. Woodbridge claims, yet we have reason to believe that there is some good in it and the antiseptics which he uses. We have ever believed in antisepticising of the alimentary canal in every disease, and purging out the accumulation of the ages, following this with some antiseptic remedy. There can never any harm occur from this course, but many, many times great good. But let the doctors comment and criticise each other as they may about the abortive treatment of Dr. W., however good or bad it may be, it will have a tendency to revolutionize the treatment of typhoid fever and that of all others. The agitation of this by Dr. W., if it does nothing else, will cause the subject to be ventilated as perhaps no other has been since my debut into the profession. And whatever subject is gotten up for discussion in any direction will be beneficial and bring out and develop the truth. We say go on Doctors, but let us have less of your spleen and more of the cause and treatment of typhoid fever.

James A. Hopkins, M.D.

Hospital Interneships.

Chicago, Sept. 30, 1897.

To the Editor:—I read with interest your editorial, "The Advantages of Hospital Interneship," in the last number of the Journal.

My opinion is that all agree in acknowledging the benefit of hospital training. Why do more students not secure to themselves the advantages of such a training? Is it a want of appreciation on the part of the prospective physician? I think not.

The average student, yes, 95 per cent., are anxious to secure a place in some good hospital, in fact in any hospital. Place the blame where it belongs. The fact is that there are too few places of this kind to be filled. The case you cite illustrates my point very nicely. You say fourteen students came up for examination to fill twelve vacancies. Out of that fourteen twelve got hospital positions and two were disappointed. Had there been forty come up for the same examination twelve would have gotten places and twenty-eight would have been counted out. That is one reason why more do not make the effort. Another will be found in the fact that those who anticipate taking the examination for hospital interneship devote their last year to "bucking" for examination, as they call it, to the exclusion of hospital and dispensary clinical work. Instruction under the tuition of their teachers is ignored entirely. What then happens to the unfortunate candidate? He finds himself, on graduation day, decidedly short in clinical experience, with but little prospect of getting more before entering active practice, unless he should be so fortunate as to have more money than many of them possess.

This can be remedied to some extent by shortening the period of interneship. If the term was made twelve months instead of eighteen months, just one-half as many more would receive the benefit of a hospital training. There are always more candidates than there are places.

The physicians who control our hospitals are responsible for this and to them should an appeal be made for more internes and shorter service. Yours truly,

A Subscriber.

Death from Carbolic Acid.

Weaverville, N. C., Sept. 23, 1897.

To the Editor:—I report this case as I have not been able to find one in which death took place so soon after taking so small a quantity of carbolic acid.

Mrs. Miles, aged 28, mother of two children, youngest 5 years old, was in the third week of typhoid fever, about the sixteenth day with temperature ranging from 100 degrees in the morning to 101.4 in the afternoon, when the nurse gave her one teaspoonful of carbolic acid (red) in one-fourth glass of water.

In three minutes she was unconscious, her lips and face livid, and muscles rigid.

The nurse gave mustard and warm water without effect, then she was given magnesia, lime-water, sweet oil and raw eggs. In fifteen minutes she was profoundly comatose and would have died of heart failure, but was given, hypodermically, morphin and strychnia, and death took place from the lungs. She was dead in less than forty minutes. W. L. Reagan, M.D.

A Query on Serum Treatment.

Jackson, Tenn., Sept. 9, 1897.

To the Editor:—Since it appears that the serum of the blood taken from those who have typhoid fever will destroy the typhoid bacillus, is it not reasonable to suppose that serum taken from those who have just recovered from the disease and inserted into the blood or tissues of those who have it, may prove a remedy for the disease?

Or, for fear of contamination from the blood of those who had it, may not the typhoid bacillus be injected into the horse or cow and the serum taken from those animals and injected into the blood or tissues of typhoid patients prove to be an antitoxin to the disease? J. A. Crook, M.D.

SOCIETY NEWS.

The American Academy of Railway Surgeons elected the following officers; President, Dr. R. Harvey Reed, Columbus, Ohio; first vice president, Dr. W. J. Mayo, Rochester, Minn.; second vice president, Dr. Arthur D. Bevan, Chicago; secretary, Dr. C. D. Bryant, Omaha. Place of meeting, Chicago, 1898.

The International Congress of Pharmacy, Brussels, August 14 to 19, recommended the institution of a superior council of legal chemistry; also that the usual denomination given to a chemic product cease to be a trade mark or private property after it has fallen into the public domain (referring to products with well-defined formulæ, antipyrin for example). An international committee was appointed to prepare a codex of methods of analyzing for the titration of drugs and Galenic preparations containing definite principles. Professor Remington of Philadelphia delivered an address on "Revision of the Pharmacopeia," with an appeal for concerted action on the part of physicians and druggists, the former agreeing not to prescribe secret formula remedies and the latter agreeing not to manufacture them. Denayer concluded his report on "Organ Extracts," by urging the importance of absolute sterility in the liquid form and absolute freedom from moisture in the powder, tablet, etc., form, kept preferably in dessicators *à la chaux* (lime). All the European countries, the United States and Mexico were well represented. The next congress will convene in Paris in 1900.

Newport (R. I.) Medical Society.—Newport, R. I., Sept. 11, 1897. Dear Doctor:—As chairman of a committee of the Newport Medical Society I am directed to call the attention of all Medical Societies and Journals to the following letter:

At a regular meeting of the Newport Medical Society, held Wednesday, May 19, 1897, the following resolutions were unanimously passed:

Resolved, That it is the opinion of this Society that Congress should change the existing laws regarding the employment of physicians on steamships and other vessels and, with a view to the attainment of that end, the Society deems it advisable that the words "other than ferry boats" be inserted between the words "vessels" and "carrying," which are on the eighth line on the forty-ninth page in Section 5, Chapter 6, Title forty-eight of the "Laws Governing the Steamboat Inspection Service, Revised Statutes of the United States as amended by various Acts of Congress, printed 1896." Also that the word "immigrant" on the ninth line of the same page be erased. Also that the words "or passengers or other than cabin passengers" on the ninth and tenth lines of the same page (forty-ninth) be erased and the words "lying between one inspector's district and another or going foreign" be inserted instead. Also that the word "fifty" be erased and the word "thirty-five" be substituted for it on the tenth line of the forty-ninth page. Also that on the twelfth line between the words "articles" and "and" should be inserted the words "and not required to do other duties that those usually required of a ship's surgeon on government vessels." Also that after the word "dollars" on the twenty-second line on the forty-ninth page should be inserted the words "for each trip or voyage."

Resolved, That the President and Secretary of the Newport Medical Society forward to the President (Dr. Nicholas Senn) of the American Medical Association a copy of these resolutions, and urge in their communication to him the expediency of urgent action on the part of the delegates to the American Medical Association, and also that each delegate shall use all influence with his individual Congressman to attain this very desirable result.

A copy of these resolutions was forwarded to the President of the American Medical Association, with two copies of the "Laws governing the steamboat inspection service," one for the President and one for the Secretary, Dr. W. B. Atkinson, both marked. Our delegate, Dr. Mary E. Baldwin, delivered the resolutions to the Secretary, who informs us that, owing to great pressure of business, they were not brought before the Association by him, expecting that our delegate would present them; and as our delegate expected that they would be presented by the Secretary they were, unfortunately, not presented at all.

At the regular meeting of the Society held the 21st of July, a committee of five was appointed to draw up a letter containing the above resolutions and also to give some data concerning this important matter and to forward them to all medical societies and journals. We can only say (what our Society has often said before) if this great event be brought about that it will give employment to hundreds of competent physicians, open new paths to the younger members of the profession and prove of great practical usefulness and benefit to the traveling public.

On the steamboats between Fall River, Mass., and New York City there are sometimes as many as a thousand passengers on the boat. Although the trip lasts, as a rule, only nine hours, still there are times when the boats are delayed for hours and it seems that it would be more in keeping with the humanity of the times to have a physician on the boat than to have the expense of canary birds and brass bands and that the money would be much better expended if such were the case. All the steamboats on the Sound, on the Great Lakes, on the long rivers where passengers are often for days without medical aid, practice the same economy. Our seagoing steamers running South, as a rule have no physician on board. Some employ the device of employing the purser as surgeon and when he is pressed, owing to his numerous duties, appoint at times a man who is not any more qualified than the purser to act as a surgeon's assistant. Such steamers as those running from Philadelphia to Portland carry often thirty or forty passengers and a crew of twenty or more and being often out three days should have a physician on board. A passenger on one of the lines running South was obliged to act for the company, as a man had a severe injury and could not be put ashore for three days. The passenger was, fortunately, a surgeon. Again, it is very common on all the steamboats to rely upon traveling physicians to care for sick seamen and passengers. They receive no compensation for their services and are not even returned their passage money. Such conduct is inexcusable besides being a great wrong to the public. Invalid physicians, traveling for their health, have been called up to attend to cases and have suffered greatly in consequence of being disturbed of their night's rest. Cases of childbirth on steamers are not infrequent, and the chairman of this committee had a case of childbirth and was up all night, and on another occasion passed a whole afternoon and night with a patient (one of the waiters) who was suffering from a nearly fatal attack of edema of the glottis. In neither case was any remunération given nor was the passage money returned. Another member of this committee has often had to perform duties not only of a medical character, but those of a surgeon. The profession is injured in this way, and it is absurd as well as injurious to the profession to have pursers act as surgeons or surgeons perform duties of a clerkly character, and none of which belong to the duties of a ship's surgeon.

We, therefore, protest against the existence of this abuse any longer, and we call upon our medical brothers throughout the land to aid us in any and all ways to abolish this abuse, to call upon their senators and representatives to aid them in so changing the laws that such abuses shall be abolished and that the long-suffering traveling public and the crews of our vessels shall have at least as much protection as the whalemen have on British ships.

The chairman of this committee called attention to this fact in an article published in the *Newport Daily News*, in 1885. The importance of having a regularly educated physician on board in case of an epidemic of cholera, yellow fever or other plague is beyond dispute to any intelligent mind and should be looked upon as an absolute hygienic requirement.

Dr. V. Mott Francis,
Dr. H. R. Storer,
Dr. F. J. Davis, *Committee.*
Dr. C. W. Stewart,
Dr. Mary E. Baldwin.

V. Mott Francis,
President of the Newport Medical Society.

Mary E. Baldwin, *Secretary.*

August 17, 1897.

Kindly send me a copy of any action that you may decide to take, in print or otherwise, in furtherance of the object indicated. Yours sincerely, V. M. F.

The Twenty-Third Annual Meeting of the Mississippi Valley Medical Association was held in Louisville, October 5 to 8 inclusive. The features of this meeting were excellent and timely papers, lively discussions, liberal entertainment and lovely weather, the whole being enhanced by the prevailing sentiment of Kentucky good fellowship and hospitality. The Association has never been so lavishly entertained as at Louisville, and this city has added another lustrous star to the constellation with which the local profession is already adorned. Many prominent and able men were present, among whom may be mentioned, Senn, Bishop, Goldspohn, Ochsner, Sanger Brown and Murphy of Chicago; Shoemaker and Price of Philadelphia; Morris and Foster of New York. The officers elected for the ensuing year were: John Young Brown, M.D., St. Louis, President; A. P. Buchman, M.D., Fort Wayne, Ind., First Vice-President; A. J. Ochsner, M.D., Chicago, Second Vice-President; Henry E. Tuley, M.D., Louisville, Secretary. A more extended report of the proceedings will appear in a later issue. The next meeting of the Association will be held on the second Tuesday in November, 1898, at Nashville. The most attractive feature of the Medical Exhibit Hall of the Mississippi Valley Medical Association is the Medical Press Bureau, conducted by Charles Wood Fassett, whose long connection with medical journalism and medical society meetings makes him capable of managing an enterprise of this kind. In this bureau were represented a number of the leading medical journals of the country, and a system of sampling and distribution has been inaugurated which is certainly most beneficial to those publishers who are fortunate enough to secure membership. Among the journals represented we notice the following: Journal of the American Medical Association, Chicago; *Annals of Gynecology and Pediatry*, Boston; *Mathews' Quarterly Journal of Rectal and Gastro-intestinal Diseases*, Louisville; *Medical Fortnightly*, St. Louis; *Medical Herald*, St. Joseph; *North Carolina Medical and Surgical Journal*, Wilmington; *Medical Review of Reviews*, New York; *Philadelphia Polyclinic*, Philadelphia; *Virginia Medical Semi-Monthly*, Richmond; *American Medical Journalist*, St. Joseph; *Journal of Eye, Ear and Throat Diseases*, Baltimore; *Daily Lancet*, New York City.

PUBLIC HEALTH.

The Lock-step as a Possible Menace for the spread of contagion has been abolished in the Detroit House of Correction.

False Economy.—The town authorities of Maidstone, Kent, England, are held responsible for the typhoid fever outbreak, owing to their refusal to renew the appointment of a watchman for the water supply at an annual salary of $200.

Health in Michigan.—Reports for September show the five diseases causing most sickness in Michigan for the five weeks ending October 2, to be: rheumatism, diarrhea, neuralgia, bronchitis and influenza. Consumption appears tenth on the list.

Results of Sanitation.—According to the New York Health Board reports for the first eight months of the present year the death rate has been 20.2 to the thousand. This means, in round numbers, 14,200 fewer deaths this year than there were under conditions five years ago; a gain, therefore, of 14,200 in actual population. Naturally much self-complacency may be read between the lines.

Typhoid Fever from a Disused Well.—The *Medical News*, October 2, has an item stating that water drawn from an abandoned well has given rise to several cases of typhoid fever near Rye Beach, N. Y. A party consisting of half a dozen persons went into camp near that place and drank water from an old abandoned well. The whole party immediately became ill, and two of the members have since died.

Yellow Fever in the Havana Hospitals.—According to a report in *La Medicina Militar Española*, during May there were in the yellow fever hospitals of Havana, admitted 814; discharged 406; died 226. During June, admitted 677; died 170; remaining 331. In the general hospitals during May there were admitted 38,692; discharged 33,739; dead 523. During June there were admitted 9,931; discharged 8,798; died 270; remaining July 1 5,512. These are the statistics of the Spanish army of invasion.

Health in Chicago.—During September the total deaths in Chicago were 1,679 or 1.04 per 1,000, as compared to 1.02 per 1,000 for the same period in 1896. Of these, 464 were under 1 year of age, 219 between 1 and 5 years. The leading causes were: Diseases of nervous system, 203; consumption, 175; infantile diarrhea, 152; other acute intestinal diseases, 163; heart diseases, 92; cancer, 76; pneumonia, 67; diphtheria and membranous croup, 53; typhoid fever, 48; bronchitis, 37 (*vide* Journal, September 18, for August report).

Sanitary Inspection Company.—In 1883 a successful company was instituted in London under the name of the London and Surburban Sanitary Survey Association. Last summer a similar corporation was formed in New York, under the title of the Building and Sanitary Inspection Company. It is prepared to make sanitary inspections of buildings and premises, to issue sanitary certificates where the conditions warrant it, to take yearly supervision of buildings, to draw plans for and take charge of all sorts of sanitation work and to make structural examinations of all kinds of property, thus offering services which are of value to owners, occupants, mortgagees, prospective buyers, lessees and investors.

"Silver Wedding" Celebration of the Michigan State Board of Health.—The members of the legislature of Michigan have consented to have Dr. Baker celebrate the twenty-fifth anniversary of the establishment of the State Board of Health on July 30, 1898. They request the State Board to prepare comparative statements of the conditions affecting the public health, and of the actual conditions of health in Michigan before and since its establishment, exhibiting, if it be true, that there is a very marked improvement in the healthfulness of the State in recent years, and statements of the principal dangers to life and health at the present time, and a program for a public meeting for the discussion of measures for the further promotion of the public health in Michigan. They invite the National Conference of State Boards of Health to hold its next annual meeting in Michigan in the summer of 1898, and also invite the Surgeons-General of the Army, Navy, the Bureau of Animal Industry and the Boards of Health of all the principal cities to assist. The Railroad Commissioner and the State Board of Health are asked to act with the citizens to facilitate the attendance of excursionists from other States; to place before the visitors the beauties of the summer resorts on the shores of the Great Lakes and to exhibit Michigan as a summer resort State. Sanitarians will take pleasure in doing their utmost to spread the light and lend a hand, because Michigan has done so much through its Board to show the value of such organizations, and through its honored Secretary has done so much to prove how much can be done by a wide-awake board backed up by a not illiberal legislature.

Disposal of Condemned Meat in London.—In the city of London during 1896 Dr. Saunders, the Medical Officer of Health, had to deal with 915 tons of meat which had been condemned as bad and which, had it not been seized, would have been sold. Contractors paid the commissioners of sewers £2,352 for the evil-smelling stuff. Dr. Saunders, in explaining what is done with it, said that first of all it is hacked and slashed about with knives to render its appearance unlike meat for market, and then it is thrown into a chemic bath to soak for some time. These baths were introduced by Dr. Saunders in 1874. The meat is treated with chlorid of calcium and soda and afterward with sulphate of iron, which renders it black, unsightly and nauseous. It is by this time a pulpy mass of decomposed tissue almost beyond recognition. It is now treated with picric acid, which turns it a bright yellow. At this point the city authorities have done with it and it is given over to the contractors, who remove it to some works at Bow, where in steam-jacketed pans it is boiled down for the fat, which is sold to candle- and soap-makers. The bones are collected and sorted, the smaller and worthless ones are reduced to powder which is sold for phosphates. The residual liquor, which is a thick yellowish-brown fluid, is used as a fertilizer.

Public Health Work in Vermont.—The *Burlington Free Press* quotes from an article by Dr. Ashbel P. Grinnell, in "The New England States," published by Hurd of Boston, the conclusions as to the status of preventive medicine in Vermont. It says: Dr. Grinnell in his discriminating record finds the Green Mountain State deficient in laws relating to the public health, but is hopeful that the State Board of Health with the aid of the local boards and the registration law of 1896, placing the vital statistics of the State in the hands of the State Board and requiring reports of births and deaths from physicians and the safeguards against the disposition of dead bodies, will in no long time remedy the deficiencies. "The Board," he says, "aims to keep the laws of the State in harmony with the recent important discoveries in preventive medicine, to secure their observance by intimate co-operation with local boards throughout the State and relies on the medical profession to give it at all times its hearty support." We are deeply interested in the work of Drs. Grinnell and Lewis and doubt not it will add real value to the great work for which it is prepared. We esteem the doctors of Vermont, with whom we have had long and large acquaintance, not only for their learning and skill in administering medicine, but more for their sympathy and success in mitigating pain and encouraging endurance to overcome distress. They are diligent by day and by night, in sunshine and storm, to overcome the calamities and weaknesses that fall upon their brethren. It is the spirit that is in them, as well as and more than the doses they dole out, that give confidence and lengthened life to the community.

Street Sprinkling with Disinfectants.—For some time the municipal authorities of the city of Brussels have endeavored to find a system for watering the public streets with a disinfectant. Mr. Van Hersten, the director of the Brussels slaughter house, has for the past four years used an apparatus of his invention for cleaning out the piggeries, stables, market and courts of said establishment. On February 23 an experiment made with said apparatus for street sprinkling proved so successful that the city of Brussels is disposed to definitely adopt the system. The apparatus, which is very simple, is composed of a cylindric reservoir which is filled with an antiseptic substance, creolin preferred. A pump system is applied to the reservoir, which produces when the city water is introduced into the apparatus an aspiration more or less strong, which is regulated at will. The antiseptic matter mixes with the city water and thus changed acts as an efficacious disinfectant. This apparatus was especially useful a few years ago during the aphthous stomatitis epidemic in Belgium. While a few sporadic cases are reported in this country, an epidemic of the disease now exists in the neighboring kingdom of Holland. During the month of January, 1897, the aphthous stomatitis was reported in 380 cattle stables in Holland, distributed over 110 communes. The number of cattle infected was over eleven thousand. In one locality in the province of Drenthe, sixty-two stables, numbering nearly three thousand animals, were contaminated, and the epidemic up to this writing is still prevailing. Although the disease, aphthous stomatitis, is reported as decreasing, it has appeared during the past fifteen days in seventy-nine cattle stables, principally in the provinces of Brabant and Hainaut, and also among the cattle in the provinces of Liége and East Flanders.—"Consular Reports," June.

Yellow Fever.—Since our last week's record, which closed October 5, yellow fever has slowly but surely been gaining ground. The record is as follows: October 6.—New Orleans 5 deaths, 46 new cases, 2 of the latter being in Algiers, making the total number of cases in Algiers 7; Mobile 4 new cases, Edwards 16 new cases. Nitta Youma 1 new case. October 7.—New Orleans 37 new cases, 2 deaths; Clinton, Miss., 1 new case, Biloxi 10 new cases, Edwards 10 new cases, Mobile 4 new cases, Henderson's Point, Miss., 3 cases. October 8.—New Orleans 47 new cases, 5 deaths; Mobile 6 new cases, Edwards 13 new cases, 4 deaths. On this date a "suspicious" case at Aleo, Ala., was declared genuine yellow fever. October 9.—New Orleans 6 deaths, 35 new cases; Biloxi 15 new cases, Edwards 17 new cases, 1 death; Mobile 3 deaths, 6 new cases. On this date 2 cases were reported at Magazine Point. October 10.—New Orleans 5 deaths, 37 new cases; Mobile 7 new cases, 4 deaths; Edwards 9 new cases, 1 death. On this date Dr. Guiteras declared 4 of the "suspicious" cases at Galveston genuine yellow fever. October 11.—New Orleans 39 new cases, 4 deaths, bringing the total cases in that city to 616, with 65 deaths and 257 total recoveries. Mobile 5 new cases with no deaths, bringing the total cases in that city to 126, with 20 deaths and 67 total recoveries. On this date Bluefields, Nicaragua, announced a nine-day quarantine against Mobile. At Galveston 2 more "suspicious" cases were reported. Many physicians, however, refuse to believe that yellow fever exists in Galveston, although Dr. Guiteras' diagnosis has been confirmed by Drs. Randall and West. As we go to press dispatches of the 12th announce 34 new cases at New Orleans, with 2 deaths; 3 new cases at Mobile. Galveston reports the eleven cases there as convalescing.

Decline of Mortality in Prussia.—Dr. W. Kruse, in *Zeitschrift für Hygiene und In. Krankh.*, has shown for Northern Germany the remarkable decline in the mortality from enteric fever and diarrhea, from smallpox and in the deaths after surgical operations in hospitals (doubtless influenced by antiseptic methods and by new and sanitary buildings), which has been observed in Prussia, and in Germany generally, since the sanitary awakening of twenty years ago. In the successive quinquennia, from 1875 to 1894, the death rates per 10,000 living from enteric fever were 6.17, 4.99, 2.78 and 1.86, and those from diarrhea, 1.63, 1.59, 0.45 and 0.3. Scarlatinal mortality has also declined, the mean mortality from 1875 to 1886 having been between 5 and 6, and from 1887 to 1894 2 and 3 per 10,000. In the periods 1877-79 and 1889-91, the percentage of deaths after operations on bones and joints were respectively 1.4 and

2.7 and for strangulated hernia 21 and 15. The percentage mortality from erysipelas has decreased from 18 to 11.7, and that from consumption from 52 to 36 per 10,000. The death rate from smallpox is full of instruction, showing a very moderate rate during the long period of single vaccination with only a small amount of infection, a period of excessive mortality when a severe infection was introduced by the French prisoners of war into a population only partially protected, and with the primary vaccination generally deferred to the second year, often, indeed, till school age; and lastly, the period of compulsory vaccination and revaccination, the former still, fortunately, not being required till the second year of life, the latter enforced in the fourteenth, there being no means of evading this or the further revaccination of all men passing through the army. The cholera rates are also highly ineteresting. With the exception of the one great outburst at Hamburg, Germany, though from her central position in Europe and her proximity to Russia, for more exposed than this country, has for the same period escaped almost entirely the epidemics that raged in France, Holland and Italy, as well as in Russia and on the Danube.

Death Rates in Brooklyn Reduced by the Use of Pasteurized Milk.—Dr. George E. West, Secretary of the Department of Health of Brooklyn, at the request of the Hon. Nathan Straus of New York City has, under date of September 20, prepared a statement as to the lowered mortality in thirty-eight weeks in children under two years of age in recent years. Dr. West says: "In reply to your request for statistics demonstrating the utility of Pasteurized milk for the purpose of diminishing deaths from diarrheal diseases, I take pleasure in supplying you with the following table, which, it seems to me, is quite eloquent:

Year.	Population.	Deaths.	Rate per 100,000.
1890	854,000	1,331	156
1891	890,000	1,320	148
1892	928,000	1,512	163
1893	973,000	1,492	153
1894	1,045,000	1,382	132
1895	1,100,000	1,507	137
1896	1,125,000	1,338	119
1897	1,160,000	1,170	101

"As the use of Pasteurized milk is confined principally to infants under two years of age, I have used the number of deaths from diarrheal diseases of those infants as a basis of comparison. Further, as only thirty-eight weeks of the present year have expired, I have confined myself for purpose of comparison to the first thirty-eight weeks of each of the other years, which period practically covers the season during which diarrheal diseases occur in large numbers. The last column of my table is obtained by dividing the number of deaths from diarrheal diseases of children under 2 years, as shown in the third column, by the estimated population of the city for the corresponding year, which I consider the fairest basis of comparison possible. The experiment of using Pasteurized milk was begun in this city about the middle of the summer of 1896, and was followed up during the present summer more vigorously and commenced at an earlier date." The New York City Board of Health has, it is said, been antagonistic to Mr. Straus' work, and have endeavored to refer the improved death-rate in New York City to the system of cleaning streets that is peculiar to that city, namely, the "white wings" system. Now this system has not been operated in Brooklyn, so that the explanation that may be desired to be made to that Board does not hold good on the opposite side of the East River.

BOOK NOTICES.

Transactions of the American Climatological Association for the year 1897. Vol. XIII. Cloth, 250 pages. Philadelphia: 1897.

The book is well bound, printed on good paper and shows excellent workmanship throughout. Besides lists of officers and members, and minutes there are twenty-two papers, a series invaluable to the physician or student of the climatic conditions and their relation to the various diseases known to the practitioner. The discussion follows many of the papers.

Proceedings of the Nineteenth Annual Meeting of the Missouri Pharmaceutical Association, held at Meramec Highlands, June 8–12, 1897. Paper. 128 pages. St. Louis: Nixon Jones Printing Co. 1897.

Among reports, etc., the following papers of interest to physicians are noted: "Acids"; "Benzoinated Lard"; "Calcium Hypophosphate"; "Pharmaceutic Chips"; "Glycerin"; "A Pleasant Laxative"; "Metric System in Prescriptions"; "Powdered Opium"; "Quinin Sulphate," and "A So-called Tasteless Quinin," the latter being an exposé of Flora-China, by G. H. Chas. Klie, Ph.G., M.D.

Transactions of the Rhode Island Medical Society, Vol. V, Part III, 1896. Paper. Providence: 1897.

This volume contains the proceedings of the annual meeting, obituary notices, lists of Fellows, etc., and the following papers: "Anesthesia"; "Compulsory Vaccination"; "Report of a Case of Tubercular Peritonitis"; "Case of Retention of Urine from Enlarged Prostate"; "Only Nervousness"; "Posture in Disease"; "Two Cases of Gastric Ulcer"; "Remarks on a Case of Syphiloderma Gummatosum"; "A Case of Myxedema"; "Remarks on Myxedema."

The Ophthalmoscope. A Manual for Students. By GUSTAVUS HARTRIDGE, F.R.C.S. Third Edition. Philadelphia: Blakiston, Son & Co. 1897.

This little book of 150 small octavo pages is equally useful to the student as well as to instructors of ophthalmology; to the former, because the subject is presented in so simple language and rendered so clear by numerous illustrations that the student can easily understand it. And to the instructor it may serve as a good example of teaching ophthalmology successfully to medical students.

Missouri Botanical Garden; Eighth Annual Report. St. Louis, Mo.: Published by the Board of Trustees. 1897.

This volume contains scientific papers on the mosses of the Azores by J. Cardot; on some mosses collected in Madeira by William Trelease in June, 1896. Botanic observations on the Azores by William Trelease. The volume also contains a list of books and papers published by the Garden or its employes for the last seven years and the report of the officers of the board. The report of Director Trelease is extremely interesting and the illustrations are excellent. All botanists and persons engaged in the study of botany will be interested in the volume.

Transactions of the State Medical Society of Wisconsin for the year 1897. Vol. XXXI. Cloth, pp. 667. Madison: 1897.

The report includes the Constitution and By Laws, lists of members, officers and committees, proceedings of the fifty-first annual meeting, reports of the various officers and an obituary list. The papers are arranged according to their section, there being ten treating of surgical topics, eight on laryngology and rhinology, twelve on practice of medicine, seven on gynecology, eight on obstetrics, six on state medicine and hygiene, seven on materia medica and therapeutics and three each on ophthalmology, otology and pediatrics. The work is on good paper and in clear type, a valuable addition to literature of this field.

The Normal and Pathological Circulation in the Central Nervous System. Original studies by WILLIAM BROWNING, PH.B., M.D. Pages 171, with two plates. Price $1.50 Philadelphia: J. B. Lippincott Company. 1897.

This work consists of certain special articles on the intercranial circulation. It is not intended as a comprehensive treatise on the subject, but it covers considerable original work. There is much to commend in the book, especially the original experimentation of the pathologists, and the work is a rebuke to howling antivivisectionists for the practical experiments made on dogs and monkeys. Most of the chapters in the work consist of papers read by the author before various societies, extended in some cases and in all revised.

It is a work of interest to all physiologists and pathologists, and practitioners desiring to increase their knowledge on anatomy and physiology of the central circulatory system.

Convergent Strabismus and Its Treatment. An Essay by Edwin Holthouse, M.A., F.R.C.S., Surgeon to the Western Ophthalmic Hospital. London: J. and A. Churchill. 1897.

This essay is the result of a careful study of 144 cases of convergent strabismus. As the majority of these cases were under observation during a period varying from nineteen months to four years, the author was in the position of collecting very precise information of the ultimate results of his treatment, and of summing up his experience in certain general principles which should be followed in dealing with convergent strabismus.

He strongly insists upon the early use of correcting glasses and most emphatically warns against early operations. "At the outset," he says, "we hold it to be a matter of primary importance that in every case in which their regular use can be depended on, fully correcting lenses should be prescribed as soon as possible after squint has made its appearance." During the first three years the prescription of spectacles is, for obvious reasons, out of question; if the squint is slight and stationary, it is better not to interfere at all until spectacles can be worn, but when the squint is progressive atropin should be used to check its progress. Anything in the way of operations, however, he regards as positively inadmissible in children of this tender age. "Whoever has seen the disastrous results which may follow a tenotomy performed at this early age can have no hesitation in pronouncing any such procedure unjustifiable." The spectacle treatment brought about a permanent reduction of the convergence in more than 60 per cent., diminished the squint as long as the glasses were used in about 30 per cent., and only in 8 per cent. no improvement whatever was noted. When glasses have accomplished all they can do or when they have no effect upon the convergence, operative procedures are in order. These are then discussed in details which are very interesting to the ophthalmic surgeons, to whom this book can not be too highly recommended for its wealth of valuable information.

The Origin of Disease, especially of disease resulting from intrinsic as opposed to extrinsic causes. With chapters on Diagnosis, Prognosis and Treatment. By Arthur V. Meigs, M.D., Physician of the Pennsylvania Hospital. With One Hundred and Thirty-seven Original Illustrations. Philadelphia: J. B. Lippincott Company; London: 6 Henrietta St., Covent Garden, 1897.

The author as he says, impressed by the separation of clinical medicine from pathology has endeavored to bring them nearer together. It is a pleasure to examine a book made up as this is of the result of original work. The illustrations, which are numerous and well executed, are drawings from actual specimens to the author's work in the pathologic department in the Pennsylvania Hospital and have never before been published. There is certainly no book published in this country that will compare with this for precision or accuracy and wealth of illustrations. There is no padding in the book, no attempt at fine writing, but plain, straight-forward statements of the conditions found in the specimens examined. The author makes a plea for the systematic examinations of postmortem cases that die in the hospital, and we fully concur in the author's conviction "that many diseases usually considered as confined to one organ are seldom so confined, for at the postmortem it has been found that there are lesions of other organs as definite as those of the part considered to be the seat of origin. At the same time many of the lesions are of such nature as to render it certain that they existed before the onset of the fatal attack." The author considers that practically all diseases may be divided into two general classes, those of extrinsic and of intrinsic origin. The work is creditable alike to the author and the publisher.

NECROLOGY.

Luke Robinson, M.D., suddenly of heart disease, on a Southern Pacific train near Lathrop, in the San Joaquin Valley, October 10. He was a member of the Royal College of Physicians and Surgeons, and an ex-president of the State Medical Society of California, besides being connected with the State University and other public institutions.

John K. Eshleman, M.D., Jefferson, 1835, died in his 88th year in Lancaster, Pa., October 7. He was well known as a contributor to the magazines and newspapers on horticultural subjects.

Peter Y. Frye, M.D., Dartmouth, 1846, born in Candia, N. H., died at his home in Oyster Bay, L. I., New York, October 9, aged 80 years. He was at one time president of the Queens County Medical Society and also officially connected with the Oyster Bay Bank.

James J. Moore, M.D., Syracuse, N. Y., October 3. Dr. Moore was born Oct. 21, 1861, at Stittsville. He received his early education in the West Winfield academy, from which he was graduated in 1875. He entered the medical department of the University of New York and was graduated in 1882. In politics Dr. Moore was a Republican and took considerable interest in municipal affairs. He served four years as school commissioner, representing the Sixth and Eighteenth wards, 1892-5 inclusive. He was a charter member of the Academy of Medicine and a prominent member of the Onondaga County society.

Dr. Welcker, who was for a great number of years professor of anatomy in the University of Halle, died in August at Winterstein. He was born in 1822 in Giessen, and studied in that university and in Bonn, taking his degree in 1851. It was not long before he began to give evidence of his ability by writing important papers on physical and physiologic subjects, many of which were connected with optics. Subsequently he made some valuable researches on the blood, the anatomy of the ventricles of the brain, and the development of the skeleton. He did not entirely confine himself to medical science, for he found time to publish a work on German poetic dialects. His first chair was in Giessen, where he taught anatomy both as *privat docent* and then as professor. In 1859 he accepted an invitation to teach anatomy in Halle, from which chair he only retired in 1894. In 1876 he was appointed to succeed Professor Volckmann as director of the Halle Anatomical Institute.——Dr. R. Berlin, professor of ophthalmology in the University of Rostock.——Dr. Surmay, corresponding member of the Paris Academy of Medicine.—*Lancet*, September 25.

Joseph M. Lovell, M.D., the first medical martyr to the yellow fever in New Orleans, September 22. He attended one of the earliest cases and was stricken soon after. He was chief of clinic to one of the Polyclinic professors.

John H. Bemiss, M.D., died September 2, aged 41 years and not of yellow fever (*Vide* Journal September 25, p. 660); our data were taken from the press dispatches which seemed to be verified by their number.

Scott Helm, M.D., Phœnix, Ari., October 8, aged 35 years. He was graduated from Rush Medical College in 1883, eventually locating in Phœnix, where he was Surgeon-General of the Territory for seven years. Dr. Helm died from injuries received by being thrown from his horse.

Ira L. Moore, M.D., Jefferson, 1851, died at the Parker House, Boston, October 2, aged 73 years. He was born in Candia, N. H., and was graduated from Amherst College at the head of a class of 227, carrying off the honors in all branches of study. After his graduation he formed a copartnership in Lowell, Mass., with Dr. Graves, a former instructor. In 1856 he was elected to the State Legislature from Lowell. In 1858 he ran for the State Senate against General B. F. Butler, and was defeated by a small majority. In 1860 he went to Boston, and in 1861 was elected to the School Committee for three years. He was elected to the legislature, where he served in the years 1865, 1866, 1870 and 1871. To Dr. Moore was given the credit of having the Back Bay district of Boston changed from a tide marsh to a beautiful residence district, which has added $100 000,000 to the assessed valuation of the city.

Edward Grether, M.D., of Brooklyn, September 22, aged 57 years. He was a native of Germany and a graduate from the University of Würzburg in 1869. Soon after graduating he emigrated to this country and about twenty years ago took up his permanent residence in Brooklyn. He was a practitioner greatly respected among his fellow-countymen living in his section of that city. His death was due to myocarditis complicated with hydrothorax.

Henry E. Branin, M.D., Jefferson, Philadelphia, 1858, died suddenly from paralysis October 6, at the Camden County Insane Asylum, Blackwood, N. J. With this institution he was connected for about twenty years. Until their separation five years ago the almshouse and asylum were one. He remained with the asylum.

Samuel McNutt Ross, M.D., Jefferson, 1850, died September 13 at Altoona, Pa., where he had been a practitioner since 1875. He was a member of the American Medical Association, State and Blair County (Pa.) Medical Societies, once a Censor of the Western Reserve University Medical Department, Cleveland, Ohio, and also a consulting physician of the Altoona Hospital. His death at the age of 73 years was in consequence of injuries from being knocked down by a wagon.

Robert R. Ball, M.D., Assistant Surgeon U. S. A., commissioned November, 1896, died in Washington, D. C., October 4, after a week's illness. He was recently stationed at Fort Adams, Newport, R. I.

Charles T. Roy, M.D., according to a London dispatch of October 5, is dead. He was born in 1854, was a surgeon in the Turkish army during the Servian War, professor, superintendent of the Brown Institution, professor of pathology at the University of Cambridge since 1884, and a contributor to several medical journals.

T. F. Fulton, M.D., Beatrice, Neb., at Union City, Pa., September 29, aged 74 years.——J. W. Norris, M.D., Palmyra, Mo., October 4.——E. v. Hofmann, aged 60 years; Professor Legal Medicine, Vienna; Director Medico-Legal Institute, etc.——J. T. de Sousa Martens, Professor General Pathology, Lisbon.——Joseph J. Sweet, Jr., M.D., Albany, N. Y., 1894, died in the City Hospital, Albany, October 3, aged 29 years.

MISCELLANY.

Change in Name.—Dr. H. Davison Scharschild of New York, by virtue of granted permission of the supreme court has taken the name Dr. H. Davison Saril.

Needle in Epiplocele.—Tuffier confirmed his diagnosis with a radiograph, which showed the large needle distinctly.—*Presse Méd.*, August 12.

Journal du XII Congres International de Medecine.—These daily bulletins, Nos. 2 to 8, have been received through the courtesy of Dr. B. F. Whitmore, with the firm of Parke, Davis & Co.

American Medical Books in England.—The only medical lexicon that receives mention in the students' number of the London *Lancet*, August 21, is Dr. G. M. Gould's large work. Among other American books that are recommended to the English student of medicine are the works of Pepper, H. C. Wood, Osler and Da Costa; also those of Senn, W. W. Keen and Lusk. Of the late Dr. Lusk's book on midwifery the *Lancet* says that it is without doubt in many ways the best text-book in the English language on the subject.

Ninety Centigrams of Calomel in Six Days were taken by mistake, by a patient being treated for malignant syphilis in Turin. The general reaction was what might be expected from such an amount, but after recovery from this the syphilis had disappeared and there have not been the slightest manifestations of it since.—*Gaz. d. Osp. e. d. Clin.*, August 15.

Roentgen Ray in the Study of Anatomy.—Diakonoff usually injects the vessels with mercury, but as this is heavy and tends to alter the shape, he has found the following mixture preferable for certain cases: Plaster of Paris, cinnabar and minium āā 20 parts; flour 10 parts: water to make a liquid paste.—*Presse Med.*, August 12.

The Library of Sir Morell Mackenzie has been advertised for sale in a London auction room. Besides a large number of general works there are many recognized authorities on his specialties. Among his own contributions to medical literature there were many copies of his "Growths in the Larynx" and "The Laryngoscope," both published in 1871, also of "Leprosy of the Air Passages."

International Congress for the Study of Tuberculosis will be held at Paris next July, with Nocard, president, and G. Masson, treasurer, 120 Boulevard St. Germain. *Themata* announced: 1. "Sanitaria in the prevention and treatment of tuberculosis." 2. "Serum and antitoxin treatment of tuberculosis." 3. "Value of the Roentgen ray in recognition and treatment of tuberculosis." 4. "Prophylaxis of tuberculosis in animals." Membership fee, 20 francs.

Rule Made That Medical Schools Must Teach in English.—The quarterly meeting of the State Board of Health was held at the Great Northern Hotel, Chicago, October 5. A resolution was adopted that after May, 1901, no school of medicine or midwifery would be recognized unless its instruction was given in the English language. A number of schools of midwifery in Chicago will be affected. After May 1, 1898, no candidate for license to practice medicine in the State will be examined unless he gives documentary evidence of a preliminary or basis education equivalent to that of a high school course.

Two-fold Effect of Alcohol on the Muscles.—H. Frey's communication on this subject is based on numerous and comprehensive experiments and tests, principally with Mosso's ergograph. He found that alcohol stimulated fatigued muscles to an increased amount of work, but produced the opposite effect on non-fatigued muscles. It also deadens the sensation of fatigue. He explains its two-fold action as: 1, a paralyzing action (central) deadening the sensation of fatigue, and (peripheral) diminishing the work accomplished by the muscles; 2, a nutritive effect, supplying new fuel to fatigued muscles.—*Deutsche Med. Woch.*, August 19.

Extensive Drainage.—The extent to which Ewald carries drainage in all kinds of hydrops and accumulations of fluid with edema, is shown by a recent case he describes in the *Berl. Klin. Woch.*, No. 25. A man 33 years old presented uremic manifestations and ascites in connection with inflammation of the kidneys. He was helped along past the critical period by punctures whenever the fluid accumulated enough to annoy him, the case terminating in recovery after 161 liters of fluid had been withdrawn in the course of six months. The pleural cavity was punctured five times, the abdomen forty-five times and the legs on one or both sides as required.

Radical Cure of Inguinal Hernia.—Nélaton has been practicing a method of radical cure with orchidopexy, which he describes in the *Presse Méd.* of July 31, recommending it for all cases in which the tissues are thin and weak, with consequent difficulty in securing solidity with the usual Bassini operation. The innovation is the cutting out of a round disc the size of a centime in the body of the pubis, 8 millimeters below the edge, with Collins' punch forceps. The thin strip of bone left above it is then sawed through and raised on its hinge of periosteum, to allow the cord to be placed in the hole left by the removal of the disc. The bridge of bone is then replaced and sutured, and the abdominal wall restored in two layers. He concludes by expressing his conviction that time will confirm the effectiveness of this transpubian passage of the cord, which retains its mobility; the testicles also cease to rise up in ectopic cases, while the course traveled by the cord is shortened at least a centimeter.

Blasucci's Hypogastric Syphon for drainage of the bladder after epicystotomy has been used for some time in the Galozzi clinic with brilliant results; the wound entirely healed in twelve days. It prevents the passage of any urine through the abdomino cystic wound, and can also be used for lavages when desired. It consists of a rubber tube in two branches, connected by a T-shaped glass tube. The short branch has four large holes at the farther end, with a bulb, blown up through a smaller tube adherent to the principal tube but not communicating with it. The long branch reaches below the bed, the end terminating in a glass ampulla, with a hole in the side, hanging in an antiseptic solution.—*Gaz. degli Osp. e delle Clin.* August 15.

A Juvenile Mistake.—One of our readers sends us the following: A bright little eight-year old boy was sent to the family physician's house one evening, he being a near neighbor, to have diagnosed several eruptive areas of "vesicles clustered on erythematous bases arranged in the course of the terminal twigs of the intercostal nerves and forming a semigirdle round the trunk" (Fox); he was informed that he had "shingles" and that he was to tell this to his parents. When he arrived home his mother asked him: "What did the doctor say was the matter with you?" When the little fellow promptly replied: "The doctor said I had the *slats*."

Dr. Bates is Surgeon-General.—Newton L. Bates, M.D., has been appointed by the President as Surgeon-General of the Navy and Chief of the bureau of medicine and surgery of the Navy. He succeeds Surgeon-General J. Rufus Tryon. Dr. Bates is a native of New York and now in his 59th year. He entered the Navy as an assistant surgeon in July, 1861, and saw considerable active service on blockading squadrons during the War for the Union. He reached the rank of surgeon in September, 1865, that of medical inspector in January, 1881, and medical director in September, 1888. After the war Dr. Bates saw service on every quarter of the globe, his last cruise having been on the flagship Pensacola in 1888. Since then he has been on duty successively at the Mare Island (Cal.) Naval Hospital as a member of the Medical Examining Board, and at the Naval Museum of Hygiene in Chicago, to which last position he was assigned in May, 1895.

An Application of the Neuron Theory to the electric treatment of hemiplegia was communicated by V. Seletzki recently to the Kiew Medical Association, with which he has been very successful. It is based on the idea that in cerebral lesions, when the focus heals, the compressed portion of the pyramidal tracts will resume their normal condition and functions if the neurons have been kept from atrophy and the muscles from losing their habit of functional activity from lack of use in the mean while. He attains this by electric treatment, which exercises the neurons (galvanization) and the muscles (faradization). He first galvanizes the head by placing the cathode on the hemisphere involved in the lesion, with the anode at the back of the neck. Then the hand is placed in salted water with the anode; the cathode at the back of the neck, after which the foot is galvanized in the same manner. The currents must be very weak and of brief duration. Muscular contractions are induced at the same time with an interrupter applied to the muscle, while the patient assists, by raising the hand, for example, when the deltoid is being treated. With this treatment he has restored motion to groups of muscles that had been paralyzed from seven to fourteen months, which ordinary electrization could never have accomplished. In one case of eruptive trophoneurosis of five years' standing, in which the pruritus rendered sleep often impossible, improvement was observed after the first séance, also in three cases of polyneuritis.—*Presse Méd.*, July 24.

Personal.—Dr. John S. Billings, now of New York City, is engrossed with the congenial work of cataloguing the literary treasures of the public library, the consolidated successor of the Astor, Lenox and Tilden collections. He has improved if not perfected the card system. When his new system of classification is finished it is his intention, as the responsible librarian, to have a shelf-list made by which the books may be checked off from time to time. In making up the groups already practically complete, some of the books mentioned in the earlier catalogues have not been found. Dr. Billings does not say that they have been stolen, but thinks it possible that they have been mislaid or shoved back out of sight. With such a list it will be easy to determine whether or not any books have disappeared.——Dr. Newborn, U. S. M.-H.S., who for the last seven years has been detailed as medical examiner of immigrants at the port of New York, has resigned with the intention of studying in Europe.

The "Dover Cliff" Case of Prolonged Unconsciousness.—Considerable attention has been given in England to a peculiar case, known as the "Dover Cliff Mystery." On August 5 a young girl aged 17 years was found unconscious and bruised, on the beach near St. Margaret's at the foot of a cliff 200 feet high, and was removed to the Dover Hospital. The character of her injuries (a severe bruise on the right side of the forehead and slighter contusions on the occiput and left ankle) makes it seem most improbable that she had fallen over the cliff, as was at first supposed, and it has been suggested that she was sunstruck while walking on the beach and received the bruises in falling to the ground. The possibility of the case being one of typhoid fever arises when it is remembered that long periods of unconsciousness, lasting more than four weeks, have been known to occur in this disease. The temperature curve, also, is not unlike that of typhoid. The principal treatment has been the use of the cold pack whenever the temperature rose above 102 F. Bromid of ammonium and iodid of potassium were given internally, with a diet consisting of milk and beef tea. The systematic use of the ice-pack and close attention to nutrition has kept the girl alive, but her unconsciousness persists.—*Medical News*, October 2.

Acute Ascending Paralysis as a Complication of Pasteur's Treatment; Recovery.—Rendu reports a case in which acute ascending paralysis supervened on Pasteur's treatment. The patient pricked his finger while assisting at a necropsy on a man who had died of hydrophobia. As a prophylactic measure he was treated at the Pasteur Institute and received sixteen injections between March 22 and April 1. On the latter date he felt cold and the following day was ill, with a feeling of heaviness in the legs so that he could hardly walk. There was also some pain in the loins like lumbago. The temperature was only slightly raised and there was some general hyperesthesia. On April 3 there was marked paresis of the lower limbs, with muscular pains and almost complete anesthesia of abdomen, lumbar region and lower limbs; there was also paralysis of the bladder. On April 4 paraplegia was almost absolute and involuntary defecation occurred about this time. There was no difficulty in respiration or in swallowing. On April 6 some weakness of the upper limbs came on and the heart became rapid. During this time the injections had been continued, as it was considered important to complete the immunization. On April 7 improvement began; the arms were no longer weak, and there was some return of power and sensation in the legs. Progress was rapid and within three weeks the patient was quite convalescent. That the case was one of paralytic rabies seems unlikely, as the incubation was too short and the clinical course unlike it. It seems more likely that an acute ascending myelitis was caused by some toxin in the emulsion of spinal cord which was injected, and that though usually harmless, the toxin proved virulent in this case owing to the receptive soil produced by the unhealthy surroundings to which a postmortem room attendant is continually exposed.—*British Medical Journal.*

Hypnotism Before the Court.—A witness was called on behalf of the defendant in the murder case of People v. Ebanks, and an offer was made to prove by him that he was an expert hypnotist, that he had hypnotized the defendant and that when hypnotized the defendant had made a statement to him in regard to his knowledge of the affair, from which statement the witness was ready to testify that the defendant was not guilty and that the defendant denied his guilt while in that condition. The trial judge sustained an objection to the testimony. He said: "The law of the United States does not recognize hypnotism. It would be an illegal defense and I can not admit it." Mr. Commissioner Searls, who prepared the opinion of the supreme court of California, wherein it, Aug. 23, 1897, affirmed the judgment of conviction of murder in the first degree, said: "We shall not stop to argue the point, and only add the court was right." Commissioners Belcher and Chipman concurred. Mr. Justice McFarland said: "I concur in the judgment and in the opinion of Mr. Commissioner Searls, but what is said in the opinion on the subject of hypnotism must be taken as applicable to the testimony offered on that subject in this case, which was clearly inadmissible, and not as covering the whole subject. It will not be necessary to determine whether or not testimony tending to show that a defendant committed the act charged while in a hypnotic condition is admissible until a case involving that precise question shall be presented." In this utterance, Justices Henshaw and Van Fleet concurred. By this decision the trial of cases by hypnotists rather than by jurors is eliminated, for one State at least. But the suggestions made in the supplemental opinion open wide the door for further legal discussion of the question of the importance to be attached to allegations of crime being committed under hypnotic influence.

Functions of the Thyroid Gland Finally Established.—The second communication from Prof. E. v. Cyon on the "Physiologic Connection Between the Nerves of the Heart and the Thyroid Gland," appears in the *Cbl. f. Phys.* of August 21 (*vide* Journal, September 4, p. 504). He summarizes the result of his research as follows: 1. The function of the thyroid gland consists in the formation of a substance, iodothyrin, the chief purpose of which is to stimulate the regulating nerve mechanism of the heart to increased activity. At the same time by this transformation into an organic combination of the iodin salts finding their way into the blood, the thyroid gland succeeds in freeing the organism from substances that affect this mechanism very injuriously. 2. This function of the thyroid gland is controlled by the heart through the intermediation of the nerves previously mentioned. In this way the heart itself superintends the production of the iodothyrin necessary to its normal activity. 3. The thyroid gland owing to its location near the entrance of the carotids into the cranial cavity, and its capacity for receiving large quantities of blood into its vessels and passing it along, forms a kind of safety contrivance to prevent the brain from becoming over-gorged with blood at any sudden increase in the work accomplished by the heart or from constriction in the peripheral vascular route. In such cases the thyroid gland may act the part of a safety flood-gate, offering very slight resistance. 4. This second function of the thyroid gland is likewise under the direct control of the heart, which, by stimulating the vasodilating fibers of the thyroid gland, wards off the threatening danger from the brain in two ways: 1, by opening the sluices to divert the surplus stream of blood, and 2, by increasing the amount of iodothyrin produced.

Washington.

Health of the District.—The report of Health Officer Woodward for the week ended October 2, shows the number of deaths reported to have been 92, of which 54 were white and 38 colored. There were 3 fatal cases of typhoid fever and 4 of diphtheria. In his estimate for the expenses in his department for the current year he asks the following: Smallpox hospital, $5,000; disinfecting service, $5,000; abatement of nuisances, $1,000; gratuitous vaccination for the indigent, $2,000; enforcing the act regulating contagious diseases, $25,000; incinerating combustible waste, $15,000; establishment and maintenance of bacteriologic laboratory, $5,000; crematory for potter's field, $25,000; medical inspection of public schools, $10,000; one physician who shall act as clerk and deputy health officer, $1,800; five additional sanitary and food inspectors at $1,200 each; one veterinary surgeon, $900; $200 per annum increase is asked for the chief clerk and each of the physicians to the poor; $520 increase for the purchase of drugs.

Providence Hospital Training School.—At the commencement exercises of the Providence Hospital Training School, recently held, Dr. John W. Bayne presented the diplomas to five graduates from the school.

Medical Association.—At the regular stated meeting of the Medical Association of the District, held on the 5th inst., the following were elected to membership: E. B. Behrend, A. W. Boswell, J. R. Church, Henry Darling, L. H. French, R. H. Graham, M. Griffith, A. G. Grenwell, A. Barnes Hooe, L. Johnson, G. W. Johnston, A. L. Lawrence, M. D. Magee, M. E. Miller, M. G. Motter, W. C. Murphy, W. S. Newell and Jesse Ramsburgh. The Association, in keeping with the promise of the Washington delegation to the American Medical Association, voted $390 to be paid to the Rush Monument Fund. Dr. Samuel C. Busey, who was the official delegate of the Association to the British Medical Association at Montreal, addressed the Association, giving a very interesting account of that meeting.

Washington Obstetrical and Gynecological Society.—The 267th meeting of the society was held on the 1st instant. The president, Dr. George Byrd Harrison, delivered a valuable and interesting address on general medicine. The annual banquet of the society has been arranged for by the special committee in charge, to take place on the 15th instant.

Medical Society.—At the meeting of the Medical Society held on the 6th instant, the following were elected to membership: Louis J. Battle, Joseph Lacy Brashaw, Franz A. R. Jung and F. A. Mazzie. Dr. McArdle read the essay for October, entitled "Tubercular affections of the female genitalia." His essay was highly scientific and instructive and was discussed by Drs. Smith, Stone, Bovee, G. W. Johnston, Forward, U. S. A., and H. L. E. Johnson.

The National Medical Review.—The former editor of the *National Medical Review*, Dr. Chas. H. Stowell, has removed from Washington to practice in Boston. The journal has passed into the hands of Drs. T. E. McArdle and George Woodruff Johnston, by whom it will be conducted in the future.

Detroit.

At the regular meeting of the Wayne County Medical society held on the evening of September 30, Dr. L. E. Maire read a paper on "An Improved Bandage for Cataract Operations." The bandage presented is made in the following way: A roll of starched crinoline bandage about three inches wide is thoroughly wet in warm water for the purpose of softening it.

It is then wound in the usual manner of applying a bandage over both eyes, around the head, the toilet of the operated eye having been made and it as well as its fellow covered carefully with a layer of absorbent cotton, which extends on both sides well around and over the patient's ears. After three or four turns have been taken, a piece of cardboard of circular shape, and from two to three inches in diameter, is completely moistened in water and placed over the operated eye. The bandaging is then completed, covering the pasteboard with a few more layers of the moistened crinoline. When the bandage becomes dry it is hard and firm. It is molded perfectly to the form of the face, and will prevent any ordinary injury to the operated eye because of the protecting covering of both the stiff crinoline and pasteboard which covers it. The bandage may be removed by cutting through it at the back of the head. Eyelets can be made in each side of the divided ends and the bandage replaced and fastened on securely by lacing; when the sound eye may be released, an opening may be cut out of the bandage immediately in front of it. The author claims for the bandage that it is light, that it is easily and readily applied, cheap and practical, and that it affords complete protection.

THE DETROIT MEDICAL AND LIBRARY ASSOCIATION at its annual meeting Monday, October 4, elected the following officers for the ensuing year: Dr. Andrew P. Biddle, president; P. C. McEwen, secretary; Edward G. Knill, vice-president; I. W. Gillman, treasurer.

Hospitals.

BY THE WILL of the late Henry Keep of Chicago, St. Luke's Hospital receives $5,000.——St. Alexander's, a new hospital, was dedicated at New Ulm, Minn., September 22.

THE NASSAU HOSPITAL of Queen's County, N. Y., held a fair at the Mineola grounds on October 7.

PATHOLOGIC INSTRUCTION AT THE LOUISVILLE CITY HOSPITAL.—The *American Practitioner and News*, September 4, refers to the following important improvements that have been instituted at the above named hospital: "We are pleased to learn that a capacious amphitheater, perfectly lighted by skylight and electricity, has been added to the equipment of the Louisville City Hospital for the purpose of enabling the students of the medical schools of the city to witness autopsies and pathologic demonstrations upon certain cadavers which will be set apart for this purpose. Autopsies held at other than regular hours will be advertised by notices posted on the bulletin-boards of each school. A museum for the preservation of the specimens resulting from this work will be provided in the near future. This department is under the care of Dr. Leon Solomon, pathologist to the Louisville City Hospital, and we are glad to learn that the new departure is in the main due to his influence and energy. The opportunity thus afforded our students of medicine for familiarizing themselves with the microscopic features of fresh pathologic lesions is of great value, and thanks are due Dr. Solomon for making it prominent in the teaching facilities of our city."

Societies.

The following meetings were held recently:

Alabama.—Calhoun County Medical Society, October 5.

Illinois.—American Academy of Railway Surgeons, Chicago, October 6-8.

Indiana.—Allen County Medical Society, Fort Wayne, September 29; Tippecanoe County Medical Society, Lafayette, October 4; Upper Maumee Valley Medical Association, Columbia City, September 29.

Iowa.—Clinton County Medical Association, Clinton, October 5; Iowa State Association of Railroad Surgeons, Des Moines, October 13 and 14.

Minnesota.—Winona County Medical Society, Winona, October 5.

Nebraska.—Elkhorn Valley Medical Society, Norfolk, October 5.

New York.—Medical Association of Troy, October 5.

Ohio.—Allen County Medical Society, Lima, October 5; Cuyahoga County Medical Society, Cleveland, October 5; Miami Valley Medical Society, Loveland, October 12; Trumbull County Medical Society, Warren, September 29; Union Medical Society of Northeastern Ohio, Alliance, September 29.

CHANGE OF ADDRESS.

Ball, M. V., from 529 Pine St. to Warren, Pa.
Barber, W. M., from Binghamton to Scio, Ohio.
Birkhofer, W. J., from Primghar to Thor, Iowa.
Boyd, W. J., from Topeka, Kans., to Pavilion, N. Y.
Butler, Thos. L., from 1511 Floyd St. to 1511 Fourth St., Louisville, Ky.
Clausen, J. J., from 1400 Summit to 404 New Ridge Bldg., Kansas City, Mo.
Coon, J. W., from 807 Walnut St. to 838 Booth St., Milwaukee, Wis.
Fanner, J. C., from White Bear Lake to Minneapolis, Minn.
Hatch, W. G., from Chicago to Prairie City, Ill.
Hanna, C. U., from Portsmouth to Pataskala, Ohio.
Hill, R. J., from 620½ Nicollet Av. to Room 2 Syndicate Block, Minneapolis, Minn.
Howard, W. E., from Kasbeer, Ill., to Bellevue Hospital Medical College, New York.
Kenyon, E. L., from 1753 Milwaukee Av. to Room 8, Peoples' Institute Bldg., Chicago.
Langsdale, J. M., from 1212 Tracy to 512 Altman Bldg., Kansas City, Mo.
Penncock, V. R., from Silver Plume to Longmont, Colo.
Pick, Albert, from Hyannis to Brockton, Mass.
Proctor, C. M., from Harvard, Ill., to Helena, Mont.
Pyle, Walter, from 119 S. 17th St. to 1831-33 Chestnut St., Philadelphia.
Walher, W. E., from Pass Christian to Bay St. Louis, Miss.
Warden, A. W., from 130 West 104th St. to 118 W. 82d St., New York.
Weeks, John E., from 151 Madison Av. to 46 E. 57th St., New York.
Weitz, J. A., from Montpelier, Ohio, to 509 3d Av., Detroit, Mich.
Wolfe, A. G., from 755 N. High St. to 35 W. 4th Av., Columbus, Ohio.

LETTERS RECEIVED.

Abbott, E. H. (2), Elgin, Ill.; Anderson, Winslow, San Francisco, Cal

Barker, E. O., Guthrie, Okla.; Batten, J
Gustavus M., Detroit, Mich.; Brennan, P.
Evansville, Ind.; Brown, G. V. I., Dulut
land, Cal.; Bulkley, L. Duncan, New York, N. Y.

Caldwell & Co., New York, N. Y.; Catchings, B. H., Atlanta, Ga.; Coates, Truman, Oxford, Pa.; Crume, G. P., Earl Park, Ind.

Davis, G. R., Ironton, Ohio.

Eastman, Joseph R., Indianapolis, Ind.

Fauster, John U., Paulding, Ohio; Franzoni, C. W., Washington, D. C.; Friend, Samuel H., Milwaukee, Wis.

Getz, H. L., Marshalltown, Iowa; Gould, George M., Philadelphia, Pa.

Hektoen, L., Chicago, Ill.; Henry Pharmical Co., Louisville, Ky.; Huening Bros., Chicago, Ill.; Hurt, C. D., Atlanta, Ga.

Jepson, S. L. Wheeling, W. Va.

Kelly, Howard A., Baltimore, Md.

Las Vegas Hot Springs Co., Las Vegas Hot Springs, N. M.; Lineweaver & Wallace, Philadelphia, Pa.; Lichty, Daniel, Rockford, Ill.

Martin, Thomas Charles, Cleveland, Ohio; Moore's Subscription Agency, Brockport, N. Y.; Moulton, E. S., New Haven Conn.; Mumaw, H. A., Elkhart, Ind.; McCurdy, Pittsburg, Pa.

Nixon, J. W., Soldier, Kans.

O'Gorman, Jas., Baltimore, Md.

Paddock, W. R., Orland, Ill.; Pence, Le Roy, Spencerville, Ill.; Potter, S. O., San Francisco, Cal.

Radasch, Henry E., Keokuk, Iowa; Reed, Bordman, Philadelphia, Pa.; Roberts, G. W., New York, N. Y.

Sharp & Smith, Chicago, Ill.; Small, William, York, Pa.; Smart, L. G., Baltimore, Md.; Smith, William, Kirksville, Mo.; Souvenir Magazine, Ann Arbor, Mich.; Stevens, C. W., Charlestown, Mass.; Stever, J. C., Three Springs, Pa.; Stuver, E., Rawlings, Wyo.

Tomlinson, P. W. (3), Wilmington, Del.; Tracy, Edward A., S. Boston, Mass.

Ulrich, C. F., Wheeling, W. Va.; Vedder, W. D. (2), Mansfield, Pa.

Walker, H. O., Detroit, Mich.; Ward, M. B., Kansas City, Mo.; Weeks, J. E., New York, N. Y.; Williams, A. C., Elk Falls, Kans.; Williams, John H., Asheville, N. C.; Woodbridge, John Eliot, Cleveland, Ohio; Wright, O. S., Plant City, Fla.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from October 2 to 8, 1897.

First Lieut. Thomas J. Kirkpatrick, Jr., Asst. Surgeon (Ft. Douglas, Utah), is granted leave of absence for one month.

Capt. Richard W. Johnson, Asst. Surgeon, ordered to proceed from Ft. Logan, Colo., to Ft. Douglas, Utah, and report for temporary duty.

Capt. James D. Glennan, Asst. Surgeon, is relieved from duty at Ft. Clark, Texas, and ordered to Ft. Myer, Va.

Capt. Norton Strong, Asst. Surgeon, order assigning him to duty at Ft. Myer, Va., is revoked.

Capt. Robert R. Ball, Asst. Surgeon, died Oct. 5, 1897, at Washington, D. C.

Major Paul R. Brown, Surgeon, having been found by an Army retiring board incapacitated for active service by reason of disability incident to the service, is by direction of the President retired from active service this date, Oct. 1, 1897.

First Lieut. Leigh A. Fuller, Asst. Surgeon, is relieved from duty at Ft. Meade, S. Dak., and ordered to Ft. Assiniboine, Mont.

First Lieut. Edward L. Munson, Asst. Surgeon, is relieved from duty at Ft. Assiniboine, Mont., and ordered to Ft. Adams, R. I.

Capt. George McCreery, Asst. Surgeon, is relieved from temporary duty at the Soldiers' Home, Washington, D. C., and ordered to Ft. Myer, Va.

Capt. Edgar A. Mearns, Asst. Surgeon, is relieved from duty at Ft. Myer, Va., and ordered to Ft. Clark, Texas.

PROMOTIONS.

Capt. Junius L. Powell, Asst. Surgeon, to be Surgeon with the rank of Major, Oct. 1, 1897, vice Brown, retired.

RETIREMENT.

Major Paul R. Brown, Surgeon, Oct. 1, 1897, for disability incident to the service.

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ADDRESS.

MENTAL EVOLUTION IN MAN.

An address delivered at the opening of the Section of Psychology, at the Sixty-fifth Annual Meeting of the British Medical Association, Montreal, Aug. 31 to Sept. 4, 1897.

BY R. M. BUCKE, M.D.

MEDICAL SUPERINTENDENT OF THE INSANE ASYLUM, LONDON, ONTARIO, CANADA, PRESIDENT OF THE SECTION.

[Abstract from advance sheets of the British Medical Journal.]

About sixty years ago, in the time of the Millerite excitement, a man who believed that the world was about to end expressed his fears to Emerson, who replied that it was really a matter of little consequence, "for," said he, "we can do very well without it." There are wise men who teach that each man creates the world he lives in, and as he gives it its substance so also does he give it its quality, insomuch that it is good or bad as he is good or bad. Be this as it may, it is certain that each one of us is of more consequence to himself than is all the outside world. Not only so, but the essential part of each man is what we call his mind, in comparison to which the body is an insignificant factor.

The study of psychology.—Psychology ought to be the most interesting of all the sciences, and as a matter of fact it undoubtedly is, though it has been greatly discredited by the imperfection of the method by which it has until very lately been studied. That imperfection is so great that it would hardly be an exaggeration to assert that nearly all the study and thought expended upon it down to the beginning of our own age has been fruitless and as good as wasted, except inasmuch as it has at last made clear the impassability of the route men have sought to follow, the route, namely, of introspection. For we might as well study the human body alone without reference to that of any other creature and attempt in that way to decipher its genesis, development and meaning as to attempt to comprehend a single human mind without including in our examination not only other human minds in all stages of evolution, but equally all other minds to which our own is related, that is to say, all minds other than human belonging to our kinsfolk, the animals, minds which stand today like mile posts along the almost infinite length of the path which our mind has followed in its upward march across the immensities and eternities from its remote infancy to the present hour; minds which in a thousand faculties represent to us everywhere, in infinite sameness and variety, *replicas* of our own or of parts of our own, showing us, as the poet says, tokens of ourselves which we "negligently dropped as passed that way huge times ago."

Comparative psychology.—As man's bodily life rests upon and grows from that of countless prehuman ancestors; as man includes in his structure the heart of the reptile, the gills of the fish, as well as the forms in outline of innumerable still lower races, so is his so-called human mind rooted in the senses and instincts of all his ancestral species; and not only so, but these senses and instincts still live in him, making up, indeed, far the larger part of his current every-day life; while his higher psychic life is merely the outgrowth and flower of them.

As truly as the plant is an embodiment of inorganic matter vivified by the transmuted forces which in the non-vital world about us we call light and heat, so truly is man's mind the outcome of—the expansion and culmination of—the imperfect sensation of the worm, the rudimentary sight, hearing and taste of the fish and reptile; and the simple consciousness which, springing from these, passed to us after almost infinite ages of slow evolution and amelioration through tens of thousands of generations of placental mammals, our immediate progenitors.

In the growth of mind, whether that of the race or of an individual, we recognize two distinct processes: 1. The very gradual evolution to or toward perfection of faculties that have already come into existence. 2. The spring into existence of faculties which had previously no existence. For it is clear no faculty (as no organ) came into mature and perfect life at once. Hearing and sight, we are told, developed by slow degrees from the sense of touch; and in the region of the intellect conceptual life was born from ages of receptual, and that from milleniums of perceptual.

Mental growth in the individual and in the race.—Let us now suppose mind growing for millions of years in the way set forth. It begins, we will say, as mere excitability; to that after a long time is added what may be called discrimination, or choice and rejection of, for instance, different kinds of food. After another long interval of almost infinitely slow advance sensation appears, and with it the capacity of pleasure and of pain; then, later still, memory; by-and-by recognition of offspring; and successively thereafter arise reason, recognition of individuals and communication of ideas. Concurrently with these intellectual faculties certain moral functions, such as fear, surprise, jealousy, anger, affection, play, sympathy, emulation, pride, resentment, grief, hate, revenge, shame, remorse and a sense of the ludicrous have also arisen in the nascent mind. We have reached now the mental plane of the higher animals, which is equally that of the human being at about 2 years of age. Then occurs in the child the mental expansion which separates man from the higher mammals—for something like a year the child mind steadily grows from the status of the latter to the status of the human mind. This year in the individual, during which it walks erect, but possesses a receptual intelligence only, not having yet the power of forming either concepts or true words, represents in the race the age of the *alalus homo*, the period of perhaps a hundred thousand years, during which our ancestors walked erect, but not having self-consciousness had no true language. At the average age of 3 years in the individual self-consciousness is born and the infant from the point of view of psychology has become a human being. But we all know that after the attainment of the distinctively human faculty, self-consciousness, the child has still much to acquire both in the way of the expansion of already possessed faculties and in the acquisition of new ones before it is mentally a mature man. Of the numerous faculties which it still has to acquire I shall only mention here the color sense, the sense of fragrance, the human moral nature and the musical sense.

That basic and master human faculty, self-consciousness, occurs, as said, at about the average age of 3 years, but when it first made its appearance in the race it must have done so at full maturity; perhaps at the age of 20, both life and childhood being shorter at that time than they are today. You will see at once why I say self-consciousness must have occurred at first at maturity. Its acquisition at a given epoch supposed a higher mental life than had hitherto existed—such higher life on the part of the race could not have come to the individual before his maturity. To suppose that, it would be a contradiction in terms. The human mind attains its high water mark at maturity (that is what the word means), and one generation could not reach before maturity what the preceding generation had not reached at all. But self-consciousness occurs today at 3 years of age, and we only reach full mental maturity (on the average) at the age of 35. The advance, then, made by the individual from the age of 3 to that of 35, represents the advance of the race between the date of the appearance of self-consciousness and today, the mental status of the 3-year old child today being the mental status of the adult when self-consciousness first appeared. How long has it taken the human mind to grow from mere self-consciousness to its present stature? Not less certainly than several hundred thousand years, the time during which man has inhabited the earth.

Of all the mental faculties below self-consciousness each one has its own time for appearing in the human infant; as, for instance, memory and simple consciousness appear within a few days after birth, curiosity ten weeks after, use of tools twelve months after, shame, remorse and a sense of the ludicrous, all of them about fifteen months after. It is to be noted that in every instance the time of the appearance of a faculty in the infant corresponds with the stage at which the same faculty appears (as far as can be at present ascertained) in the ascending animal scale; for instance, memory and simple consciousness occur in animals as primitive as the echinodermata, while the use of tools is not met with below monkeys, and shame, remorse and a sense of the ludicrous are almost, if not entirely, confined (among animals) to the anthropoid ape and the dog.

As in prehuman so in human psychology, each superadded faculty was acquired in its own time in the history of the race, and that historic period corresponds with the time in the life of the individual into whom the faculty is born today. For instance, self-consciousness appears in the individual at the age of about 3 years—it appeared in the race several hundred thousand years ago. It has been proved by Geiger and others that our color sense was acquired by the race not more than 30,000 years ago. It is acquired by the individual at the age of about 5 or 6. It is thought that the sense of fragrance was acquired by the race later than the color sense; it is also acquired later by the individual. Our human moral nature can not be more than 10,000 years old, for a careful consideration of the records that have come down to us from the early Romans, Hellenes, Hebrews, Egyptians, Assyrians and Babylonians would indicate that as we go back into the past, this faculty tapers down toward the vanishing point, and that if it continues so to taper as we ascend the ages, all of what we distinctively call our human moral nature would certainly have disappeared by the time we had gone back the number of centuries mentioned—that is 10,000 years.

Today the human moral nature in the individual, instead of being born at the age of 3 years as is self-consciousness, or at 5 or 6 as is the color sense, does not come into existence before the average age of about 15 years. As to the musical sense, it is almost certainly less than 5,000 years old in the race, and when it occurs at all, is not usually born in the individual before adolescence.

There are three other laws which govern the acquisition of new faculties by any given race, viz.:

1. The longer a race has been in possession of a given faculty the more universal will that faculty be in the race.

2. The longer a race has been in possession of a given faculty the more firmly is that faculty fixed in each individual of the race who possesses it. In other words: The more recent is any given faculty the more easily is it lost.

3. A study of dreaming seems to reveal the fact that in sleep such mind as we have differs from our waking mind, especially by being more primitive; that in fact it would be almost strictly true to say that in dreams we pass backward into a prehuman mental life; that the intellectual faculties which we possess in dreams are, especially, recepts as distinguished from our waking concepts; while in the moral realm they are those faculties such as remorse, shame, surprise, along with the older and more basic sense functions, which belonged to us before we reached the human plane, and that the more modern mental faculties such as color sense, musical sense, self-consciousness, the human moral nature, have no existence in this condition, or if any of them do occur, it is only as a rare exception.

Let us now compare a few of the faculties which have been already mentioned in the light of the rules laid down. This will give us a definite notion of the growth of mind by the successive addition of new functions. For this purpose we will take simple consciousness, shame, self-consciousness, color sense, the human moral nature and the musical sense.

Simple consciousness.—Simple consciousness makes its appearance in the human infant at the age of a few days; it is absolutely universal in the human race; it dates back certainly to the earliest mammals and probably much earlier; it is only lost in deep sleep and coma; it is present in all dreams.

Shame.—Shame is said to be born in the human infant at the age of fifteen months; it is a prehuman faculty, being found in the dog and in apes, and undoubtedly existed in our prehuman ancestry; it is almost universal in the race, being only absent in the lowest idiots; it is very common in dreams.

Self-consciousness.—Self-consciousness makes its appearance in the child at the average age of three years; it is not present in any species but the human;

it is, in fact, that faculty the possession of which by an individual constitutes him a man. It is not universal in our race, being absent in all true idiots; that is, it is permanently absent in about one in each thousand human beings born into the world. In our ancestry it dates back to the first true man; a race, we are told, unclothed, walking erect, gregarious, without a true language, to a limited extent tool-using, destitute of marriage, government or of any institution; animal, but in virtue of its highly developed receptual intelligence, king of animals, which developed self-consciousness and by that fact became man. It is impossible to say how long ago it was when this event occurred, but it could not have been less than several hundred thousand years. This faculty is lost much more easily and frequently than is simple consciousness. We lose it in coma and also often in the delirium of fever; in certain forms of insanity, as in mania, it is often lost for weeks, even months, at a time; and lastly, it is never present in dreams.

Color sense.—This faculty appears in the individual at the average age of about five years. It is absent in one adult human being out of every forty-seven; it appeared in our ancestors, as Geiger has shown from linguistic paleontology, in the Aryan period probably less than thirty thousand years ago. It is seldom present in dreams, and when it does occur, that is, when any color is seen in a dream, it is generally that color which for good reasons was first perceived by man, namely, red.

Moral nature.—The human moral nature belongs to a much later stage of evolution than any of the faculties so far considered. It does not make its appearance in the individual before the average age of fifteen years. It is congenitally and permanently absent in at least forty human beings out of every thousand. It would seem clear, as stated already, from a consideration of our historic ancestors, from the fact that this faculty rapidly fades out as we ascend into the past, that it can not have existed in the race more than ten thousand years at the most. It is far more unstable in the individual than older faculties such as self-consciousness. It is never present in dreams.

Musical sense.—The musical sense does not appear in the individual before the average age of about twenty years; does not exist in more than half of the members of the race; has existed less than five thousand years in the race, and is never, or almost never, present in dreams, even in the case of professional musicians.

The scheme of mental evolution.—You now clearly see the scheme upon which I suppose the mind (as far as we have got) to have been built. I say advisedly "as far as we have got," because, if the mind has grown in the way set forth, it is still growing and is not built but is in the act of building. No man can ever say positively that his theory (of any fact) is the true one, but I am prepared to say of the above hypothesis that, if it be accepted, it will enable us to understand something of the phenomenon of mind as we observe it, whereas if we should prefer to hold as many do, that the human mind was created independently of any that preceded it by a *fiat* and *per saltum*, then I say deliberately that there is and can be no such thing as a science of psychology, and that every attempt to investigate or explain, to comprehend or divine the *rationale* of the facts observed as to its origin and growth in the individual must remain for ever futile. And if I could find the right words I would bring home to each one who hears me the inextinguishable conviction that, in this idea of evolution, lies enfolded the mystery of the past, the explanation of the present, and the sure prescience of the future—what we were, what we are and what we shall be.

The atavistic theory of idiocy and insanity.—In conclusion, I desire to refer briefly to two corollaries which flow from this hypothesis. The first is, that if it is correct, then all forms of insanity, including all forms of idiocy, are nothing more or less than cases of atavism. In this view insanity is due to congenital absence or imperfection (leading to breakdown) of some faculty or faculties, such absence or imperfection being due to more or less complete reversion to an ancestral type. In my opinion, this view explains insanity and its numerous forms more completely than these can be explained from any other point of view. Upon this view the comparatively recent origin and rapid evolution of the human mind, and especially the rapid mental evolution of the so-called Aryan peoples in the last four or five thousand years, is almost solely responsible for the large number of cases of insanity in the modern civilized world, since the stability of any form, function or faculty in any race is dependent upon the time it has existed in that race, and therefore the more recent a faculty is in a race the more frequently will it be found absent, defective or unstable in the individuals of the race.

Future development of mind.—The second corollary, which is even more important than the first, is that, upon the view here set forth, the human mind at present is not formed, but forming; is not completed, but in process of construction. By slow and dubious steps taken in darkness our remote ancestors wearily climbed to simple consciousness. After another immense interval they reached self-consciousness. But that can not be the end—the cosmic process can not stop there—can not, indeed stop anywhere. Evolution, as far as we can see, has always gone on, is going on today and will always go on. Our old mental faculties are some of them fading out, others advancing toward greater perfection, and alongside of them new ones are springing up, some of which will, without doubt, be of overshadowing importance in the future.

So-called telepathy and clairvoyance seem to be specimens of such nascent faculties. I place in the same class the phenomena of what is often named spiritualism. The labors of the Society for Psychic Research have made it plain to me that these phenomena, as notably in the case of W. Stainton Moses, really exist. And I think a study of the above-mentioned case, together with that of Mrs. Piper and that of Mary J. Fancher of Brooklyn, would compel any unprejudiced person to make the same admission. But to me these are not cases in which outside agents are acting on or through a human being, but are cases in which a given human being has faculties which are not commonly possessed. Whether any given faculty, such as one of those now alluded to, shall grow, become common and finally universal in the race, or wither and disappear, will depend upon the general laws of natural selection and upon whether the possession of the nascent faculty is advantageous or not to the individual and to the race.

But of infinitely more importance than telepathy and so-called spiritualism (no matter what explanation we give of these or what their future is destined to be) is the final fact to be here touched upon.

This is, that superimposed upon self-consciousness, as is that faculty upon simple consciousness, a third and higher form of consciousness is at present making its appearance in our race. This higher form of consciousness, when it appears, occurs at the full maturity of the individual, at about the age of 35, but almost always between the ages of 30 and 40. There have been occasional cases of it for the last 2,000 years, and it is becoming more and more common. In fact, in all respects, as far as observed, it obeys the laws to which every nascent faculty is subject. Many more or less perfect examples of this new faculty exist in the world today, and it has been my privilege to know personally and to have had the opportunity of studying several men and women who have possessed it. In the course of a few more milleniums there should be born from the present human race a higher type of man possessing this higher consciousness. This new race, as it may well be called, would occupy, as toward us, a position such as that occupied by us toward the simple conscious *alalus homo.* The advent of this higher, better and happier race would amply justify the long agony of its birth through the countless ages of our past. And it is the first article of my belief, some of the grounds of which I have endeavored to lay before you, that a race is in course of evolution.

ORIGINAL ARTICLES.

HYDROPHOBIA.

Read in the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY CHAS. H. SHEPARD, M.D.
BROOKLYN, N. Y.

This paper is presented more with the idea of calling attention to enforcing the fact that there is a reliable remedy for animal poison, than to offer any new developments in regard to hydrophobia. Little that is new and undisputed has been discovered since the report of the American Medical Association, in 1856. We are still confronted with contradictory theories and strange anomalies, which are only to be explained from the vantage ground of one who realizes that disease is not an entity, but rather a remedial effort, and that relief comes only by our ability to recognize and assist the vital forces in their inevitable conflict with all foreign material.

Although hydrophobia is one of the rarest and most fatal of acute, infectious diseases, and is produced only by inoculation of a specific animal poison, which manifests itself by symptoms due to a disturbance of the central nervous system, it is mitigated by the more important fact that the period of incubation is longer than that of any other acute specific disease. This period is variable, rarely less than a month, in some cases reaching nine or twelve months, the average being six or seven weeks, which gives opportunity for remedial measures, that as we will endeavor to show, are ample to eradicate the poison.

The etiology of hydrophobia is so well known that it needs but a few words of description; mainly coming from the saliva of dogs, rarely from cats or other animals, it is a well recognized fact that the disease never originates in the human species. Its spontaneous origin is confined to the lower animals that do not perspire. The investigations of scientists all over the world have as yet failed to determine the true cause of this terrible malady, although the fact seems to be well settled, that the disease occurs much more frequently among the male than among the female dogs or other animals. Inoculation may arise from a bite, scratch, or from a lick upon an abrasion. Instances have been given where the disease came from the lick of a dog that was not mad.

A puzzling case occurred some years ago in England. A boy 14 years of age, while playing with a Scotch terrier, was bitten slightly on the hand. Three weeks later he became ill and died in terrible convulsions. The physicians pronounced it a genuine case of hydrophobia, but a girl who had been bitten by the same dog appeared to have suffered no harm, and, more remarkable still, the dog was examined by a competent veterinary surgeon, and pronounced perfectly healthy. Such cases are not uncommon.

When preventive measures are adopted as soon as possible, the larger number of persons escape. Children are the greatest sufferers, from being helpless and more exposed, and their cases are not open to the charge of simulated or spurious disease, and at the same time they are a complete refutation of the theory held by some authorities that there is no such disease.

The fact that during the period of incubation there are commonly no symptoms, is liable to lead to a sense of false security. But that is the time to adopt vigorous measures of prevention. Occasionally there is pain or discomfort at the seat of the wound, and sometimes mental depression, which may arise from anxiety regarding possible consequences. Even the onset of the disease is rarely attended by pain or inflammation in the wound. The first evidence of the impending disorder is usually mental depression, disturbed sleep, discomfort about the throat, with difficulty in swallowing liquids; even the attempt occasions spasms, which soon involves the muscles of respiration. The intensity of all these symptoms increase within a few hours, until the mere sight of water will cause a spasm. The reason is frequently lost, and the end from exhaustion is assured in from one to six or eight days.

The varieties in this disease are as great as in any other, because each case is modified by the condition of the system, and the vital reactive powers of the individual.

If there is a prospect of relief from the horrors of hydrophobia, this relief may well claim our earnest attention. It is well known that from the bite of a rabid dog there is a period varying from seven days to six months, before the more acute symptoms manifest themselves. This gives ample time to eliminate the poison from the system. In "Todd's Clinical Lectures," occurs this passage, "Large evacuations by sweating may be employed more freely and with less disadvantage to patients, than by any other secretion." This is also demonstrated by the fact that many diseases are daily being cured by some form of sweating bath, and that physicians are more and more using that form of treatment. In China, and other countries, as well as our own, sweating has been successfully used in the elimination of malarial poison. Another proof is that in some Eastern countries the sweating bath is used to cure the poison of snake bite, which is much more rapid in its action than the poison from the saliva from a rabid dog. It will also readily be seen that treating this malady from the outset is a very different thing from waiting until the poison has become absorbed and permeated the whole system, and the paroxysms have set in, when in truth there is little hope of cure under any treatment.

Hydrophobia belongs to that large class designated as ferment diseases, which depend upon the introduction and development in the system of ferment germs. Enteric fever and erysipelas are familiar examples. Simple absorption has sufficed to inoculate the patient, but in the majority of instances the skin receives more or less abrasion, and the germs are either implanted in the epithelium beneath, or introduced directly into the circulation. The abrasion may heal kindly, but in a varying time, depending upon many factors, an irritation at the seat of the abrasion, accompanied with darting pains, announces the onset. Unlike other diseases, the blood appears not to be a good soil for the development of the germs, which however circulate with it until they find the soil, or tissue, best adapted to them, and then the real havoc begins. In the dog and the man, the three pairs of salivary glands, the parotid, submaxillary, and sublingual, appear to furnish the required conditions, and to be the main seat of the lesion. The congestion of the nervous centers that so directly ensue, is probably consequent upon changes in the structure of these glands. Every physician knows well how speedily severe nervous symptoms follow such changes, how intimate the sympathy is between the glandular organs of the mouth and throat and the nervous centers at the base of the brain, and what violent hysteriform seizures often ensue in such cases. With the involution of the great respiratory tract of the nervous system come difficult respiration and its train of associated symptoms. At the same time it is more than probable that the nervous system suffers from the more direct poisoning caused by the presence of germs in the circulation, but not because they are a specific nerve poison, for when a full dissection is performed, no evidence of it is found in the nerve centers, and this excludes the nerve poison hypothesis.

In the McCormick case, as reported by Dr. Hammond, June 1874, microscopic examination revealed disease of the cortical substance of the brain, disease of the medulla oblongata, and disease of the spinal cord, also disease of the pneumogastric and hypoglossal nerves. The nerve elements were broken down and oil had taken their place, and this has been found the general direction of the disease, with slight modifications in different cases. Fatty degeneration of the nerve substance was a marked symptom.

The question quickly arises, what best can be done to arrest the action of this poison? Nature does everything possible by arousing every emunctory to action and, as in all cases of poison or morbid matter in the system, the leucocytes are called upon for their most vigorous action to relieve the patient. It is claimed that immediate suction of the wound has saved many patients. Good authorities believe that the virus remains localized, for a time, in the cicatrix, and that cutting it out even after the original wound has healed, may serve to avert the disease.

To diminish the production of rabies in the dog, Fleming, one of the most distinguished veterinary surgeons, recommended that dogs should be muzzled, except in times when the disease is epidemic, that they should be placed under good hygienic conditions with a heavy tax upon every animal, and that all vagrant dogs should be killed. It is claimed by some, among them Fleming, that rabies has spontaneously originated in the dog, in consequence of exposure to extremes of heat and cold, ungratified sexual excitement, maltreatment, insufficient food, etc. Roucher, another authority, also maintained the same idea.

Opposed to this is a long array of eminent authorities who claim that rabies does not originate in the dog otherwise than by inoculation with the virus of a rabietic animal.

In the pathologic anatomy of the disease we are also involved in a mass of contradictions. Careful microscopic examinations of the brain and spinal cord, by medical experts, have been attended with entirely negative results. In some few cases there was found fatty degeneration of the nerve-cells, notably that published by Dr. Hammond in 1874, in others simple congestion of the vessels, but in the whole list there was no lesion found that was peculiar to hydrophobia.

In reporting this condition of things, the *Medical Record* stated, May 25, 1878: "We are forced to the sad conclusion that, with the present means at our command, every case of hydrophobia is necessarily fatal."

Dr. Hammond, in his report previously referred to, endorsed the plan suggested by Bourrel and also detailed by Fleming in his treatise on rabies, of having the incisor teeth blunted. So far as dogs treated that way are concerned, this was claimed to be an absolute preventive, but non-rabid dogs have been known to communicate the disease. It is a well known fact that the germs of this poison are sometimes present in the saliva of dogs that are apparently healthy, and particularly frequent in that of the spitz. It is also known that the bite of a man in anger may inoculate a man whom he bites, with poison that produces disease, if not hydrophobia. Instances are on record of a woman while in anger nursing her infant, thereby bringing on convulsions and endangering the life of the child.

The pathologic changes in the nerve substance are but the local exhibition of the general systemic poisoning. In the effort to throw off this poison a small amount of morbid matter adjacent to living structure is dissoved by the leucocytes, and is forced out of the system by way of the natural emunctories. When the system is in the throes of a vital struggle with this morbid material, there can be no excuse for thrusting upon it more of the same material, even though it be in attenuated form. The human system, when laboring under morbid influences, needs but those elements which can add vigor to the vital resistance, and the fluid which patrols the entire body, should be strengthened rather than further decomposed and disorganized by the addition of extraneous and poisonous matter.

The Pasteur treatment is the accredited method for those who have been bitten by a rabid animal, but this, like the antitoxin treatment, is simply sending one poison after another in the system, and whatever the result the victim is the chief sufferer. The Pasteur treatment has not proved uniformly successful, and in those cases where it was apparently so, it is open to question whether the patients might not have recovered without any treatment. It is well known that during the first few years of the experimental inoculations for rabies, so many deaths occurred among the patients that Pasteur himself became alarmed at his own work. Since that time, from the improvement in the treatment, the death-rate has lessened, due to the dilution of the curative lymph.

It is well enough, and most commendable, to discover the microbe which, as stated, appears "to be the veritable and sole factor in the malady," but facts go to show that the microbe is the result of the disease, except in inoculation.

Pasteur found no indication of an incubation period shorter than seven days, and he never claimed that he had discovered a *cure* for hydrophobia, but simply that a person who had been bitten by a presumably mad dog and within a few days was inoculated with attenuated virus, would not develop hydrophia; if a certain time had elapsed after the bite this preventive treatment was of no use whatever.

The London *Lancet*, of Oct. 31, 1885, says: "We can not but think that Pasteur's inferences are sanguine and premature." In the year 1895 the *Lancet* published a statement from Dr. Magner, in which he pointed out that Pasteurian statistics were very misleading, and quoted from a report of the Registrar-General of England, to show that in the five years preceding the establishment of the Pasteur Institute, the number of deaths from hydrophobia were 155, whereas in the five years thereafter they reached 159. He thought that was a strong argument that the Pasteur Institute had no effect in diminishing the deaths from hydrophobia. An article in the Paris *Journal of Medicine*, by Prof. Peter, stated that the inoculations pretended to be antirabic by M. Pasteur were in principle nonsense, and in practice deceptive. Statistics have shown that the mortality from hydrophobia, in and around Paris, the seat of the Institute, has not been in any way lowered, but on the contrary, has increased ever since Pasteur began his inoculations. In 1895, 272 persons died of hydrophobia after undergoing the Pasteurian treatment, which ought to have saved them from any attack of the malady. . . In 1866, a girl named Pauline Kiehl, was taken to the Institute, but as hydrophobia had already set in Pasteur declined having anything to do with the case. The girl was then taken to Dr. Leon Petit of Paris, who cured her by the vapor-bath treatment. . . . Dr. Lutaud, editor of the *Journal of Medicine* of Paris, with straightforwardness asserts that Pasteur does not cure hydrophobia, but he gives it. . . In 1894, Dr. C. W. Dulles of Philadelphia, made a report to the Pennsylvania Medical Society, of his special study of hydrophobia, covering a period of over ten years. His figures give an average, from a total of seventy-eight cases, of one per annum to every 4,500,000 of population, with an excess of cases in the vicinity of Pasteur Institutes. In fact, he charges directly that not only has Pasteur's methods "increased the number of deaths from hydrophobia," but that "there has been added to these a large number of deaths due to inoculation of what ought to be called Pasteur's disease." . . . Dr. Dolan, editor of the *Provincial Medical Journal*, taking a general survey of Pasteur's methods and his numerous failures, says that "Not only does Pasteur not protect from the disease under the very conditions demanded by himself. but he has added a new terror to it by the introduction of paralytic rabies."

In Long Island City, on April 25, 1897, a strange dog severely bit a 6 year old boy named Charles Silk. Two days thereafter the child was taken to the Pasteur Institute in New York and a course of treatment commenced at once, which lasted fifteen days. After completing the course at the Institute the mother of the child was told that her son was insured against dog bites for ten years to come, but three weeks from the day of being bitten, the boy died, a pronounced case of hydrophobia.

Better than Pasteur institutes, and better than all other remedies, or rather preventives, would be what is proposed by an eminent English writer, Mrs. Maynell, in the London *Chronicle* and that is the utter extinction of the canine race, holding that the life of one child is of more value to the world than that of all dogs, and that one of the inevitable results of our advancing civilization will be their extinction. While the dog forms a prominent feature of the domestic life of our day, the services he renders are by no means an adequate offset to the danger with which his presence continually menances the community.

The Pasteurian treatment is a grevious mistake, although it is as yet the only method that has medical sanction. There is a simpler, safer and more scientific treatment for the dreaded disease, based not upon the old fashioned practice of putting foreign matter into the system, but on the more modern and exact principle of eliminating the poisonous taint. That is the hot air or vapor bath treatment as practiced in many lands, but particularly by Dr. Buisson, formerly of Paris. By this means patients have been cured, even after hydrophobia had set in.

In the year 1826, Dr. Buisson was called in to attend a woman attacked by hydrophobia. According to custom he bled her, and happened to wipe his hands on her handkerchief, covered with saliva. "Perceiving a mark on the first finger of my left hand," he writes in a book published in Paris in 1855, "I became aware too late, how imprudent I had been. As soon as I reached home, I cauterized the wound with nitrate of silver. On the seventh day I experienced a sharp pain in the region of the scar. Imagining, however, that it was in consequence of the cauterization, I paid no great heed to it, but the pain became so intense that I was obliged to put my arm in a sling. The pain grew more and more acute, commencing at the first finger and following the radial nerve till it mounted to the forearm. The paroxysms lasted two or three minutes, with intermissions of five or six minutes. At each paroxysm the pain spread to the length of several centimeters, when it passed the elbow it became intolerable. My eyes were extremely irritable, and felt as though likely to start out of their sockets. I was painfully affected by light, and consequently by all luminous bodies, such as glass and metals. My hair seemed to stand erect. My body seemed lighter than air; I believed that by springing from the ground I could have lifted myself up to a prodigious height. I had tightening of the throat, constant nausea, salivated much, and expectorated incessantly. I felt that my sublingual glands were swollen, but when I wished to assure myself of the fact by looking at them in a glass I was unable to carry out my design on account of my eyes. I had a constant longing to run and to bite, and my only alleviation was to walk quickly up and down my room, biting my handkerchief the while. I had a horror of water."

Ordinarily there is but one result to such a condition as this. "For some time past," continues Dr. Buisson, "I had been persuaded that a vapor bath was able to prevent, but not to cure hydrophobia. My thoughts being occupied solely with death, I sought that which was the most prompt and least painful, to put an end to my life. I resolved to die in a vapor-bath. I took a thermometer in my hands, fearing that the heat I desired might be refused me. I had been but a few minutes in the bath before I felt a change for the better. This gave me hope. At 127 degrees F. I was cured. At first I believed it was merely a long intermission from pain, which would be terminated by contact with the air outside the bath. After the bath I dined and drank with ease, and went to bed and slept well. From that day to this, nearly twenty years, I have felt no sort of pain or uneasiness."

Dr. Buisson again says: "Experience has proved to me that hydrophobia may last three days. The cure is sure by following my system the first day, uncertain the second, impossible the third. Who would wait for the last day, knowing my means? One would not even wait for the malady, one would always prevent it. Hydrophobia never shows itself before the seventh day after the bite, and one can then go a long journey to procure these baths, called Russian."

The *Lancet* says: "Hydrophobia was cured by the late Dr. Buisson in his own and eighty cases by vapor baths, raised rapidly to 135 degrees F., and more slowly to 145 degrees F." "A vapor bath," writes Dr. Buisson, "prevents the development of hydrophobia and cures the malady when developed. In order to convince all sensible persons that I am really in earnest I offer to inoculate myself with the disease. This fact should be a sufficient guarantee of the certainty of my method of cure."

It is interesting to state that in London there is now established a Buisson institute, under the care of a qualified physician, *for the gratuitous treatment of* hydrophobic cases. A number of cases of undoubted hydrophobia have been successfully treated by means of these baths in India, and the Viceroy of India has notified Mr. F. E. Pirkis, R. N., of the London Buisson Baths, that the government will afford facilities for the placing of Buisson baths for the treatment of hydrophobia, in government hospitals and dispensaries in India. Twenty baths for that purpose are being immediately dispatched. In looking over a late paper from Calcutta, it was noticed to contain an advertisement of thirty-four Buisson Baths, located in different parts of India, where that treatment could be obtained free by needy sufferers.

There is no possible doubt as to the value of the Turkish bath in all disorders of the ferment class, and whether it is competent to the complete eradication of the poison, or to arrest destructive tissue changes when once they have thoroughly begun, will appear doubtful only to those who are not familiar with the wonderful restorative action of heat when used in its higher potency. The simple treatment of a hot air bath has actually cured the disease in the last stages and restored the patient when in the extreme horrors of rapidly approaching death. A prompt use of the hot-air bath in every case of a bite from a dog can not but do good, even if there is no question of the animal being rabid, and when the animal is mad it is a safe and effective remedy. Whoever is willing to investigate the merits of the hot-air bath will soon learn that it has a valid claim to the title of certain cure for hydrophobia.

In Brooklyn, N. Y., June, 1874, a case came under my supervision. A suspected dog was confined but broke away and in his career of biting other dogs also bit a Prospect Park laborer, one George Wagner. As the dog was to all appearances suffering from rabies he was immediately killed. The man's wounds were cauterized with nitrate of silver and on the third day thereafter he was brought to the Turkish bath. He was bitten through the palm of one hand and partly through two fingers. He complained of what seemed like neuralgic pains in the hand and arm, which were swollen, and also pains in the head, back and throat. He underwent the processes of the bath twice daily during one week and once daily for two weeks longer. The baths were administered with exceptional vigor in his case. Soon every unpleasent symptom vanished and for many years afterward he was well and hard at work.

Dr. M. Hermance, also of Brooklyn, N. Y., in 1877 saved a boy from the agonizing death of hydrophobia, by the use of the vapor bath, which was applied while the patient was tied down in bed. In about three-quarters of an hour after beginning operations a profuse perspiration was induced. When he began to sweat freely signs of returning consciousness appeared, which increased as the perspiration was continued, until in the space of about two and a half hours he was fully restored to consciousness, with a perfect relief from all his hydrophobic symptoms, the pain in the bitten hand and arm included, of which he had complained very much in the intervals of consciousness between his convulsions.

There is also most positive evidence regarding this form of treatment from Wilmington, Del. In the year 1869 three children of that place were bitten by a rabid dog. This dog also bit a heifer, a cow and two other dogs. The four animals soon afterward died of hydrophobia. The children were placed under the care of Dr. John Cameron of that city and by him were taken to Philadelphia and there subjected to the Turkish bath daily for two weeks. Although the wounds were very severe and the discharge from one of them was of the color of verdigris for several days, they healed without difficulty and no symptom of the malady has been manifested since.

In 1866 Rev. J. J. Curran of the Industrial School, Arlington, N. J., published a case which occurred under his care. One of the pupils named Klee was bitten on the hand by a dog on January 2. As the wound healed rapidly nothing more was thought of it, but on January 22 unmistakable symptoms of hydrophobia manifested themselves and increased for two days, when there appeared no possible hope for him. Then a small kerosene oil stove was lighted and placed on the floor; on top of this was placed a pan of boiling water and over all a chair, on which the boy was seated. Around the chair and boy and vapor-making machine were wrapped several folds of blankets, pinned about his neck and fitted so that the steam was retained about his body. He was also given a dose of sweating medicine and in five minutes the perspiration was streaming from every pore of his body and in ten minutes after he said: "The pains are all gone!" He was kept in this condition for about half an hour. The result was that the boy was cured and two months after he was as well as he ever had been and so continued.

The natives of Australia, and also of India, have a successful habit of at once taking violent exercise on beginning to feel ill. This is the principle of the Turkish bath treatment, that is, to relieve the system of its impurities by sweating.

Sir John Drummond Hay, who was many years English minister in Morocco, long before Pasteur's time, stated that the Arabs there cured hydrophobia by sweating. The patient was swathed in woolen covering till all but smothered, placed in a small tent (these tents are always of black camel's hair, much more impervious than canvas) and then the tent was closed so as to exclude air as much as possible and the patient left until profuse perspiration carried off the poison. This treatment was found invariably successful.

A St. Petersburg newspaper states: "We are informed by good physicians that if the patient, immediately after being bitten, will go into a bath and stay there seven days he will have excellent chances of recovery. The poison in the blood will be eliminated by a steady and vigorous perspiration. Some physicians have attained good results by washing the wound with warm vinegar and then applying hydrochloric or muriatic acid."

There is undoubtedly an hysteric or "mental hydrophobia," as it is sometimes called, induced by emotion, or through fear of the disease after having been bitten, which may lack many of the characteristic symptoms of the true affection and differs from it notably in its rare fatality. Such cases, serious enough to the patient for the time being, would be most easily and agreeably treated by the Turkish bath. Herein would come one of the great advantages to the community, which every city would enjoy by having, what would be most desirable to all, a public Turkish bath, that would be open to such cases as well as to any other. A few days' or, at most, a few weeks' treatment at such an establishment would put the patient out of reach of any danger from hydrophobia.

Some twelve years ago, four children, living at Newark, N. J., were bitten by a dog supposed to be rabid, and more than $1,000 was subscribed to send them to Paris that they might undergo Pasteur's treatment. If the people were only awake to their best good and would subscribe liberally for public Turkish baths they would have a better and surer remedy right at their own doors.

On March 28, 1897, Dr. Frank D. Gray, in Jersey City, was bitten by a St. Bernard dog that had shown some slight symptoms of rabies. Evidently not knowing any better way, Dr. Gray sailed for Paris to take the Pasteur treatment. Had he been aware of the eliminating power and healing virtues of the Turkish bath he could have remained at home and saved himself the mental torture as well as the expense incident thereto. It is very pleasant and desirable to go to Paris, but to "wash and be clean," is much more desirable.

The conclusion that is forced upon us by these facts is that in all cases of infectious disease our chief efforts should be directed to promoting the eliminating power of the patient. This is working in harmony with and assisting the vital resistance to disease. Whatever tends to invigorate the individual enables him the more quickly and surely to surmount the difficulty. Herein lies the most important element. When it is understood that in the proper application of heat, and in that we recognize all forms, whether it be the use of hot water, the Russian bath or the above all most desirable Turkish bath, and the fact remains that in heat we have an agent capable of counteracting the poison of rabies, then it may well be asked, What poisonous influence can resist its potency? Knowing this we should do all in our power to arouse the the public mind to the value of the public Turkish bath, which should be established by the people in every city in the land and so conducted that its blessings would ramify through every stratum of society. Thus would we hasten on the time when hydrophobia will cease to be a terror in the land and disease will not be the inheritance of every child, but rather that good health will be the pride and possession of every citizen.

A STUDY OF THE BLOOD IN TUBERCULOSIS.

OR THE RELATION OF LEUCOCYTES TO THE BODY AND THEIR AID IN INTERPRETING VITAL PHENOMENA.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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No branch of science appeals to us so deeply as the study of life; and it is the object of the following research to investigate some of the causes which tend to shorten life, and if possible to devise means of detecting these causes before they have produced permanent injury to the individual.

In presenting the subject I feel very keenly my inability to do it the justice which it deserves. But realizing that success is achieved in any line of research only after repeated efforts, and often after many failures, I am encouraged in the undertaking, believing that the closer we adhere to nature, the nearer we shall arrive at the truth. Also I regret that the limited time which is necessarily allowed for the presentation of the subject, prevents my giving proper credit to many authorities whose researches have rendered me valuable assistance in forming the following deductions.

A Preliminary study.—The animal organism has been the subject of study and discussion as long as any now before the scientific world. Previous to the time when the microscope came into use, vital phenomena were very imperfectly understood. But since that date much progress has been made.

A study of the living organism may be made with reference to its structure or morphology, or with reference to its functions. In former papers,[1] dealing with the blood in tuberculosis, I have considered almost exclusively the morphology of cells and their physiologic chemistry. In these departments I have pointed out numerous analogies existing between leucocytes and the larger organism. But the present paper will be more in the line of

A study in functions.—I shall attempt to point out, interpret and classify the phenomena of cell life, and to ascertain if analogies cease with the morphology, or if they are also extended to the functions.

1. In studying the functions of a living organism, I shall begin with the simplest form of animal life, the leucocyte. I shall first note cell phenomena, and then interpret and classify them, with reference to ascertaining how far they reveal the conduct or behavior of the cell, or the plan or purpose of its actions. With this in view, a small quantity of fresh blood or lymph is prepared in the form of a hanging drop.

Among the first phenomena noted are those pertaining to cell metabolism. Cells are observed to partake of food, grow, develop to maturity and finally die, or divide and form two new cells. Furthermore, if an artificial stimulus is applied, they contract and move away; or, in other words, they make an effort to avoid the irritant. If pathogenic germs are introduced into the hanging drop, the cells approach the invaders, and often an immediate warfare ensues. If a single cell is observed, and the enemy is too powerful for a single-handed combat, the cell moves away and in a short time a group of cells appears and joins in the attack. These interesting cell phenomena have been observed and reported by Metschnikoff, Leidy, M. Greenwood, Kanthack and many other excellent authorities.

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[1] Medical Record, Sept. 5, 1896; March 13, 1897.

Hence, a study of cell phenomena is evidence that cells experience sensations; that they respond to irritation; that they possess the power of adjusting their actions with reference to the conditions surrounding them. In other words, they feel the need of food or experience hunger; they make a struggle to obtain food, which is a struggle for existence; they recognize the presence of an enemy, and exert themselves in self-defense or self-preservation; they manifest the disposition to protect their companions against enemies; and by development they reveal the phenomena of differentiation of functions and structure, and show a tendency to put into execution the principles of co-operation and division of labor; and finally, they reveal the phenomena of reproduction.

If leucocytes exhibit such remarkable and independent behavior when extracted from the larger organism, and are independent of its central nervous system, it is evidence that the actions or conduct of each cell emanate from within the cell itself. Hence, each cell is endowed with a something which produces vital phenomena.

2. The larger animal organism is an aggregation of cells, or smaller living organisms. These cells become classified into groups by the process of differentiation, and each group is especially employed in performing some particular function. Now, since it is observed that the cell is endowed with that which produces vital phenomena, it seems rational to infer that the vital phenomena of the larger organism is the aggregate of the phenomena produced by these smaller organisms or cells.

3. Finally, the social body, or the body politic, possesses the characteristics of a complex organism. Men divide themselves into groups and classes, each from repeated effort acquiring skill sufficient to perform some particular function; each, in some respect, differing from the others, and yet all co-operating for the good of the whole.

Classification of organisms.—Thus, we find three distinct realms of life, each being a part of a larger realm. The cell is a living organism on a low plane of development; it is a vital unit and occupies the first biologic magnitude. Man is a complex organism on a higher plane of development; he is a multiple of units and occupies the second magnitude. Humanity is a more complex organism, a compound multiple of units, and occupies the third magnitude. On the other hand, we find in the cell a localized center in the nucleus; in the individual, a localized center in the brain; while in the social organism we find a centralization of functions in the seat of government. Furthermore, there is an environment or realm for each of these organisms: for the cell, for man and for humanity.

It is not our purpose in this research to enter into a discussion of psychic problems. But a study of life in its various realms is evidence that there is within every living organism a something which enables it to adjust itself to its environment. And in bringing about this adjustment, vital phenomena result from acts emanating from within the organism itself. Hence, the laws by which these acts are governed are the laws of the organism. The laws by which cells and their phenomena are governed are the laws of biology. The laws by which individuals and their conduct are governed are the laws of sociology; but from the many analogies existing between these smaller and larger organisms, it would seem that the laws of sociology are simply the laws of biology extended to a wider realm.

System of interpretation.—In former papers I have outlined, in part, the fundamental principles of a system of interpreting vital phenomena. This system is based upon what I believe to be rational hypotheses. These may be formulated as follows:

1. That there is a system of life realms, each realm being a part of a larger realm.
2. That there is a continuity and universality of the laws of life.
3. That the laws in force in the various life realms run in parallels and are analogous.
4. That the phenomena in each realm have analogues in each of the other realms.
5. That a study of the laws and phenomena in one realm will lead to the discovery and interpretation of their analogues when we enter other realms.

Therefore, resting upon these hypotheses, a study of the larger and more complex body will furnish a key for interpreting the laws and phenomena of leucocytes. And, inversely, cell phenomena will give us a key to the larger body.

Factors in organic development.—Now, since every living organism, consciously or unconsciously, tends to adjust itself to its environment, in bringing about this adjustment, there is a change or differentiation in its functions; and, as a result of differentiation in its function, there follows a corresponding differentiation in its structure or morphology. Hence, during the course of the natural development of an organism, as it readjusts itself to a constantly changing environment, there follows both a physiologic and morphologic differentiation. This is true of a cell, an individual or a nation. Therefore, there are three important factors to be considered in the study of organic development: 1, the condition surrounding the organism, or its environment; 2, its functions; 3, its structure or morphology.

The law of differentiation.—Further, when such interesting cell phenomena are observed in a hanging drop, after the cells are removed and have no further connection with the larger body, we may ask what may be expected of such cells if they become differentiated into tissue cells and become a part of the organized body? The problem is difficult of solution. But if we may utilize the phenomena observed in one realm of life to interpret those observed in other realms, we may infer from observing the result of evolutionary development in larger organisms, that when a cell undergoes differentiation its former functions are not lost but, on the contrary, strengthened, developed and differentiated.

In this connection, we may ask what becomes of the infant when it attains adult life? After attaining a certain degree of functional development it takes a place in the social organism and, after acquiring sufficient skill, performs a part of the complicated labor of humanity. If it is a strong organism its functions will be equally strong, or if a weak organism the functions will be equally weak, and the social body will be strengthened or weakened accordingly.

Hence, it would seem that in a similar manner, when a wandering cell or leucocyte becomes a tissue cell, that it will continue to be a center for the exercise of its inherent functions, in a similar manner to that before becoming differentiated; but that it will take upon itself more complicated duties. If it is a strong cell its functions will be equally strong, or if a weak cell they will be equally weak, and the larger organism will be affected accordingly.

Hence, acting upon the assumption that there are definite relations existing between morphology and functions, and between functions and environment, and that these relations are governed by laws, I began the study of tuberculous blood, believing that I might find morphologic appearances in the blood elements characteristic of this disease.

Etiology.—The etiology of tuberculosis has been involved in uncertainty. This much, however, is now generally accepted: that it is produced by the tubercle bacillus. Some authorities claim that bacilli are the sole factors in bringing about the disease. From a somewhat extensive study of the blood in this disease, I feel justified in stating that if we stop at this point only a part of the truth is expressed. These studies have convinced me that it is not only necessary for bacilli to enter the animal body, but that they must find the necessary conditions for propagation before the diseased condition known as tuberculosis becomes established. In this connection it is a well recognized fact that tuberculosis is associated not with strong tissues, but with tissues that are more or less weakened. Therefore, one object of this paper is to show, from a study of the blood, that there must be a previous condition of diminished resisting power of the tissues which renders them a fertile culture medium for the pathogenic germs, before the germs begin to develop; or, in other words, that tuberculosis is preceded by a pretuberculous stage, which in reality is as much a stage of the disease as the ovum represents a stage in the life history of the future organism. In the first instance, if the body tissues furnish a fertile culture medium for the bacteria, as soon as they enter the tissues germ genesis begins and a germ colonization becomes established. In the second instance, if the ovum furnishes a fertile culture medium for the sperm, as soon as the sperm enters it cell genesis begins and a cell colonization becomes established. The first colonization, if not checked in its progress, ultimately develops into an active tuberculous condition; the second colonization, if not checked in its progress, ultimately develops into a more or less mature organism.

Therefore, in searching for the source of the disease, we must antedate the beginning of active germ development in the weakened tissues by passing back to the time when the tissues begin to lose their resisting power and thereby become a fertile soil for the germs. The question which appeals to us most forcibly at this juncture is: Can the condition of feeble resistance of the tissues be detected before the bacilli form a colony and the tissues begin to disintegrate?

Factors in culture development.—A further argument on this line is one which every bacteriologist knows to be true, *i. e.*, that before he can grow a culture, three things are absolutely necessary: 1, a culture medium more or less congenial to the growth of bacteria; 2, living germs; 3, conditions of temperature, moisture, light and atmospheric pressure surrounding the culture medium, favorable to growth. An artificial culture medium may be as perfect as can be prepared, yet if it be kept at a boiling or freezing point the culture will not develop. Therefore, with a congenial culture medium and living bacteria, unless the surrounding conditions are favorable, there will be no culture formation. Many competent observers have reported experiments which show that bacilli may remain inactive in an uncongenial culture medium and yet retain life; but when the conditions become favorable to development they immediately begin to multiply. Whether we consider artificially prepared culture media, or the tissues and fluids of the animal organism, these facts are equally true.

This theory, therefore, furnishes a rational explanation for the unequal susceptibility of various persons to tuberculosis. And this explanation rests upon the hypothesis that tubercle bacilli gain admittance to the tissues of the animal body more readily, and propagate more vigorously, when the tissues are in a definite or specific pathologic state.

The relation of leucocytes to the body.—This brings us to the most important part of our subject, viz.: The relation which leucocytes bear to the larger tissues of the body, and their aid in revealing the condition of these tissues which renders them a congenial culture medium for bacilli.

It matters little in this study which theory of cell genesis is accepted, viz.: That leucocytes are tissue formers, or that tissue cells are leucocyte formers. In either case cell genesis results from cell division, and by the process of development and differentiation there is a transformation from one state through a series of changes into another state. Hence, it matters little in which direction the cell differentiation takes place; whether it takes place from leucocytes toward tissue cell; from tissue cells toward leucocytes, or whether it takes place in both directions. In either case a reciprocal relation exists between the proximate and remote state of the cell as well as between the parent cell and its offspring. Therefore, it is the intention of this study to show that it is possible, from a study of the leucocytes, to make a diagnosis of approaching active tuberculosis before the larger tissues of the body show evidence of breaking down.

The basis for diagnosis.—If we accept the theory that leucocytes are tissue formers, then it is evident that if they are deteriorating before they become differentiated into tissue cells, that the tissues themselves will eventually possess the same characteristics; or on the other hand, if we accept the theory that tissue cells are leucocyte formers, it is also evident that if the tissue cells are weak and manifest a tendency to disintegrate, that the leucocytes will possess the same characteristics. Consequently, in either case, in estimating the resisting power of the larger tissues we must ultimately depend upon the leucocytes. Therefore, it is upon the following hypothesis that a diagnosis is formed: That disintegrating leucocytes form, or are formed by, weak tissues and weak tissues furnish a congenial soil for the development of bacilli.

Blood changes.—A careful study of the blood reveals comparatively uniform sets of phenomena for health and for each variation in the body tissues. Hence, the relation between the blood elements and the body tissues becomes an important factor when we seek to discover the beginning of pathologic processes. The blood changes which take place during the progress of diseases are exceedingly numerous. The ability to correctly interpret all cell phenomena, many of which are now looked upon without conveying any significance, would no doubt be the means of explaining what are considered obscure conditions.

It will be generally conceded that immunity, idiosyncrasy and predisposition are terms used for processes or conditions of the living organism concerning which we possess very little knowledge. And until we possess a better knowledge of cell phenomena many of the phenomena of the larger organism will no doubt remain in obscurity.

Blood changes in tuberculosis.—On comparing the phenomena of the blood elements in various diseases with those of normal blood many differences become apparent. Hence, a definite combination of these differences is frequently recognized as being significant of a definite pathologic condition. In study of the blood in tuberculosis I have recognized numerous cell phenomena which have invariably existed, to a greater or less degree, according to the progress which the diseases has made. I have interpreted these phenomena as signifying:

A. Irregular cell genesis and, B., irregular cell metabolism. These differences may be recognized, *a*, from variations in the morphologic structure of the cells, and *b*, from variations in the staining properties of the cell tissues.

A. Irregular cell genesis may be subdivided into: *a*, Defective cell production, and *b*, excessive cell production.

B. Irregular cell metabolism may be sudivided into: *a*, Irregular cell differentiation, and *b*, excessive cell disintegration.

Irregular cell differentiation may be subdivided into: *a*, Defective cell development; *b*, perverted cell development, and *c*, excessive cell development.

A few of the forms and characteristics of irregular cell differentiation are the following: 1, Giant cells; 2, dwarf cells; 3, cells with poorly differentiated nuclei; 4, cell bodies having poverty in granules. These and many others are probably the phenomena of cells of low vitality. In this connection I have particularly observed that cells of low vitality usually possess feeble differentiating power, and this is shown by their nuclei.

Cell disintegration.—It is but one step from malassimilation to disintegration. This is true of the larger organism and equally true of the cell. Cells of low vitality are probably first to undergo disintegration and disintegration usually begins during the early life of the cell and may be partial or complete. In this connection it is well known that the risks to life in larger organisms are much greater in infancy and early childhood. The same is evidently true in cell life. Hence, when the products of cell disintegration are abundant it indicates a feeble organization of cell tissues, and when this exists we may expect weak body tissues and hence weak organism.

Cell genesis.—It is a question as to whether there is a disease due to defective cell genesis, since reproduction is one of the strongest functions of an organism. On the other hand, excessive cell genesis is associated with many pathologic conditions.

Leucocytosis.—Leucocytosis is generally believed to result from excessive cell production. But it must be remembered that there are other factors by which leucocytosis is governed. In discussing this subject we must consider the manner in which cells are disposed of as well as their genesis. If we accept the theory that leucocytes are tissue formers, then, when a leucocyte becomes differentiated into a tissue cell, either in the process of tissue growth or in the process of tissue repair, the cell is evidently no longer in the circulation. Therefore, if this occurs a leucocyte is disposed of. On the other hand, a leucocyte may from feeble structure undergo disintegration before it become transformed into a tissue cell. In this case it is also disposed of. Hence, leucocytes may disappear from the circulation by being differentiated into tissue cells and taking upon themselves the functions of organized cells or by passing into dissolution before this is accomplished.

Furthermore, if cell genesis should be normal and from some cause the combined number of leucocytes undergoing differentiation into tissue cells and those undergoing disintegration while yet in the circulation are not equal to the number generated, an increase in the number of leucocytes existing in the circulation will evidently follow, and this is known as leucocytosis. We therefore see that theoretically it is possible to have leucocytosis without excessive cell production.

On the other hand, if the number of cells that become differentiated into tissue cells, together with those that undergo dissolution while in the circulation, are equal to the number generated, even if the number generated be in excess of normal cell genesis, yet there will be no increase in the number of leucocytes remaining in the circulation and consequently we will not have leucocytosis. We therefore see that theoretically it is impossible to have excessive cell production without having leucocytosis. Hence, the degree of leucocytosis is not so important as the other cell phenomena which accompany it, which assist in estimating the degree of cell disintegration and the differentiating power of the cells. But, when leucocytosis exists in tuberculosis we may look for one of the advanced forms of the disease, namely: *a*, Chronic suppuration; *b*, formation of lung cavity; *c*, inflammatory exudation.

Diagnosis by exclusion.—While it is true that there are a number of cell phenomena, such as poorly differentiated nuclei, leucocytosis, a marked change in the differential percentages, and many other conditions, which are present to a greater or less degree in a variety of diseased conditions, yet there are usually accompanying symptoms, or the absence of certain symptoms, which will enable one familiar with blood appearances in health and disease to make a diagnosis by the method of exclusion. Hence cell phenomena may be considered both as positive and negative evidence in forming a diagnosis, and often the negative evidence is as valuable as the positive.

Stages of tuberculosis.—In order to facilitate the study of tuberculosis I have made the following classification of the stages, and given the blood characteristics for each:

1. *The pretuberculous stage*, approaching closely to incipiency. No leucocytosis; a slight decrease in the percentage of young cells; very little or no rela-

tive increase in the percentage of phagocytes; cells of feeble differentiating power; more or less abundant debris from cell disintegration.

2. *Early incipiency*, or the stage in which the tuberculous process has not yet become general, and before there is active disintegration of the larger tissues. No, or very little, leucocytosis; moderate decrease in percentage of young cells, which decreases as the disease advances; moderate increase in percentage of phagocytes, which increases as the disease advances; accompanied by well marked evidence of cell disintegration and impaired cell differentiation.

3. *The advanced stage*, or the stage in which the disease has advanced to destructive tissue changes, *e. g.*, when there is formation of lung cavity and extensive distribution of the tuberculous infection. Slight leucocytosis; marked relative decrease in the percentage of young cells; marked relative increase in the percentage of phagocytes; abundant evidences of cell disintegration; abundant debris from cells that are going, or have already gone, into dissolution, and imperfect cell differentiation.

The fact that in tuberculosis there is more or less decrease in the percentage of young cells in the blood does not necessarily argue that there is deficient cell genesis. The explanation probably lies in the fact that cell disintegration is abundant in these cases, and that cell mortality is greatest among young cells.

At this point I wish to give a brief interpretation of the

Significance of phagocytosis.—When bacilli find the larger tissues of the body in a suitable condition for colonization, they at once begin to multiply. The first evidence, or at least one of the first evidences gained from a study of the blood, indicating that the bacilli have commenced active colonization, is a relative increase in the percentage of phagocytes, which I shall express by the term *phagocytosis.*

In using this term I do not wish to convey the meaning which is often attached to it, which relates to the function of phagocytes, but, on the other hand, I wish to express the condition of a relative increase of the number of phagocytes as compared with the other varieties of the leucocytes; in a similar manner that leucocytosis is used to signify a relative increase of the number of leucocytes as compared with the number of red cells.

One of the first principles of every organism is self-protection. Therefore, whenever there is an active colonization of bacilli in the body, we invariably find an increase in the relative percentage of phagocytes. The natural inference is that the phagocytes are interested in the defense of the organism. If bacilli are toxin producers, their toxins begin to accumulate in the body when they begin to multiply; and, on the other hand, when the toxins begin to accumulate in the body, there is invariably a marked relative increase in the percentage of phagocytes, and this consequently justifies the theory that phagocytes are antitoxin producers. Hence, when a marked phagocytosis exists, it would seem to indicate that nature was making a greater call for the antitoxins. Therefore, when there is an increase in the bacilli and their toxins in the body, the organism in self-defense calls for increase in the antitoxins; and when this occurs we invariably find a phagocytosis and often a leucocytosis.

In further proof of this interpretation, I have observed

The effects of treatment.—I have invariably foun that an improvement under any treatment in tube culosis is accompanied by:

1. A relative increase in the percentage of youn cells in the blood, which usually has decreased i proportion to the severity of the case.

2. A decrease in the phagocytosis, which exist almost always in proportion to the severity of the cas

We observe, therefore, that under a successf treatment for tuberculosis one of the effects is a d crease in the phagocytosis. And if phagocytes ar recognized as antitoxin producers, we have no alte nation except to infer that there is a decrease in th demand for antitoxins, and this further signifies th the supply of toxins has been diminished. Furthe more, if toxins are the product of the bacilli, thi directly implies that the germs are decreasing an hence the patient is improving.

Within the limits of a single paper one can do li tle more than generalize on many of the importa points which aid in forming a diagnosis and differe tiating the pathologic conditions revealed by mea of the blood. The foregoing interpretations hav been made and verified by actual experience in th study of many hundred cases of tuberculosis, bot in the progress of the disease and during convale cence, under various methods of treatment.

But notwithstanding this they are not intended dogmatic statements. They, however, express m conviction that if blood phenomena are proper studied and correctly interpreted, they will enable to approximate very closely the true state of th living organism, at a time when a diagnosis is mo valuable.

Staining methods.—One of the most importa steps in the study of pathologic blood, is the necessit of being familiar with the staining methods th bring out cell phenomena which are significant i disease. I have found it exceedingly difficult to com bine the ingredients of staining solutions in such manner as to bring out perfectly the phenomen belonging to all parts of the blood, in the same spec men. I therefore have found by experimentatio that it is of great assistance to stain two or more film of the same blood according to the methods whic bring out various sets of cell phenomena to the be advantage. By studying these in connection wit each other I ascertained that each furnished inform tion not found in the others. While making the staining experiments, I accidentally discovered th many varieties of staining could be produced upo the same blood film. By this method various po tions of the film reveal a distinct set of cell phenom ena, and by it much labor is saved.

The method which I have adopted is as follows:

TECHNIQUE OF QUADRANT STAINING.

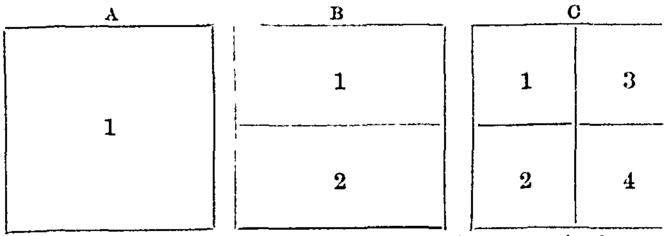

Fig. A.—1, unstained film. Fig. B.—1, unstained; 2, stained in ac stain Fig. C.—1, unstained; 2, stained in acid stain; 3, stained in ba stain; 4, stained in acid stain and counterstained in basic stain.

After properly fixing the film, the cover-glass grasped by the upper margin with a pair of force and a portion of the film lowered into an acid staining solution. It is allowed to remain in this solution a sufficient length of time to properly stain the oxyphile tissues. It is then removed from the staining solution, washed in a normal salt solution and dried between the folds of blotting paper. It is then quickly passed through a flame, with film surface uppermost, care being used to avoid overheating (Fig. B).

The cover-glass is next grasped by its left-hand margin with a pair of forceps and a portion of the film lowered into a basic staining solution. It is allowed to remain in this solution a sufficient length of time to produce proper counterstaining. It is then removed from the solution, washed and dried (Fig. C).

It is now observed that each quadrant represents a distinct set of cell phenomena and that each can be studied separately without readjusting the microscope.

First quadrant: Shows the blood in an unstained condition.

Second quadrant: Stained only with an acid stain, hence shows all oxyphile tissues.

Third quadrant: Stained only with a basic stain, hence shows all basophile tissues.

Fourth quadrant: Stained with an acid stain and counterstained with a basic stain, hence shows oxyphile, basophile and amphiphile tissues.

The claim has been made that the limits of hematology have been reached; but the more one studies the profoundly interesting phenomena observed in the blood, the more he is convinced that hematology has but commenced to reveal the truths that are possible of discovery. Why one familiar with blood work can refuse to believe the truths that are contained within the blood elements is difficult to understand. Fortunately a refusal to recognize such phenomena will not invalidate the truths which they portray.

It is quite probable that unsatisfactory blood work and the apparent lack of uniformity in the same way result from the following: 1, an imperfect or irregular technique; 2, unfamiliarity with cell tissues, and especially the phenomena of cell disintegration; and 3, absence of a systematic method of interpreting, classifying and recording phenomena.

In conclusion. When we realize that the bacillus is not the sole factor in the cause of tuberculosis; when we realize that there must be a condition of weakened resistance on the part of the tissues before the bacilli can find a congenial culture medium in which to develop, we shall have taken a long step in the right direction in the study of the disease. Also, when we realize the relation existing between leucocytes and their antitoxins on the one hand, and pathogenic organisms and their toxins on the other, we shall have advanced far toward the solution of the problem of immunity and shall have done much toward establishing the *modus operandi* of pathologic processes.

Therefore, instead of hunting for the germ of the disease, let us also search for the condition of the tissues which is known to favor its development. Instead of attempting to destroy the germ, let us also attempt to improve the condition of the body tissues and thereby render them less congenial to the germs. And if we wish to successfully accomplish this we must detect the pathologic process early in its progress. Hence, an early diagnosis made through a study of the blood element is our hope of detecting the condition of the larger tissues before they have commenced t undergo active disintegration. And if detected a this stage, proper steps may often be taken to preven the further advance of the disease. But when th condition of the tissues is discovered which fur nishes a fertile soil for the growth of bacilli, the mos persistent treatment should be instituted, accompa nied by an early change to a climate known to be les favorable to germ development.

205 Jackson Block.

THE ADVANTAGES OF CASTRATION IN THE DEFECTIVE.

Presented to the Section on State Medicine, at the Forty eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY EVERETT FLOOD, M.D.

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The conclusions presented are drawn from observ tion of twenty-six cases. None of the operations ha been reported unless more than one year has elapse and nearly all are more than 2 years old while good number are from 3 to 8 years old.

The ages of the boys vary, but are nearly all betwee 7 and 15 years. It is very easy for the critic to clai narrowness of view in any one advocating such operation as this and to offer the usual objections tradition, but it is not so easy for him to offer us an measure giving equal relief. This is not presented a panacea but simply for what it is worth and it is n a premature chance thought. The first castratio were performed with the idea of preventing masturb tion in certain cases where the habit was most co stant and the boy had no sense of shame, besides bein a confirmed epileptic and of course somewhat feebl minded.

The written consent of the parents or guardian h been obtained in each case and the operation has bee in many instances performed by a surgeon of the sta but in others by the resident officers.

It has been found in every case that the masturb tion has ceased, the boy has become fairer in con plexion, and in a few instances has taken on addition flesh. He has ceased to have foul thoughts and give expression to lasciviousness, and no longer e tices other boys to masturbate in his company as w often done before the emasculation. They have become more manageable, less inclined to quarre more capable of reasoning.

The number of spasms has diminished in every i stance, though in some cases but little, and the for and frequency of the attacks have been lessened. T mental effect on the boy is always good. If he co siders it all he looks upon himself as a specially fa ored being and a grade higher in the scale than t ordinary boy. No melancholia has so far followed t operation. The boys have become tidier in their ma ner of dress and in personal cleanliness. More con dence is reposed in them by their associates, truthfu ness has increased, parents feel safer about them. T possibility of their transmitting defects to offspring of course removed.

In some instances no particular benefit has be noticed, except the cessation of the habit, for a lon time, one or two or more years; then the boy has begu to gain and has shown steady improvement in inte lect as well as in a much reduced number of spasm Many of these cases have had all treatment stopp after the operation, and naturally some months have elapsed before they were in the usual condition of physical health. This is especially the case where the bromid habit has been broken up in conjunction with the castration, or a short time subsequent to it. The question as to whether resection of the cord would be followed by advantages equal to those coming after the removal of the glands has not been investigated.

The effect on girls has been noted in only two cases. These were subjected to operation before coming here. The results in these instances have seemed to fully justify the procedure.

ALCOVE BEDS FOR THE EPILEPTIC.

Presented to the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY EVERETT FLOOD, M.D.

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In presenting this subject I labor under the disadvantage of advocating a theory rather than a well demonstrated fact. Caring for the epileptic in such beds as I am about to describe has, so far as I am able to learn, never been tried. An approach has been made to it in a few places, especially in the asylum at Turin, where very narrow rooms are used, but the essential features of this plan are lacking.

The method is not advanced as a plan to be followed in all cases, but as apparently well adapted to certain conditions. The idea is to make an alcove, with walls of any firm material, either plank or brick, or brick with plank or board cover, just wide enough to easily admit the fully made-up bed. The bed should run on easy rollers and possibly project a few inches out of its alcove. There may be one alcove or many, side by side. This kind of a dormitory may be constructed on the ground floor or any floor above, provided the foundations are suitably strengthened, and no very great weight is added by this kind of construction. Each alcove is to have a suitable fresh-air ingress and a proper outlet for the warmed air. There may be a door to the stall or not, according to requirements. If a door is desired, then the bed can not project beyond the sides of the alcove, but may be flush with them.

There may be a single row of alcoves, or a double row in the middle of the room, or a single row at one side, or a row on each side. The better way would seem to be to have five to ten alcoves in each row. A double row head-to-head, running through the middle of the room so that the watchman can easily walk around the whole is the plan mainly considered.

The patient gets into bed over the foot, or the bedstead may be withdrawn, the patient is tucked in by the attendant and the bed then pushed back into its alcove. Experiments have been tried with different materials, and it is shown that sounds from one alcove to another can be so deadened that no serious discomfort would be occasioned by such noises as are ordinarily heard from this class of persons, while odors from one to another are absolutely prevented and each patient is breathing pure air. If a bed becomes soiled and is withdrawn from the alcove then odors might be perceived in the adjoining places, but the bed can be quickly stripped, the bedding thrown into the shute, which is conveniently placed, and ventilated, while the patient is being attended to in the bath. To make up these beds they must be withdrawn from the alcove and the clothing adjusted. The floor and walls of each place can then be properly cleansed and the bed pushed back.

Any one of us would, I am sure, prefer a dormitory of this sort to one where there is common air space for all.

With epileptic children the clothing is kept on the bed much better than in any other way and, in fact, it would be really difficult for the patient to get himself uncovered enough to take cold.

Opposite each alcove is a ventilated space for the patient to hang his day garments. The windows in this room are above such closed spaces.

The night nurse goes around quietly looking into each alcove in the row, or in the double rows, and need not disturb any patient either with her light or by any noise she might need to make.

The cost of such construction as this would manifestly be greater than for the ordinary dormitory, for it is natural to suppose that a room especially adapted to the use of this class of patients will cost more than one designed only for the ordinary insane or demented patient. The result to be reached is a more difficult one.

Details for the construction of the remaining parts of the building have been worked out, but need not essentially differ from other asylum buildings.

RELATION OF RAILWAY COMPANIES TO STATE BOARDS OF HEALTH.

Presented to the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY G. P. CONN, A.M., M.D.

CHIEF SURGEON BOSTON AND MAINE RAILWAY, CONCORD, N. H.

In the last twenty years it has become a well-settled fact that State boards of health are primarily intended to take cognizance of the interests of health and life among the people of the State; and while it may be true that the work of a State board is to a considerable extent educational in its character, yet its scope is practically unlimited. Its observations and duties should not only pertain to the physical welfare of every citizen of a State, but business interests should receive due attention and the commercial relation of State, federal and international prosperity should never be ignored nor forgotten. Therefore, a bureau of health becomes an integral part of the executive department of a State, around which every citizen has the "inalienable right to life, liberty and the pursuit of happiness."

Such conditions represent the brightest and most potent exponents of a higher civilization, in which robust health for all classes of people is made possible. State pride is quite universal and progressive prosperity becomes a motto for every person as well as every vocation.

As an introduction to the subject I propose to briefly discuss and bring to the notice of this National Association, the above will serve to outline and emphasize the fact that hygiene, in effecting the moral and physical conditions of the inhabitants of every community, State or nation, must directly or indirectly have an influence in all business pursuits, including State, federal and international transportation.

It is a topic of much importance and, in a brief paper, can not be fully considered and therefore I can only hope to present to your notice a few of the more salient points that are ever being presented to the railroad surgeon.

Problems involving hygienic principles in railway transportation will always be promptly referred to the surgical department of the road, for the reason that only s[illegible] can deal with such questions in an intelligent [illegible] impartial manner. The surgical department of railway labor is the only section that is fitted by education and practical work to consider questions involving State, interstate and international sanitation, and in order to decide important questions regarding the life and health of the public and employes, the railway surgeon must keep in close touch with boards of health and other hygienic organizations of the country.

The public have become critical on all matters pertaining to life and health and now demand far more attention to sanitation than would have found favor a decade since and would not have been deemed necessary or expedient until within a few years.

Only a few years ago the National Association of Baggage Agents, recognizing that the public demanded more stringent rules and regulations in the transportation of dead bodies, held a consultation with experts in sanitation and formulated the following rules, which have been adopted by railroads and State boards of health throughout Pan-America:

> *Rule 1.* The transportation of bodies of persons dead of smallpox, Asiatic cholera, typhus fever or yellow fever is absolutely forbidden.
>
> *Rule 2.* The bodies of those who have died of diphtheria, anthrax, scarlet fever, puerperal fever, typhoid fever, erysipelas, measles and other contagious, infectious or communicable diseases must be wrapped in a sheet thoroughly saturated with a solution of bichlorid of mercury in the proportion of one ounce of the bichlorid to one gallon of water and incased in an air tight zinc, tin, copper or lead-lined coffin or in an air tight iron casket, hermetically sealed and all inclosed in a strong tight wooden box, or the body must be prepared for shipment by being wrapped in a sheet and disinfected by a solution of bichlorid of mercury as above and placed in a strong casket or coffin and said casket or coffin incased in a hermetically sealed (soldered) zinc, copper or tin case and all enclosed in a strong outside wooden box of material not less than one and one half inches thick.
>
> *Rule 3.* In cases of a contagious, infectious or communicable disease the body must not be accompanied by any articles which have been exposed to the infection of the disease. In addition to a permit from the board of health or proper health authorities, station agents will require an affidavit from the shipping undertaker stating how the body has been prepared and the kind of coffin or casket used, which must be in conformity with Rule 2.
>
> *Rule 4.* The bodies of persons dead of diseases that are not contagious, infectious or communicable may be received for transportation to local points in the same State when incased in a strong coffin or metallic case and inclosed in a strong wooden box, securely fastened so that it may be safely handled. But when it is proposed to transport them out of the State to an interstate point (unless the time required for transportation from the initial point to destination does not exceed eighteen hours) they must be incased in air-tight zinc, tin, copper or lead lined coffin or an air-tight iron casket or a strong coffin or casket encased in a hermetically sealed (soldered) zinc or tin case and all enclosed in a strong outside wooden box of material not less than one inch thick. In all cases the box must be provided with four iron chest handles.
>
> *Rule 5.* Every dead body must be accompanied by a person in charge who must be provided with a ticket marked "corpse," and a transit permit from the board of health or proper health authority, giving permission for the removal and showing name of deceased, age, place of death, cause of death (and if a contagious or infectious nature, the point to which it is to be shipped, medical attendant and name of undertaker.
>
> *Rule 6.* The transit permit must be made with a stub, to be retained by the person issuing it, the original permit must accompany the body to destination; and two coupons, the first coupon to be detached by the station agent at initial point and sent to the general baggage agent, the second coupon by the last train baggageman. The stub, permit and coupons must be numbered, so the one will refer to the other, and on permit will be a space for undertaker's affidavit, to be used in cases of infectious or contagious diseases as required by Rules 2 and 3.
>
> *Rule 7.* The box containing corpse must be plainly marked with paster, showing name of deceased, place of death, cause of death and point to which it is to be shipped, number of transit permit issued in connection and name of person in charge of the remains. There must also be a blank space at the bottom of the paster for station agent at the initial point to fill in the form and number of passage ticket, where from, where to and route to destination of such ticket.
>
> *Rule 8.* It is intended that no dead body shall be removed which may be the means of spreading disease; therefore, all disinterred bodies, dead of any disease or cause, will be treated as infectious and dangerous to public health and will not be accepted for transportation unless said removal has been approved by the State board of health and the consent of the health authority of the locality to which the corpse is consigned has first been obtained and the disinterred remains enclosed in a hermetically sealed (soldered) zinc, tin or copper lined coffin or box incased in hermetically sealed (soldered) zinc, tin or copper cases.

These rules were made for the protection of the public against dangerous communicable diseases. While self-interest, to a great degree, on the part of the corporations in the protection of their patrons and employes against pestilential danger probably prompted this action, none of us can doubt but that our whole country has been benefited.

I have quoted these rules as but few of the roads in the East have been careful to post these regulations, preferring to rely on the health authorities to enforce the law. More widely circulated knowledge is necessary and I take this method of bringing it to the observation of the public and the profession.

Another sanitary consideration that is always of great interest to the managers of our local and through lines of transportation, is the management of serious outbreaks of infectious and contagious disease. The advent of cholera or yellow fever, at home or abroad, disturbs commercial centers all over the world. The declaration of federal or State health authorities that smallpox is prevailing in Canada or California as an epidemic at once creates excitement and very often leads to unwarrantable interference with transportation that might be avoided if the surgical department of through lines were in touch with State and national health officers. It is true a great and decided improvement in these matters has taken place since the epidemic of smallpox in Canada in 1885. At that time the Provincial Board of Health of Ontario was the only health authority in Canada worthy of consideration; while two of the New England border States were without health authorities and entirely helpless to meet the exigencies of the occasion. Michigan and Minnesota on the west, through their most efficient boards of health, asked our federal authorities to interpose the protecting power of international quarantine.

Everyone understands that international problems require considerable time for solution and that diplomatic correspondence is oftentimes so dilatory as to be very exasperating, while every sanitarian understands that epidemics of contagious disease have no respect for geographic or municipal limitations, nor can be dispelled or discomfited by proclamation or diplomacy. The results of the appeal to the federal government in the West being far from reassuring it was determined in New Hampshire to appeal to the railroads to take the initiative and lead in public sentiment rather than follow in its wake. This seemed the more necessary by reason of municipal reports from Montreal that there was no epidemic prevailing and the fact that the Province of Quebec was without a health board that could furnish reliable information.

The epidemic was well developed in Montreal early in July, and in August the health board in New Hampshire, realizing that nothing was being done to restrict the spread of the disease, determined to warn the management of the great through lines of transportation traversing New England and the Canadas of the danger they were in of having a panic that would unnecessarily disturb transportation and might lead to a complete embargo by reason of a shotgun quarantine.

This notice was most kindly received and the managers of international transportation interests asked for information and instructions of what was necessary to protect and maintain their traffic engagements. The result of this information was a conference of railway managers and surgeons with the boards of health of New Hampshire and the Province of Ontario. This took place in the city of Montreal. A delegation from this conference met by appointment a committee of the Montreal city government. This committee, while admitting there were some cases of smallpox in the city, strenuously asserted that it was far from being an epidemic. This statement was utterly and irrefutably answered by Dr. Coverton of the Ontario Board of Health, who brought to their notice duly attested certificates of deaths by smallpox, which showed that 127 had died during the previous week and 39 the day previous. The daily records of deaths were sufficient to show the increase of the epidemic week by week and it is to the credit of the mayor and city government of Montreal that they willingly adopted a course of rigid investigation that brought into existence not only an efficient health board for the Province of Quebec, but also a Dominion board of health that is receiving commendation and support from sanitarians all over the world.

In bringing about these results and municipal reforms a great deal of animosity was engendered among the ignorant and superstitious. The anti-vaccination element in society took it upon themselves to stir up dissentions, riots prevailed and large numbers of the inhabitants boldly proclaimed that they would not submit to such rules and regulations as were deemed necessary to suppress the epidemic. The government was most ably and earnestly supported by the railroads, as a single instance will verify.

The inhabitants of a small suburban station in which was posted the rules and regulations considered necessary to protect its people and the inhabitants of other places, took occasion to send word to the division superintendent of the road running through the town that they would not submit to the rules and tore down the copies that had been posted. No further rules were sent them, but the next day every train passed that station at the rate of thirty miles an hour. The station master closed up the depot and it remained closed until the authorities of that town appointed a local health board and instructed them to support and carry out the rules and regulations that had been adopted by the managers of all railways in Canada.

A single instance of this kind was amply sufficient to bring about a reform and the people of that section were very soon educated in the elementary principles of hygiene. It is but a simple act of justice to these people to report that in a very short period they were enthusiastic supporters of every rule and regulation that gave assurance of protecting themselves and neighbors from the direful effects of a loathsome epidemic.

In less than sixty days the epidemic was stamped out and the rules and regulations abandoned. It is but fair to the management of those roads to state that with the exception of the importation of rags and paper stock there was no interruption of the running of either passenger or freight trains, neither was there any development of the disease in New England. Sanitary inspectors examined all through passengers while in transit, many were vaccinated, some were quarantined as suspicious cases and a great deal of baggage was thoroughly disinfected at division and international points.

In a paper of this kind designed for an association of medical men it is unnecessary to multiply instances of this work, neither am I disposed to flatter myself that I am imparting any new information to the members. Still it is probably quite true that a great many of the managers of our railroads have never been called on to provide for the stamping out of an epidemic of this nature, therefore if this shall be the means of bringing a work of this kind to their notice it will have served its purpose.

NATIONAL MEDICAL LEGISLATION.

Presented to the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY JAMES T. GREELEY, M.D.

NASHUA, N. H.

I have the honor to address you on this occasion in behalf of action, already initiated, well-advanced and generally approved by you and by the profession of this and of foreign countries, because it is designed and calculated to raise the character of the profession, to exalt the capacity of those on whom the welfare of all mankind rests, to weed out or fitly qualify those empirics who are at once the bane of medicine and the terrible foes of social health and of all prosperity. The intention is necessary, is wise, practical and permanent. Its propriety is demonstrated as well by the notorious evil against which it is leveled as it is by the patent values of the purposes for which it is framed. Wherever attempted it has been crowned and laureled both by popular and professional approval. It appeals to all who desire health for themselves or others; is simple and unequivocal; criticises those only who are notoriously unworthy of tolerance and exalts modest merit as much as it condemns charlatanry, ignorance, impudence and murder. Briefly expressed, this movement approves, tends and works for a higher, a universal law, which shall raise the standard of medical education in all schools, weed out practitioners who, under whatever sounding school title, are evidently unfitted to judge the issues of life and death, and perform the duties for which they are employed, and thereby raise the practice of medicine to a level with that of other arts and sciences upon which mankind depends for its welfare and permanence, for its very being. Fortunately, I address those who are experts in all that pertains to the subject matter, and who have been deterred from action heretofore only by the enormity of the evil and apparent hopelessness of David fighting with Goliath. Their judgment is our own, their sympathies are ours. We labor only to have that judgment and their sympathy expressed and forced forward in order to place the profession in this country far to the front, and the sound health of the community attained and preserved. To secure this unquestionable benefit I address a select body of scientific men who were thoroughly trained for their duties, who have kept step with all advances, whose merits commend them to the confidence of their patients and their communities, and who are vitally concerned in the maintenance of sound doctrine and in the abrogations of charlatanry as the minister in his pulpit or the judge upon the bench.

We seek a comprehensive law to regulate the practice of medicine; a law which shall render medical quackery as dangerous as highway robbery, or more so; as disreputable as chicken stealing; which shall positively require competent knowledge as a condition *sine qua non* to a degree; and which shall be enforced by competent pains and penalties. Is there one here present who dissents from this object, who will state that it is either unnecessary or insufficient? I hear no such avowal. Were there such, even one, I would refer his opinion to the opinions of the great medical luminaries of France, of Germany, of Great Britain and all Europe, who have for years insisted that the physician's education should be *teres ac rotundus*, round and full; that it should be kept so in the light of later discoveries; that quacks should be prevented from undermining the public health and that every gain in every art should be sifted for its medicinal uses. But really, there is no scientific, no professional nor reasonable objection to our demand. The only antagonism proceeds from those men who wish to secure the honors and rewards of medical skill without learning what medicine is, without mastering anatomy, without acquiring chemistry, without such knowledge of botany even as that which stored the good wives' simples in one century and the pipsissewa and patented concoctions in another. They are animated by the same spirit which led the Ephesians to worship Diana—that of gain.

But this is not modern medicine. Modern medicine requires its pupils to thoroughly know the anatomy and make-up of man; the nature, stage and history of every disease, and to know as thoroughly the means and agencies to be employed in every event. Coke-Lyttleton said that law should be comprehended in theology, because it treated the way in which God operates. Under that rule, medicine should rate even higher, since it prescribes a cure for the evils which it alone can detect. It is the supreme and constant arbiter of human life and as such derives its knowledge from the most recondite sources, and ascertains its prescriptions from all that is old and all that is new. The most gifted can scarcely hope to compress all that is set before them in this task. What can the ignorant unlearned quack really do with one cure-all and a dozen alternatives?

I have spoken generally, but my speech is not without ample and educated reply. The officers of many boards of health, medical societies, registers of health, etc., replying to letters of inquiry concerning the evil and its remedy, have stated directly, or *inter aliis*, that "under the act just passed in this State (Massachusetts) the traveling quacks have left the State and we expect still better results." The secretary of the South Carolina Medical Examining Board says: "The State law works well; has raised the standard of the schools and will keep tramp doctors out." The secretary of the California Board of Health says: "There is a restraining influence in the law and I do not know that other States are better situated so far as quacks are concerned." The secretary of the Wisconsin Medical Society says: "The laws relating to medical practice are exceedingly lax, in fact, a dead letter, no registration being required and there being no board of examiners. I am in favor of most any kind of a compromise with the 'sectarians' in order to get a board of some sort that will help us to get a law passed." The Nevada Board of Health remarks that "the recorder is the sole judge of the genuineness of a diploma and the standing of a college, which makes the law an absolute failure."

In South Dakota "the enforcement of the law has compelled unqualified practitioners to leave the State and has compelled some medical societies to raise the standard of medical education." The Missouri Board of Health says: "The law has prevented the location of quacks and charlatans in our State; whenever a man having a diploma from a recognized school has been guilty of unprofessional conduct, we have revoked his license. We have advanced the standard of our medical societies and will soon require changes to elevate the standard of preliminary requirements." The Montana Board of Medical Examiners states: "Our law has operated to the entire satisfaction of all persons except those who have felt its weight. Our ranks are singularly free from impostors and quacks and the stranger can send for a physician assured that he will get a reputable one. The laity are in sympathy with our law and discriminate between educated and uneducated men." The State Board of Minnesota says: "The law has been very effective for nine years and has given the State the best profession of any State in the Union. We trust to improve it by increasing the preliminary education of our candidates." In Delaware "the law has been in operation a year and has given general satisfaction, although the homeopathists opposed it. Our State was a dumping ground for those who could not pass the boards of other States, and we copied the law of Pennsylvania which was very satisfactory." In New York "the general standard has been raised by the enactment of the law." North Carolina: "The law regulating the practice of medicine has been extremely beneficial in raising the standard of the profession. Our law is the oldest in the United States." The Washington (D. C.) Society "is urging Congress to legislate for its protection, and its hopes will soon be fulfilled." The Kansas Board "is making a desperate effort for the enforcement of its law all over the State, and hopes the next legislature will enact a better." In Indiana "the law is no law and the State Medical Society wants a four years' graded course and a rigid examination by a nonpartisan board. As it is the State has no law on the subject." In Idaho "the effort of the State Society to establish a State Board of Examiners was defeated by the quacks, but this winter will see such a bill passed."

Such is the law as it stands in so many States. Such are the reasons for the enactment of a general law that will protect the people from malpractice and ignorance and protect competent physicians from the rivalry of quacks and charlatans. There is every reason why such a measure should be perfected, rendered uniform, and nationalized. The end can be won only by united action, and that action can be secured only by combined and persistent labor. The desired end being approved by reason and testimony, let us formulate the legislation required, and, co-operating with every State in which the *mens sana in sano corpore* is preferred to ill health and dishonest medicine, press it unitedly and persistently. Earnest endeavors will secure universal approval and we shall see our bills of mortality reduced and the just desire of the medical profession endorsed by popular and general approval. The object is National; let the effort be as general.

MORE PHYSICIANS AND LESS LAWYERS IN CONGRESS AND LEGISLATURE.

Presented to the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY EPHRAIM CUTTER, M.D.

NEW YORK, N. Y.

The present number of physicians in the United States Congress is ten. Lawyers are 303, or about 70 per cent. (See Appendix A.)

The present is a good time to discuss this, as a department of public health in the President's Cabinet is advocated, and as the Government attends to the biologic needs of plants, cattle, hogs and sheep more than they do to the same needs of human beings.

Public health is worth more than coal, gold, houses, lands, silver or wine, although it is unlisted in the census of National wealth. There is need of physicians awaking to a realizing sense of their National rights and importance as citizens, especially in governmental bodies.

Congress and legislatures are representative bodies of the people. – Professional people alone are not truly represented. The law alone can not represent medicine. There are in the United States some 75,000 lawyers who represent some 49,000,000 of people. This is altogether beyond reason and this is said with no reproach. The same proportion of physicians and clergymen in Congress would be as bad. This was seen in the Methodist International Conference, held in the Metropolitan Opera House in New York some years ago, and in the AMERICAN MEDICAL and in the British Medical Association meetings. To me it seemed as if the clerics and medics argued as acutely, split hairs as finely and delayed business as refinedly as their legal brethren in Congress. Probably they could do no better.

When suitable persons can be found in all professions and employments in the United States they should be representatives in Congress, to avoid the "mint, anise and cummin" modes of doing delegated business.

I speak for 120,000 physicians in America and give the following reasons why they should be in Congress in larger proportion to lawyers than 10 to 303:

1. Out of fifty-six signers to the Declaration of Independence, two were physicians, *i. e.*, Benjamin Rush and Lyman Hall. Twenty were lawyers, according to the best of my information. Thus medicine was to law as one in ten. This is better than one in thirty.

2. Physicians are citizens entitled to representativeship.

3. Physicians come into more intimate contact with the people and know them more intimately than any other class of professionals.

4. They are all the time studying *evidence* more than are lawyers, because life or death is involved in their business more.

5. The emergencies physicians meet far excel those that lawyers meet. Physicians at any time are liable to be called to attend the highest officials, whose lives are of priceless value to the Nation, and at once physicians are made to fill all the functions of lawyers; to be as to evidence, counsel for, counsel against, judge and jury, promptly within a few minutes, sometimes three, and on the physician's action depend the life or death of, it may be, a president! It took the law six months to decide Guiteau's case, but a shorter time to settle that of President Garfield, the victim. Physicians must exert the same qualities of mind as lawyers, but how much more rapidly! Matters of medicine are always coming up in State affairs which physicians should decide, not lawyers. It is needless to enumerate.

6. The effort to have a department of public health in the Cabinet is evidence that the public sees that lawyers can not and ought not to administer such matters, just as it is proposed to have a cabinet department of commerce and manufactures. The fitness of things urges this action. A physician in the Cabinet would be a rarity, but we aver that he ought to be there as to State medicine.

7. The good effect of having medical examiners in place of unmedical coroners is an argument in favor of our position. Its efficiency, economy and common sense are very palpable when this plan has been adopted.

8. The effect of physicians in their own department being ruled over by lay people is embarrassing, harassing, if not paralyzing. In our late war this was done away with in some cases and with the happiest results. At any rate, in 1889, British army medical officials made the most favorable comments on this and alleged it as a superiority over English administration. A like exaltation in Congress might do as well.

9. Laws have been passed, or tried to be passed, as to medical matters, which are not complimentary to the legal fraternity, as on their faces they showed a want of acquaintance with the subject. Once there was an effort of Congress to award $100,000 for a cholera cure. It was required that all cases should be cured for one year. The lawyers forgot that this was impossible from outside causes, *i. e.*, feeble constitutions, late stages of disease, want of response to remedies and natural death rate. Sometimes the poison of disease is so powerful that the most active remedies fail. You can kick dead lions, but not some live dogs. Again, medicines act differently on different cases.

10. It is the right of physicians to be better represented in Congress because of legal medicine, and to do away with the disgraceful pitting of medical experts against each other. Commissions should be appointed as in France.

11. *The medical profession* is the *most public spirited* in deeds of charity. It gives away most to the public in unpaid labor. It has not its equal in its self-denying labors, in season or out, by day and night, summer and winter, storm and calm, danger and safety, for the worthy and unworthy, No profession works so hard to render its ministrations or existence needless. Many physicians pass their lives in going about doing good, and die poor because they

have so freely given away their ideas and substance to the poor and needy, and to the rich and well-to-do. This entitles them to places in Congress, as they prove they seek others' good.

12. The greatest physician never gave a bad character to other physicians, but pronounced repeated woes on lawyers.

13. Physicians are remarkably faithful to trusts. Surely those who trust their lives and bodies to physicians would trust them to aid in making biologic laws.

14. Our legal friends need the aid of other representatives in Congress. Although lawyers were in control of Congress for a century, still they failed to provide a proper presidential succession bill, and Hayes and Tilden were muddled with no way of relief open. None knew who was elected, politicians were at sea. Had the United States been Mexico it was said that civil war would have followed. But a Philadelphian, educated at Yale for governmental affairs, suggested that President Woolsey of Yale should head a petition that twenty-five prominent democrats and republicans should informally meet at the Fifth Avenue Hotel, New York, and consult. It was done. The course submitted by the democrats was adopted and Mr. Hayes was elected. Here President Woolsey, never a lawyer nor politician, had such an influence from his character and natural and acquired abilities, that he solved a problem for legislators. Surely they needed him!

Again, about 1815, France paid us millions of dollars for spoliation on our commerce. For nearly seventy years lawyers in Congress kept the money back, and when paid gave no interest! The unwisdom of this appears when it is said that, had these millions been paid to an individual, and he acted as our Congress did, there was not a lawyer in Congress from 1815 to 1885 but would have sued the trustees and heirs and made them pay principal and interest. If Congress had had the normal proportion of physicians, scholars, clergymen, bankers, farmers and others to help the said lawyers act as they would have made an individual trustee act, and refused for seventy years to so act themselves, then the suffering of those kept out of their lawful rights would not have been. It is doubtful if physicians would have acted so, because they are all the time relieving others' physical woes.

15. Physicians are needed in Congress to put through the department of public health in the Cabinet. It is said that Secretary Bliss was looked at unfavorably because he is a merchant. Even the charter of Greater New York provides for a non-medical man to be at the head of the board of health! The lawyers want it all.

16. More physicians are needed in Congress to see that man has his foods protected, as plant and cattle foods are protected. The adulteration of human foods and medicines is awful. When the adulterants are held to account their lawyers come to physicians, who have been most earnest in detecting such frauds, to aid in getting a light sentence. Connecticut is the only State, I am told, that has the same laws for the food of man, beast and plant. Prof. S. W. Johnson of New Haven, was the author of this common sense bill.

17. Physicians are needed in Congress to see to other causes that hinder the biologic developments of man. The family is the unit of the nation. If one is sick and feeble the other is so. Grand and noble mothers have made English and Dutch speaking nations great. None are better able to tell how to have healthy families than physicians. If States need such laws, physicians should make them. What is there more valuable to a nation than healthy human beings?

18. If physicians, lawyers and others had proper representation in Congress, more time would be spent in work and less time in words.

What a lawyer said about Congress.—We quote from "Thomas Jefferson's Works," published in 1854: "Our body was little numerous but very contentious. Day after day was wasted on the most unimportant questions. . . . I served with General Washington in the legislature of Virginia before the Revolution and during it with Dr. Franklin in Congress. I never heard either of them speak ten minutes at a time, nor to any but the main point which was to decide the question. They laid their shoulders to the great points, knowing that the little ones would follow of themselves. If the present Congress errs in too much talking how can it be otherwise in a body to which the people send 150 lawyers, whose trade is to question everything, yield nothing and talk by the hour? That 150 lawyers should do business together ought not to be expected."

19. Finally, physicians are needed in Congress to enforce all that is good in this Section of State Medicine.

As this is written, Dr. Gallinger, the only physician of the Senate. is an object lesson to illustrate this article. May 13, 1897, he reported an admirable vivisection bill. The same day he introduced a resolution for a $50,000 appropriation for Americans in Cuba who were starving. He did this much to the approval of all good and true. Physicians can not stand and let folks starve to death. But Senator Gallinger would do much more if he had his proper number of medical colleagues, in place of being all alone. The writer wishes to be understood. He does not object to lawyers in Congress, but to the excessive proportion of more than two-thirds. This is not representation, it is assumption.

Appendix A.

THE OXFORD HOTEL, WASHINGTON, D. C., Feb. 2, 1897.

My Dear Dr. Cutter:—Tough job! Plenty of doctors outside of Congress, but inside scarce as hen's teeth. So here goes. One senator is from New Hampshire. Representatives: One each from California, Kentucky, Maryland, Missouri, Ohio and two from South Carolina. . . .

Very truly yours, RALPH DUNNING.

SOME FEATURES RESPECTING THE DRAINAGE OF THE LARGER MUNICIPALITIES.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY AUGUSTUS P. CLARKE, A.M., M.D.
CAMBRIDGE, MASS.

One of the chief difficulties to be overcome in the management of a large municipality is that which is encountered in providing a proper system of drainage. The method that was established at an early date consisted in the construction of small drains so as to have them open out into a ravine or natural water-course. Sometimes the large mains had their openings at the mouth of a river or directly into a harbor or bay. The objection to such a plan of laying sewers is in the tendency of the sewage matter to become deposited after a lapse of time upon the banks of the river and shores of the deeper waters. The odors given off by the deposition of such material after it has been exposed to the sun, winds and fogs are at times of the most unsavory character. Their baleful effects, however, have not always been fully recognized, especially when they have occurred in the vicinity of those towns where large establishments of commercial interests, such as pork packing, grease rendering, bone grinding, soap manufacturing and other offensive trades have been conducted. I can readily recall the bitter contest that took place some twenty-five years ago in our Boston metropolitan district over a condition of affairs not unlike that to which I have here referred. In deciding as to the dangers of allowing the continuance of those evils, in unraveling the threads of such a complication and in devising measures for their relief, the highest authority of the State government, including the municipal council, the city and the State boards of health, the supreme judicial court and the legislature, had to be invoked. The testimony offered by some of the witnesses is still worthy of comment. One leading chemist stated at the aldermanic hearing held at that time that he had made a careful investigation and found that the unpleasant smells were due to the presence of acrolein, which had been produced in some of the large business concerns and that this product had been formed by the exposing of certain fats and oils to a prolonged temperature, which was somewhat less than that of the boiling point of common water, and that the rapid tarnishing of the silver on the door plates and household utensils and the discoloring of the paint on houses and fences in the vicinity were due to the oxidizing agency of this peculiar chemic element. Another distinguished chemist, who was a witness for the offensive trades' establishment, stated that he had given the subject much attention and had found that the foul and disagreeable odors were not due to the formation of acrolein, that no such chemic compound had been generated in the processes of rendering oils and fats, and that such nce could not be evolved unless at a temperature ld be above 500 degrees, and that the raising such a degree would cause an immediate of the vessels used and a destruction of the gs in which such work would be carried on. attributed the odors to the presence of sulphurated hydrogen and sulphid of ammonium and other noxious gases that were disengaged from the sewers and from the flats of the lowlands upon which the drainage matter had been deposited. The result of the legal contest was, that after some of the principal business firms had through compromise agreed to improve the conduct of their manufacturing processes by introducing some improved machinery and by passing all foul-smelling gases through redhot tubes, the government was compelled to incur a debt for a large outlay in filling up the river bottoms, in dredging out the channel and in the construction of a number of trunk sewers for carrying the drainage matter into the deeper portions of the Charles River estuary.

Since then another great expense has been incurred for the construction of the metropolitan sewer for conducting the sewage far out into the harbor, where it could be pumped up and then so discharged as to be swept away into the sea by the ebbing of the tide. Though much has been accomplished by the completion of the undertaking, still it must be admitted that the capacity of these mains is far from being adequate for effecting the purpose which it was hoped their construction would fulfil. The surface and storm waters so necessary for diluting and attenuating the sewer contents can not be carried off by these channels, but have to be diverted in other directions for final disposition. For the more inland cities and larger town centers other methods of drainage have been attempted.

In Brockton the plan of sewerage and of the sewage disposed consists in the construction of main sewers and a reservoir into which the sewage is discharged to be stored through the night, before being lifted by means of a pumping station and carried by a force main into large filter beds raised a considerable distance above the natural water level of the ground. The filtration material consists of fine sand and gravel, the coarser portions being nearer the surface. The area in which the filtration takes place comprises about thirty acres of flat sandy land, most of which is situated in the town of Easton, and is divided into twenty-three beds. Each bed occupies a surface of about one acre. From twelve of the beds the subsoil was removed, from six the removal was only in part, in the other beds the subsoil was allowed to remain upon the land. The material, including the loam that was removed, was utilized in preparing the embankments between the filtration beds. Beneath a number of the beds a layer of clay, at the depth of upward of seven feet was found, over this was laid a series of five-inch under-drains that were connected with a fifteen-inch pipe carrying the percolating water into a brook, a small branch of the Taunton River.

The report of the board of 1895 says, substantially, that when the beds were left with level surfaces they froze in the winter to such an extent that the sewage could not be disposed upon them. When they were furrowed, however, notwithstanding that a low temperature prevailed, no trouble was encountered in this respect.

In considering the advantage which this method of sewage disposal affords to inhabitants of towns, it will be seen that some serious objections to its general adoption will become apparent. In the first place this plan of arrangement which has been denominated as the separate system, imposes the necessity of excluding all surface water and all ground water from the street sewers and the house connections. The material must therefore when disposed upon the beds, be in a more or less concentrated condition.

Another feature that should be considered in this connection lies in the general use of meters in the distribution of Brockton's water supply. It is well known that when such a device for a water service is employed many families will reduce their water for consumption and of waste to the lowest minimum, thus leaving their house drains and sewers inadequately flushed and permitting them to become the *nidi* of disease germs.

Reference to the published report of the city engineer of Brockton shows that, though the population of that place in 1895 was 33,165, the average daily flow at field during the month of January of that year was only 215,000 gallons; in February it was 100,000 gallons: and in July yet less, being only 195,000 gallons. In October, when the amount discharged had reached the highest point of the year, it was only 457,000 gallons. Examination of the report of the chemic analysis is interesting. The amount of free ammonia that was determined per 100,000 parts was 3.45, that of chlorin was 9.05. A foot-note states that the odor was offensive; the sample was collected as the sewage flowed out upon the filter beds. A chemic examination of the effluent from the underdrain at the Brockton Sewage Disposal Works, according to the report of the State Board of Health shows that the sample collected in February, 1895, when it contained a large amount of ground water, had no odor. The amount of free ammonia per 100,000 parts was reduced to .0248 and the amount of chlorin to .75. A visit which I made to the Brockton filtration beds in Easton, Feb. 6, 1897, revealed the fact that there was more or less offensive odors being exhaled from the beds for the sewage deposits. The same was observed on a visit I made there only a short time before. I was informed that much offensive or unpleasant odor had been noticed by people who were living or traveling in that vicinity.

The sewage disposal of Amherst is called the separate type system; it embraces only house drainage. The drainage matter is conducted to a settling tank about a mile from the village, thence it is carried through a pipe 520 feet in length to Fort River. Some of the sledge is removed and is used as a fertilizer on neighboring farming lands.

The sewage of the city of Worcester is exposed to chemic reaction before it is discharged into the Blackstone River. An analysis of the water shows that the pollution of the river decreases as the distance becomes greater.

An interesting fact has been brought out through the study of the relation which the cities of Lawrence and Lowell have to the Merrimack River. The water supply of Lawrence is taken from the Merrimack, which receives the drainage of a considerable portion of the State of New Hampshire; it is only nine miles above the intake of the Lawrence waterworks that the sewage of Lowell enters the river. Typhoid fever had prevailed extensively for the past years in Lowell and Lawrence during the later portions of the autumn and winter months, after the disease had nearly ceased in the towns higher up the river. Sometimes the epidemic would appear in Lowell before it reached Lawrence It should be stated that the intake of the Lowell water supply is from the Merrimack at a point somewhat above the location of the city. The large death rate occurring from typhoid fever led the board to conclude that the occurrence of the attack was owing to the disease germs that were brought down the river and that they infected the water which was furnished for the use of the inhabitants. The invasion of typhoid fever was subsequently checked by the use of sand in the construction of filtration beds which served to remove to a considerable extent the disease-producing germs.

The Board of Health further concluded that streams are insufficient for self-purification; that it is practicable to protect, to a marked degree, the community against the contamination of water that is supplied for domestic purposes, by the employment of properly constructed sand filters.

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practice that was in vogue during my early school days when the farmers in southern New England used to make large sand beds upon their fields and, into the pits that were made in them, would deposit the contents that were brought from the city privy vaults. The matter was allowed to remain until it soaked into the mass of sand or other material that was used for holding the sediment. Under or near the beds there was usually made a ditch or trench along which the vile water, after percolating through the mass, would flow and be carried into a neighboring ravine or hollow. The effect produced on our olfactories when we were passing in the vicinity gave unmistakable evidence that the "noxious effluvia" was invading our atmosphore far and wide. We also recall the fact that those districts in which it used to be the custom to deposit such masses of exuberant ordure have since become the veritable haunt of the bacillus malariæ and other disease-producing germs.

Though all must concede that the details of the present plan for the disposal of sewage have, through the advice and suggestions of the State Board of Health, been carried out in a most creditable manner, still it can but be felt that some more effective and scientific system of drainage for the rich and densely populated States should be inaugurated.

My recent visit to the Republic and City of Mexico afforded many opportunities for reflection. While there I had the privilege of visiting the drainage works of the city and of witnessing the admirable working of the desagüe and the tunnel that had been constructed, at great expense, for insuring the drainage of the City and Valley of Mexico and for conducting the sewage and the water of the lakes into the Gulf of Mexico. I will not describe in detail the plan adopted, but the method employed by the Mexican government embraces a subject that should receive the most careful consideration.

Many portions of New England and of other States adjacent to them present features for which the Mexican plan, more or less modified to suit local conditions, could no doubt with great and permanent advantage be adopted. The employment of such a method would tend to obviate many evils of our present system of drainage.

In constructing a canal after the plan I have mentioned, its bottom should have a uniform slope, its sides should be so projected as to have a proper batter, and its capacity ought to be sufficient to receive all waters that should be carried off. It should be of such a depth as not to be seriously affected by freezing during the colder months of the year.

It is far from pleasant for one to contemplate that in the future, not altogether remote, there should abound at no distant intervals all over our land and in the vicinity of the delightful prospects of the natural water courses huge piles of sand and gravel
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ment by the government at Washington of more stringent regulations for the protection from pollution of all the navigable rivers and streams. Such protection should extend not only to the end of the navigation lines but for some distance beyond so as to include control of the important branches of such watercourses. All persons, including private individuals, persons connected with companies, corporations, towns, cities, and with the management of States should for the violation of such provisions, be subject to indictment or to the penalty of the payment of a fine.

AIR—ITS USE AND ABUSE.

Presented to the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

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DES MOINES, IOWA.

The air we breathe is a subject of such magnitude and diversified uses, and corresponding abuses, like all other valuable elements that augment our mechanical, physical and therapeutic existence, *that the limited* time of this paper will only permit me to speak of the atmosphere in a general way, that it may be used to lengthen our longevity. It is employed in the treatment of disease in many ways and for many purposes, is used as the medium from which we get oxygen, is found in a gaseous mixture of definite composition, with a variable pressure, is used as a vehicle for other substances in a gaseous or finely divided state, and is also selected as a medium by which the temperature of the body may be readily and effectively influenced. The principles in which the dual relations of the air stands to the economy as a definite compound of certain gases, and as an atmosphere with a certain pressure, is very frequently disturbed, and this disturbance or abuse accounts for some of the most familiar phenomena of disease. Abuses in the alterations in the quality or quantity of respired air, whether from the state of the atmosphere itself, or from derangement of the complex apparatus of respiration and circulation, is the cause of some of the most serious and distressing diseases of the chest, and should prompt us to utilize all available means to change the compositions, or volume, of the air used, which is all the more practical because the supply is unlimited and composition altered at pleasure by increasing or diminishing its pressure.

We find, accordingly, that ever since the discovery of the composition of the atmosphere, frequent trials have been made of its value therapeutically, and oxygen was early recognized as its active constituent and came to be administered, as it is still, in the form of inhalation.

Within the last few years a remarkable advance has been made, on the one hand, in the physiology of respiration and the relation of the circulation to the atmospheric pressure and, on the other, in the pathology of disease of the chest.

Clearer views have been reached on the signification of various symptoms, and especially of dyspnea in its different forms and observations upon the effects of compressed and rarefied air. The modern therapeutist has availed himself of this knowledge and revived the use of air, physically altered, in the treatment of disease of the lungs, heart and other parts of the body with accuracy and successfully, and the aerotherapeutist of today has come to stay, and his methods a recognized factor in preventive medicine.

The physiologic effects of rarefied air will manifestly be different accordingly as it is admitted to the body as a whole, or only a part; and familiar examples are afforded by descent in the divingbell or ascent in a balloon; and is obviously indicated in diseases where inspiratory dyspnea is an urgent symptom, spasmodic asthma, stenosis of the air passages from anatomic causes, acute and chronic bronchitis. In threatened phthisis it is used prophylactically, and in chronic pleurisy it may prevent the collapse and retraction of the chest wall. In cardiac dilatation, due to mitral incompetence, it is useful; in general nutrition, combined with other remedies, it will relieve anemia.

We might continue indefinitely the theory of the uses and abuses of air, but enough has been said in a general way, we hope, to preface the practical utility of air as will be most beneficial to the well, the sick and, last but not least, the physician.

Investigators have been trying to discover the causes of the bad effects of defective ventilation, and while some have attributed them to excess of carbon dioxid, or deficiency of oxygen, or to both of these factors; others, and even Brown-Séquard, believed that even healthy animals exhale a volatile organic poison of the nature of an alkaloid or ptomain. Drs. Billings, Mitchell and Bergey have, in an extensive series of experiments, failed to find any trace of a volatile poison in an expired breath. However, they did find a very small amount of ammonia and combined nitrogen in human breath, and show that this is due to decomposition of organic matter in the mouth and pharnyx, but not of any peculiar volatile organic poison. They find no evidence whatever, and believe the high mortality of persons living in crowded dwellings is now known to be due in a large part to specific hereditary and acquired diseases, and that the good effects of increased ventilation are to be attributed, in a large part, to the lessened quantity of dust particles to which micro-organisms adhere. The offensive smell of public halls and places of entertainment is, *in their opinion, due to* volatile products, or decayed teeth and foul mouths, to fatty acids given off in the excretions of the skin, and to the means used for illumination. I do not believe as Drs. Brown-Séquard, Billings, and a few others, but think they have taken an extreme position on the question of the merits of rebreathed carbon dioxid. Yet, I believe if more attention was given to the character of atmosphere we breathe, and the manner in which it is taken into our lungs; if more attention was given to ventilating places of public gatherings, especially school houses and, last but not least, the sick room and private residences; if more thought was given to the noxious influences of confined air upon our physical, as well as mental economies; and if more thought was given to the therapeutic effects of the air, and less to the therapeutic benefits derived from drugs, we would succeed in many instances where we now fail, while 'tis true all either can do is to assist nature and exercise such influence on the morbid changes in tissues and organs as to restore the parts to a state compatible with systemic life.

There has recently been practically and emphatically demonstrated in Iowa the amount of *good* the combined influence of the physicians of a State can do when they pull together to mold public opinion; by the recent new medical law passed by the Iowa legislature. Realizing then the wielding power of our forces, it is our bounden duty to utilize our influence in molding public opinion in a way that all public and private buildings shall be so arranged and used, and that persistent attention will be given the subject, to the end that we may all have a pure atmosphere to live in, and our patients pure air, as well as pure drugs, to relieve them of their ills and promote their convalescence.

THE SIGNIFICANCE OF THE OCCURRENCE OF PATHOGENIC SPIRILLA IN THE WATERS OF THE DELAWARE AND SCHUYLKILL RIVERS AT PHILADELPHIA.

Presented to the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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As a result of a systematic study of the waters of the lower Schuylkill and Delaware along the city front during the past year, I have found over a hundred spirilla, many of which possess pathogenic properties when inoculated into the lower animals, notably pigeons and guinea pigs.

A careful study of the morphologic and biologic characters of these organisms shows that many of them are very closely allied to the group of pathogenic spirilla with which we are already familiar, the most important member of that group being the spirillum choleræ Asiaticæ, or Koch's common bacillus. The resemblance in some instances is so close that one not expert in the exact differentiation of the members of this group of organisms would be unable to detect any differences. Others deviate slightly from this type, while a considerable number show more or less marked deviation from this type.

A considerable number of these organisms are apparently identical with the vibrio Schuylkillensis isolated from the water of the lower Schuylkill last year by Dr. Abbott.[1]

The organisms were isolated from samples of water collected at different points on the two rivers along most of the city front, and from samples taken from the main and branch sewers of the city as they discharge into the rivers. Several organisms were also isolated from the water supply of the Laboratory of Hygiene, University of Pennsylvania, where the research has been conducted. These organisms were found to be most plentiful during the summer months, but were found to persist in limited numbers during the fall and winter months. About the middle of March of this year they appeared to have again increased somewhat over the numbers found during the winter months. Since they were found each month from June, 1896, to March, 1897, it is safe to assume that they are present during the entire year.

It is not necessary at present to go into details as to the general morphologic and biologic character of each of the organisms found. This will form the subject of a future report. Morphologically the different organisms varied somewhat as to the length and thickness of the rod, the degree of curvature and the tendency to form short or long spiral chains. Considerable variations were also noted as to the biologic characters of the different organisms, as, for instance, some give the characteristic indol reaction of the cholera organism, others less decidedly so, while a few failed to show any indol production. The form of the colony in gelatin plates is also variable. Some show the characteristic concentric arrangement of the cholera organism, while others deviate from it in several minor particulars. In the same manner the growth in all the different culture media varies with the different organisms; for instance, an organism may vary from the cholera group in only one particular, others in two or more particulars. Several organisms may show similarity in one or two particulars and deviate from the type in others, while other organisms show deviation from the type as to the former particulars and conformity as to the latter. When studied in detail the whole class of organisms appear to have originated from one or several ancestors and, from long continued separate existence under different conditions, they have developed this irregular form of deviation from the original types.

When all the known characters of these organisms are taken into consideration with the idea of classifying them into groups we are met with insurmountable difficulties. When grouped according to one or other of their peculiarities we are able to arrange them into several different groups, but according to which of their peculiarities is taken as the basis for classification, we find that only a limited number always fall into the same group. Indeed, our present knowledge gives us no measure by which they can be grouped systematically.

The characters which have been taken as a basis for classification are the following: Morphology, pathogenesis, indol production, form of colonies in gelatin plates, growth on blood serum, growth in litmus milk and the reaction produced on the organisms by the serum of an animal immune against one or the other of the most prominent types of the organisms.

A large number of the organisms found possess distinctly pathogenic properties for pigeons and guinea pigs. When quite small doses are inoculated the animal usually recovers and possesses a certain degree of immunity. The form of immunity conferred is closely allied, if not identical with that resulting from inoculation of the cholera organism. For this reason it is very difficult to produce absolute immunity. An animal may recover from quite large doses of a virulent spirillum and later succumb to a smaller dose. Many of the organisms were found to be but feebly pathogenic, or even non-pathogenic. The immunity conferred by one type of organism was found to be protective against large doses of another type of organism. This is in accordance with what Dr. Abbott has found with regard to the immunity conferred by the vibrio Schuylkillensis and that conferred by the vibrio Metchnikoff.

The most important point with regard to the occurrence of these organisms in the river water around Philadelphia is the fact that similar organisms have been found in the surface waters of European cities in which there had recently been an epidemic of Asiatic cholera, notably at Hamburg and Altona.[2] In this city we have not had any cases of cholera since 1873, and then only a few cases developed. The foremost bacteriologists of Europe have been inclined to the opinion that the organisms which they found in the surface waters of European cities were the remains of the true cholera organism, and that the deviations in the morphologic and biologic characters from those of the cholera organism were brought about by their prolonged existence in the water. No such explanation of the occurrence of the organisms in Philadelphia waters can be given. However, their distinctly pathogenic properties for the lower animals leads one to assume that they are not without significance. What their real significance is has not yet been determined.

The fact of the occurrence of these organisms in our surface waters at a time when there has been no outbreak of Asiatic cholera for many years, is of the utmost importance. Had these organisms been discovered subsequent to an outbreak of cholera, or at the time of a cholera scare, it is evident that their significance would have been looked upon as quite different.

It is most desirable that the surface waters of other American cities should be studied in order to ascertain whether these organisms are widely distributed. It is also desired to have careful studies made of outbreaks of diarrheal diseases in our cities, with the view of determining whether these organisms bear any causal relations to such diseases.

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THE PHYSICAL AND HYGIENIC CARE OF CHILDREN.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

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The physical and hygienic care of children plays a most important part in the domain of medical science. At the present time more care is given to the mental development of children than to their physical education and hygienic surroundings. The cause for this seems to be due to the fact that teachers and parents know little or nothing about physiology, anatomy and hygiene. The knowledge of these subjects is very important and is especially needed by those who are interested and closely connected with pedagogy. If teachers and parents once recognized that as much, if not more, importance should be attached to the physical and hygienic welfare of children we should not see so many weak, delicate and deformed cases.

It is pitiable that the physiques of thousands of children are absolutely neglected, especially when the medical man knows perfectly well that more care in this respect would make a brighter and more active mind.

Parents and school-teachers who are ignorant of the effects of exercise on the circulation of the blood can not possibly understand the benefits of physical work in reference to improving and strengthening the constitutions of children. They will also be more ignorant of these effects unless they understand the metabolic changes brought about in the different organs and tissues of the body by physical and hygienic conditions.

The physical and hygienic care of children should not be entrusted, as it now is in the vast majority of cases, to a quack, because great harm and severe injury is very likely to be the result. It is just as essential to entrust the physical and hygienic care of a child to a specialist as it is to entrust a surgical operation to the skill of an expert surgeon. The reason so much precaution should be taken is that unless a physician thoroughly understands the effects of physical exercise he is extremely liable to do more harm than good; the result being that physical exercise is condemned when the condemnation should be attributed to the ignorance of the physician. Physical exercise properly prescribed will never be productive of anything but good results and these results are a great benefit to children, especially where the specialist is dealing with a weak, diseased or deformed patient.

It is far better, in cases where it is applicable, to prescribe physical exercise for children than to use a drug because exercise is a natural means of altering, strengthening and developing the different tissues in the body; while drugs are unnatural and employed for the most part to change pathologic to physiologic conditions. There is no safer means of strengthening the constitution of weak and delicate children than by exercise, because by this means every organ and tissue in the body receives new blood and receiving new blood is greatly benefited when auxiliary conditions of diet, sleep, ventilation, clothing, bathing and sunlight are added.

If physicians, who are consulted in reference to the physiques of delicate children, would ask themselves the question, "Am I fitted to prescribe exercise for these children," and then carefully consider the needs of such patients and send them to a specialist, much better results would be obtained. Instead of doing this, these children are sent to a gymnasium, where in the vast majority of cases the instructor knows absolutely nothing about medicine, the results after a time being overwork, disease or deformity. Many physicians have no other idea of a gymnasium than as a place where one can get "some" kind of exercise and, in addition, do not know for what purpose each piece of apparatus has been made.

There is ample reason why a physician who is not a specialist in physical culture is not capable of prescribing physical exercise for his patients. In the first place not being familiar with the different methods of prescribing exercise, he can not tell what kind of exercise to give; secondly not knowing the effects of these exercises he will be absolutely incapacitated to prescribe the proper amount; thirdly he will not be able to recognize the early symptoms of overwork when they manifest themselves; fourthly he will not know how to take and arrange anthropometric measurements; fifthly not observing his patients when they are exercising he will not know whether the proper muscles are used or what the effect upon the heart, lungs and nervous system is. These questions are of prime importance and it would *be much safer for the doctor not to prescribe exercise* for his patients and then send them to a gymnasium where the above considerations are never taken into account.

On the other hand when a physician sends these children to a specialist it is the duty of the specialist to consult with the physician by whom such patients have been sent and under no conditions should the specialist prescribe a drug of any kind because he will not understand how to prescribe for these patients so intelligently as the family physician.

Some physicians may think it is not necessary for them to possess special knowledge in prescribing physical exercise for their patients; but no one will assume for a moment that he is worthy to be called an ophthalmologist, aurist, gynecologist or surgeon unless he has made an especial study of these branches.

Physical education has had a wonderful growth in the United States in the last decade and it is a pity that few physicians and gymnastic professors (so called) recognize the vast amount of knowledge required to fit one to be a specialist in physical culture. The benefits resulting from physical exercise correctly applied are beyond measure, and the tonic effect is much better than that of drugs. The specialist in physical culture should know the effects of every kind of exercise he prescribes, *i. e.*, whether the nervous system is to be affected chiefly or whether the muscular system, the respiratory apparatus or the bony framework is the part called upon to perform the major part of the work.

In addition the hygienic surroundings of children should be most carefully observed, and everything pertaining to their improvement should be most rigidly carried out.

Diet plays no small part in this respect and the food should be most nutritious, and easily digested. Under no conditions should any food be prescribed that will in any way tax the digestive functions; and in many cases the physician must insist that the diet shall consist of nothing but milk. Physical results are ofren negative when diet is overlooked, because the gastro-intestinal canal does not perform the digestive functions properly and the patient instead of being benefited by his exercise, as he should be, finds that disease, as for example dyspepsia, is the result. Care should be exercised by the specialist in physical culture in allowing a sufficient time to elapse, in these cases, between the time food is taken and the period at which exercise begins.

If exercise be indulged in too soon after eating, great injury may result because the digestive organs will not receive an amount of blood sufficient to supply the process of digestion completely, the result being that the food is incompletely oxidized in consequence of which many diseases arise.

Bathing is also very essential in reference to the hygienic care of children. Baths of one sort or another are productive of good or bad results according to the intelligence with which they are prescribed. There are few children for whom exactly the same kind of a bath may be prescribed. Their constitutions differ so widely that it is necessary when prescribing a bath to inquire very closely into their family history and regulate the kind and temperature of the bath accordingly.

It is also important to regulate the number of baths. In most cases one bath a day will be sufficient, yet in some cases a bath every other day or twice a week will suffice. The time spent in bathing is a a factor needing the closest attention, because if these children are allowed to bathe or be bathed regardless of the length of time a chill, depression or shock, may be the result, and in consequence the nervous system may suffer greatly. The physician who makes a specialty of the physical development of children should be thoroughly posted on all matters pertaining to the different kinds of baths and to the method of prescribing them. A bath wrongly prescribed especially in the case of weak, delicate and diseased children is often as productive of injurious results as a drug given in an overdose.

Strict attention should be paid to the manner in which these children are dressed. Many parents dress their children according to the season of the year, no matter what the temperature of the weather may be, and in so doing a cold results which often leads to some bronchial or pulmonary trouble. If they would dress their children according to the temperature and not according to the season of the year these troubles would not occur.

Massage is another important topic in reference to the physical and hygienic care of children, being one of the best means the physician has for aiding him in the cure of these cases. The doctor should be so conversant with massage that he may prescribe the special kind of rubbing needed for each case. The man who is a masseur and not a doctor needs especially to be guided in rubbing these patients; yet if the physician be ignorant of the different technical ways of using massage how can he prescribe massage intelligently.

SOME OBSERVATIONS ON THE PRINCIPLES INVOLVED IN PROPHYLAXIS OR PREVENTION OF DISEASES IN GENERAL, AND OF PULMONARY TUBERCULOSIS IN PARTICULAR.

Presented to the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY N. S. DAVIS, M.D.
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Prophylaxis or preventive medicine is founded on the supposition that a large proportion of the important diseases that afflict the human race are preventable by judicious measures adopted for the purpose. Such measures must be directed toward the accomplishment of one or more of the following objects: 1. To prevent the development of the specific causes capable of inducing disease. 2. To destroy or neutralize such causes after they are developed and before they had excited active symptoms of disease. 3. To so increase the natural vital resistence of the living body that it successfully resists the action of the supposed causes of any form of disease; and 4, to interrupt contact or communication of the sick with the well. To be successful in the accomplishment of these important objects we must have reliable knowledge of the causes that produce disease, or at least the conditions and laws under which they are produced or propagated, and the vital or metabolic processes by which they are destroyed or expelled from the living body.

It has long been known that one group or class of specific causes of disease is developed only in the animal body while under the influence of the same causes. Such are the causes of the class of acute eruptive fevers, variola, varicella, scarlatina, rubeola, etc. Being evolved only in the bodies of the sick and eliminated through the various excretory processes in sufficient quantity to poison the immediate surrounding air and thereby communicate from individual to individual in confined atmosphere or by contact, they are very appropriately called contagious. Fortunately all the diseases arising from this class of causes are strictly self-limited in duration and very rarely attack the same individual more than once.

Another very important class of disease-producing poisons is developed and propagated outside of the human body, chiefly in connection with organic impurities in the air, soil, water or food, and have until recently been called infections. The important diseases arising from this class of causes are periodic and continued fevers, yellow fever, plague, cholera, and other endemic and epidemic affections, which like the preceding class are self-limited in duration, but not like them self-protective against future attacks. Their propagation does not depend so much on present contact as on the sanitary or insanitary condition of the environment.

The exact difference between a contagious and an infectious disease may be thus illustrated: Though a case of smallpox be placed in a perfectly healthy neighborhood, supplied with pure air, good water and clean soil, the patient would communicate the disease to every individual who came in close contact with him, and had not been previously protected; while if a case of erysipelas, typhoid or yellow fever or cholera be conveyed into such a neighborhood, it would not communicate the disease to a single individual in the new locality, unless the case was confined in an unventilated and unclean room until the confined air became sufficiently impregnated with the excretions to develop new infectious matter. When this has taken place, other persons from a healthy neighborhood coming into such a room and breathing its atmosphere are liable to sicken with the same disease; and many such instances have been quoted as proofs of personal contagion, when they were only foci of infection.

It is in limiting the number and destructive effects of this class of acute diseases by removing the conditions by which the soil, water or air become infectious that sanitary work has conferred its greatest benefits upon mankind. And it is in discovering the individual pathogenic bacteria and their ptomains or toxalbumins in each infection, and the laws and conditions under which they develop and multiply, that modern chemic and microscopic research has achieved its most important results in adding to the resources of the healing art.

The infections of soil, water, air and household filth have been recognized for centuries, under the names of marsh miasms, idio-miasms, and epidemic constitutions, and many of the laws by which they have been governed. But it remained for the chemists and bacteriologists of the present day to discover, isolate and propagate the active infective agents concerned in many of the diseases of this class. Very naturally, with the discovery of each pathogenic germ and ptomain came first the idea of destroying it by specific medication, and we speedily became overwhelmed with antiseptics, germicides and antitoxins with which to fight the noxious agents after they were already doing their destructive work in the blood or tissues of the living body. Experience however, is fast demonstrating that this is commencing the fight too late to achieve the most important results: for when the pathogenic germs and toxins have already pervaded the system and established their morbid process, the administration of germicides and antitoxins is found to exert but a limited control over the progress of the disease, and does nothing toward removing the insanitary conditions of the soil, the water, the air and the household want of ventilation and cleanliness.

On the contrary. so far as the sanitarians have directed their efforts intelligently against the contamination of the waters and soils of any country by excretory filth and decomposable vegetable and animal matter, and have enforced such domestic regulations as secured to the people personal and household cleanliness and free ventilation with pure air and good light, just so far have they destroyed the sources of infection, and lessened the prevalence and mortality from the whole class of infectious diseases. If any illustration of this is needed, we have only to compare England, with her sanitary officers in all her seaport cities, and even country districts, constantly waging a warfare against every species of water and soil contamination, and enforcing household cleanliness and ventilation, and year after year boldly defying the inroads of cholera, yellow fever, plague and other infectious diseases, without a recognized quarantine station on any part of her coasts, with her colonies in Asia, where almost every river, watercourse and well is so contaminated with filth that the greater part of the population may be said to eat, drink and even inhale their own excretions, and as a consequence the cholera, typhus, yellow fever and plague continue their destructive visitation from year to year.

A Haffkin with his anti-cholera vaccination may prevent a few thousand cases of cholera when an epidemic is prevailing, but he must repeat the same every year or at every return of the disease, so long as he does nothing to remove the sources of the infection. But let the soil and waters of India be purified and their future contamination guarded against with the same vigilance as they are in England, and they would have no further use for either anti-cholera vaccin or anti-plague serum.

Yet the chemists and bacteriologists are almost certain to call every toxic and pathogenic germ with which they are able to produce a disease by injection or inoculation a contagion, and the sanitarian readily falls into the same habit and calls every disease so produced *contagious*. It is on this line of investigation that the bacillus tuberculosis was discovered, and its reproduction in the sputum of the patients, and the idea of the *contagiousness* of phthisis was revived and proposed as the chief basis on which to found measures of prevention, by officially declaring the disease to be contagious and to be reported by physicians to the health authorities, as in the well known acute contagious and infectious diseases. But the wide disparity between the clinical history of the acute, self-limited, infectious diseases with the well-defined beginnings and terminations, and that of pulmonary tuberculosis or any other form of tubercular disease, with its obscure beginning, its duration through months and years, and its already diffusion in almost every township in Christendom, should cause every true sanitarian to hesitate long enough to scrutinize all sides of the subject before he decides to put smallpox, typhoid fever, cholera and tuberculosis under one and the same designation—*contagious*.

As previously remarked, one of the most important errors now common to both bacteriologists and sanitarians, is that of calling every disease *contagious* as soon as a specific germ is identified with its progress, and then directing their chief sanitary or preventive efforts toward the destruction of the germ. There is, however, a clear and very important practical distinction between the contagion that propagates acute disease wherever and whenever it comes in contact with an unprotected individual, and the specific microbes classified by M. Jaccoud (*Sem. Méd.*, January, 1897), as etiologic dualisms, because they may exist in a healthy organism without injury to the latter for an indefinite period, and become noxious only in consequence of changes undergone by the organism itself.

The bacillus tuberculosis is the most familiar example of this class. It may be found in the upper air-passage of perfectly healthy individuals, in the air of dwellings, public conveyances, hospitals and in the dust of streets in almost every part of Christendom; and yet it displays its noxious effects in producing pulmonary tuberculosis in only a limited percentage of the population in any country. The only reasonable explanation is that given by Jaccoud when he says that with this class or group of microbes "pathogensis by changes in the organism is the rule, and the traditional etiology based on heredity, congeniality, predisposition, constitution, temperament, or on somatic or cosmic influences retains all its force. These multiple and variable elements are the *true causes* of disease; the microbe is only the instrumental agent."

The truth of this statement is illustrated and confirmed by the clinical experience of the profession in all countries and through all the centuries, as could readily be shown by facts and figures, if time and space would permit. The truth is that the leucocytes and other elements of vital resistance in strictly healthy human bodies, surrounded by fairly good sanitary conditions, completely resist the influence of all the bacilli of tuberculosis to be found in the air or the dust, as the history of the Brompton Hospital for consumptives, and other hospitals in which tuberculous patients in every stage of advancement have been admitted and treated, clearly show. It is only when the natural vital resistance of the healthy living body has been impaired by persistent depressing mental influences, such as anxiety, despondency or grief, or by living in overcrowded, ill-ventilated houses on damp soils; or by insufficient food, clothing, and open air exercise; or by the use of alcoholic drinks and other anesthetic and narcotic drugs; or by prior attacks of other severe disease; or even hereditary defects of organization, that the tubercle bacillus is able to develop its destructive effects on the human subject. If this is true, the leading practicable principle of prevention is so to instruct the people that the various causes of vital impairment enumerated may be avoided.

To publicly declare tuberculosis a *contagious* disease, and require physicians to report to the health boards every case, with isolation of advanced cases, would deter large numbers from consulting a physician in the early stages of their disease, through fear of thus being reported; it would add greatly to the anxiety and despondency in families where a suspected case might exist, and would equally add to the difficulty of finding employment for such; and it would speedily lead to the erection of legal barriers in the way of changes in climate, thereby compelling the unfortunate consumptive, like the leper, to abide either in the isolation hospital or some colony on a strip of the public domain set apart for that purpose. In a word, it would be going back to repeat the sanitary treatment of consumptives practiced in Italy and Spain during the first quarter of the present century, and with very similar results.

Instead of thus directly adding to the fears, anxieties and miseries of all classes of the people, our sanitary authorities should with increased vigor, continue their work of enforcing everywhere cleanliness, house ventilation, soil drainage, pure water, wholesome food and the discontinuance of the use of all varieties of alcoholic and other anesthetic drinks, which so invariably diminish nerve sensibility and vital resistance to morbid agencies. In so doing they will accomplish vastly more in limiting the spread or prevalence of tubercular consumption than by all other agencies combined. It is to work in these directions that we owe whatever improvement in the ratio of mortality which has taken place during the present century. Indeed, if we could effectually stop the use of all varieties of alcoholic drinks, and thereby do away with their depressing and paralyzing influence on the vital processes in living matter, with the poverty and mental wretchedness that ever accompanies their habitual use, before the end of the first quarter of the incoming century the prevalence and mortality from tubercular disease would have been diminished more than one-half.

PRESENT STATUS OF INOCULATION AGAINST YELLOW FEVER.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY J. McFADDEN GASTON, M.D.
ATLANTA, GA.

The attention of the medical profession has been called anew to the preventive treatment of yellow fever by the claim of Giuseppe Sanarelli to have discovered its germ.

We find in the *Medical News* (January 27) the following notice: "A cable dispatch from Rio de Janeiro to the *London Times* states that a young Italian, Giuseppe Sanarelli by name, has undoubtedly discovered the yellow fever germ. Sanarelli is the director of the Uruguayan National Institute of Experimental Hygiene, and a follower of Pasteur. He is said to have sent an account of his discovery under seal to the Academy of Medicine at Rome."

There appears also in the *Medical Record* (April 24, 1897), the following allusion to this supposed discovery: "The Rome correspondent of the *Lancet* writes that Dr. Giuseppe Sanarelli, who believes that he has discovered the bacillus of yellow fever, as well as a remedy for the disease, has embodied his researches in a monograph which has for some time been in the possession of the Academia Medica di Roma, that body being thus empowered to protect his claim to priority should that claim in the interval have been challenged. The supplementary studies by which he has sought to check the laboratory and clinical work leading up to his discovery are now completed, and the whole series, including the substance of the monograph aforesaid, will be published in three successive numbers of the *Annali dell' Instituto Pasteur*. Coincidently with the appearance of the first of these fasciculi, that is, within a few weeks' time, he will deliver before the Montevidean Society of Medicine a lecture, accompanied by illustrative preparations, in which the nature of his discovery and the successive stages by which it was arrived at will be fully set forth."

In connection with these announcements, I would ask attention to the following paragraph in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, headed "Prophylaxis of Yellow Fever in Brazil": "The disease was kept under control and stamped out in Buenos Ayres by the immediate removal of every case, as it appeared, to the floating hospital, while all the other inmates of the house were taken at the same time to the island quarantine station, where they remained until all danger was past. The house was submitted to a vigorous disinfection during the entire time of their absence, and as a final measure, all the walls were calcimined. The physician first called to the case was also quarantined in his own house for the same length of time, and the premises disinfected. By these measures the disease was restricted to a few isolated cases in the early spring. Dr. A. Simoes proclaims in the *Rev. med. chir.* of Brazil the success of inoculations with attenuated cultures of the yellow fever microbe, the micrococcus xanthogenicus discovered by Freire in 1880. Since he was authorized in 1883 by the government to administer them, 11,881 persons have been inoculated, and he states that the mortality among them has been only 0.5 per cent., while among the rest of the population it has averaged 30 per cent. The yellow fever hospital had a mortality of 78 per cent. until the inoculations were introduced, when it fell to 30 per cent. He adds that if all the strangers recently arrived and all persons exposed to contagion would have themselves inoculated epidemics would cease and there would be only a few sporadic cases, while vigorous hygienic and disinfecting measures in addition would exterminate the pest altogether. —*Cronica Medica*, October 15."

To enable those who may not have noted the progressive steps in yellow fever inoculation it is proper to state that in 1885 I drew the attention of Dr. Joseph Holt of New Orleans to the great practical importance of this matter; and as president and representative of the Louisiana State Board of Health he presented a memorial from the New Orleans Cotton Exchange to the American Public Health Association, to appoint a commission to investigate the discovery by Domingos Freire of a method for the prevention of yellow fever.

In connection with the discussion of this proposition in the *New Orleans Medical and Surgical Journal* the editor said: "It is our conviction that a few months will see Freire and his researches consigned to that lunar limbo where are laid away all things lost or forgotten here on earth."

But it appears that Freire, like Banquo's ghost, will not down and after seventeen years the work goes on successfully in Brazil, and the Argentine Republic may well profit by the latter's example instead of trusting to quarantine and disinfection alone. It is to be hoped that Sanarelli will be as successful in Uruguay as Freire and Simoes have been in Brazil.

I subsequently presented a memorial to Congress from the AMERICAN MEDICAL ASSOCIATION and it was favorably considered, but upon getting the sanction of the ASSOCIATION at its next meeting for sending two additional commissioners to assist Dr. Sternberg with his work in Brazil and Mexico, Dr. J. B. Hamilton managed to have the resolution rescinded. The same gentleman, as chairman of the Section on State Medicine at the 1890 meeting in Nashville, initiated steps to put a quietus to further investigation of the prophylactic inoculation of Freire against yellow fever, and with him and Dr. Sternberg rests the responsibility of the failure to secure its advantages in this country. It is hoped that the influence of these prominent members of the profession may yet be counted in the interest of yellow fever inoculation. Great would have been the necessity for all precautions in view of the recent outbreak of yellow fever in Cuba and of the close relations of this island with Key West and Tampa, Fla., during the present civil war for Cuba's rights, not to speak of past epidemics at Brunswick, Jacksonville and New Orleans. At the meeting of the quarantine conference in Montgomery, Ala., in 1889, I claimed that as germaine to the objects of the quarantine conference yellow fever inoculation should be accorded the place of the most radical means of prevention known and that if it accomplished anything it accomplished everything.

In an article which appeared in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (March 22, 1890), it was urged as a fact versus fiction. Again, as late as Dec. 8, 1894, I wrote for the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION the conclusions which had been formed in September, 1894, in the International Congress of Hygiene and Demography, assembled at Buda-Pesth, Hungary. This Congress announced its belief in the discovery of Freire as follows: "It is a fact attained for science, thanks to the labors of Prof. Domingos Freire, supported by many physicians of Brazil and by observers of other countries, that a microbe (*cryptococcus xanthogenicus Freire ou bacteria de le Dantec*) is the active cause of yellow fever."

From Dr. Sternberg's instructive and interesting description of the observations made by himself and others, it is inferred that the germs or bacteria presented by Freire, Carmona, Gibier, Findlay and others are not to be regarded as identified uniformly in connection with yellow fever, so that the yellow fever bacillus has yet to be discovered. It is most probable that the views of Dr. Vaughan in regard to certain diseases being developed by ptomains after the death of bacteria in the different structures, may be the key to explain the phenomena of yellow fever. All are aware that in the case of hydatids, the chief element of disorder is their death, and hence it would seem that the most philosophic investigation, after the progressive changes in yellow fever have resulted fatally, should not detect living bacteria in the structures of the body, but that they should be sought in the fluids or secretions of the subject of yellow fever in its early stages.

Facts are stubborn things, and as in medicine we use many remedies empirically, without having any rational explanation of their *modus operandi*, we are called upon to test the prophylactic virtues of yellow fever inoculation without having a truly scientific clue to its efficacy. If it appears that inoculation in any form or with any substance, be it a bacillus or not, prevents or modifies the progress of yellow fever in human beings, we are warranted in resorting to it to secure our people against the ravages of this disease. It is claimed that such a process has been employed with satisfactory results in Rio de Janeiro by Dr. Domingos Freire, and the results have been tabulated, giving the names and location of those inoculated, *reaching above seven thousand individuals*, subject to the scrutiny of interested observers, before 1889. The deaths among all those subjected to this process *have not exceeded one to the thousand*, while the percentage of deaths among those attacked with yellow fever in the same localities has far exceeded this proportion, being one in one hundred. *Under such circumstances* we must either disprove the statistics or accept the results as conclusive. Dr. H. M. Lane, a former resident of Carthage, Mo., and now at the head of one of the largest educational institutions in Brazil, situated at San Paulo, was inoculated in 1886. He gave his report (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Vol. VII, p. 165) in a paper on "Yellow Fever in Brazil." He was then a resident of Rio de Janeiro, Brazil, and had every opportunity for judging of the merits of inoculation. He had no great disturbance of the vital functions from inoculation, and has remained immune. The statistics of vaccination have never been questioned because the disease has never been explained by the culture of a microbe associated constantly with the disease, and recent studies presented to the consideration of the American Association of Physicians have failed to isolate the cause of variola.

The views of an editorial which appeared in the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION some years ago, made this very point with reference to yellow fever inoculation and the studies that have been made by Freire and Findlay. The mosquito was shown by the latter to have inoculated the virus of yellow fever, and the more frequent number of inoculations caused a gradual attenuation of the virus. The people thus bitten were affected with yellow fever in a mild form. The idea of Freire is a similar one, but he cultivates the virus in the laboratory in such a way that he secures the prophylactic influence without the serious consequences of yellow fever.

When Jenner introduced vaccination. more than a century ago, the presumption against his process was stronger than that which exists at the present day against yellow fever inoculation, and it was necessary to determine by actual demonstration that the modified impression produced by vaccination really gave immunity from any serious effects of variola.

This running comment may serve somewhat as an introduction to the forcible words of the editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (Jan. 11, 1890), and already epitomized. "And apropos of inoculations, the press of the country has again referred to the inoculations practiced at Rio de Janeiro, stating that the City Council of that city has been so favorably impressed by their ascertained value as protecting against yellow fever, that $600 a month has been voted for vaccinal establishments. To us, at a distance, it seems that the reasoning of Dr. Domingos Freire of Rio de Janeiro, Brazil, Dr. L Girerd, late of Panama, and Drs. Carlos Findlay and Delgado of Havana, is sound and based on the reasoning applied to vaccination. From a case of specific yellow fever, blood is taken from the finger and a culture is made. The attenuated culture is used for inoculating. Natural result, a mild yellow fever, or planting corn that they may get corn, to use a homely simile. Dr. L. Girerd, while in that hotbed of yellow fever, Panama, inoculated himself and produced a mild yellow fever. In December, 1886. the *Canada Medical Record* published a translation of his paper. In Havana. Cuba, Dr. Carlos Findlay repeatedly has inoculated new arrivals, with the happiest results, *i. e.*, subsequent immunity in that hotbed of yellow fever. Again, 'like produces like.' That the blood of a patient suffering from specific yellow fever must be full of its germs goes without saying. In attenuating it, the cultures made *à la* Pasteur, the gentlemen named have worked on accepted lines. They are well-known writers and investigators, as native and foreign medical literature testifies. They have fixed on certain germs or microbes which, from their constancy in their cultures, they believe to be the specific germs. Many years ago, during a limited epidemic of yellow fever at Southampton, England, Dr. Hassell of that city detected an unknown germ or entity in the blood of his patients. Ziemssen refers to it. But be that as it may, from the blood of yellow fever patients the poison of the disease is obtained.

"To repeat, time, patience and investigation will clear up the minor details; the great ones seem to be indisputable. That yellow fever is due to an entity or germ all students of yellow fever accept."

NOTE.—"At the request of Dr. Freire the government of Brazil has appointed a committee of seven prominent physicians to investigate his claims in regard to the micrococcus xanthogenicus" (JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, July 10, 1897, p. 92).

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
BY CARL H. VON KLEIN, A.M., M.D.

XIV.—INFLAMMATION AND WOUNDS.

(Continued from page 802.)

Until within the eighteenth century opinions were divided, and it is surprising that so many surgeons instead of improving the methods of ligature, set themselves, as it were, to disparage its advantages and to discover new means of arresting the flow of blood. They charged against it that the manipulation was cumbersome, the thread insecure and that the coats of the arteries were cut and sometimes nerves were included in the ligature. from which evil consequences arose. Englishmen generally accepted the ligatures, discarded styptics entirely for the large vessels, while the flow from the smaller ones could be stopped by compression. Paré's simple method was again introduced into the English hospitals by White, then by Aikin and used with much success. Sharp, on the contrary, preferred the suture and thought that with the use of pincers the arteries could easily slip out of the ligature. All progress was checked so long as they thought it necessary to include the muscle fibers in the stricture. At that point contention began. Englishmen discarded this method entirely on account of the contraction of the muscles, of the slipping of the thread and of the cutting of the arteries (A. Monro, Gooch, White, Aikin). Bromfield always bound up the artery alone, and invented a curved and pointed hook for the purpose of drawing it up. Alanson and B. Bell likewise favored the ligature of the isolated artery; Bell furthermore considered the procedure so easy and reliable that it was foolish even to think of any other method and rash to trust the large vessels to any other means when the ligature was so simple and could be relied on so fully; he furnished the pincers with a slide for closing them. Although an advocate of ligature, Warner said he knew a few cases should be reserved for the hot iron when ligature was impossible. In France the great regard for J. L. Petit retarded the development of ligature; he allowed to the thrombus alone the power to arrest the flow of blood and close the vessel, and saw only one advantage in the ligature, that of holding back the coagulum. As the greatest advocate of direct compression, which best supports the action of the thrombus, he discarded the ligature in amputations as a cruel method. Its superiority was only gradually conceded, and its general introduction in France is especially due to Desault. With one blade of the pincers in the opening of the artery he seized and bound it with a waxed thread, which he drew only moderately tight and double knotted. (On account of the after-hemorrhage Desault bound the veins also in amputations; he introduced the two blades of the pincers into the openings of the artery and vein if they lay close together, and included them in a common ligature.)

Pouteau, who regarded the swelling of the cellular tissue as the most important factor in stopping hemorrhage, insisted that many muscle fibers be bound with the artery in order to obstruct the blood as much as possible and prevent cutting through the artery. Louis, on the contrary, who feared the quick falling away of the thread, caught as little of the tissue as possible with the artery. Deschamps proved that just this inclusion was the source of many after-hemorrhages, and with Scarpa announced the principle that for ligature the artery must be separated from all other parts, even its cellular tissue. Only with the recognition of this principle was the way opened for the general application of ligature. Those among the German surgeons who were educated in England advocated it earnestly. Richter, Heister and the two Siebolds regarded the ligature of the isolated artery as the most reliable, the safest, gentlest and most harmless means of arresting hemorrhages of the larger arteries. Richter did not fear the cutting through, if the threads were rather broad and not drawn too tight. He recommended Bromfield's hook instead of the suture, which was very popular at that time but appeared to him inconvenient. and instead of the artery pincers, which he discarded because they seized nerves and muscle fibers with the artery. (In 1753 von Brunn in Gottingen had from his investigations upon animals by binding the larger nerves, to which the severest accidents happen, enunciated the theory that in ligature of the arteries the nerves should never be bound with the artery.) He had no confidence in compression or the hot iron, but left the former to hemorrhages of the small vessels, the latter to very deep-lying blood vessels. As a modification of the ligature Scarpa advanced the method of protection to a special principle in which he laid a small strip of linen between the thread and the artery. Previously Deschamps, who objected to the insertion of foreign bodies, had come forward with a new discovery, the "Presse-artère" (1793); he took a small silver staff with a head set at right angles and doubly perforated. Between this and the thread, the end of which was passed through the two perforations and knotted in the cleft in the upper part of the staff he squeezed the artery. The fear of hemorrhages from this time on constantly diminished. The large arteries were boldly encountered. Petit, Deschamps, Ehrlich and others laid bare the injured art. cruralis and bound it. Acrel, in a case of traumatic aneurysm, successfully placed a ligature on this artery a few inches under the lig. Poupartii, and indeed Desault in aneurysm of the axillaris undertook an operation which hitherto. out of fear of a hemorrhage, had been performed only two or three times. He failed at this as he could not stop the flow of blood. and his patient died suddenly. In the year 1775 the carotis communis was for the first time bound by Warner and Else, following which Lynn, J. Hunter's assistant, in 1792 achieved the same result in a violent hemorrhage after the extirpation of the parotis. The ligature of the carotis externa was, as B. Bell relates, first performed in 1786 in a hemorrhage attending extirpation of a scirrhous tumor. Abernethy followed in 1796 with the binding up of the iliaca externa.

Next to the ligature, *compression* was the principal means for stopping hemorrhage. For this purpose the tourniquet was used, which had been invented by Morel in 1674, and which J. L. Petit had improved in 1718 by adding a screw for the drawing on of the girdle. This instrument was endlessly modified. Among the Germans Ehrlich invented a pad having a crosspiece with a handle for the purpose of compression; Brünnighausen and Hesselbach invented an iron hoop with a handle. Indirect digital compression, already known to A. Paré, found an advocate in the eighteenth century in Louis, who recommended it in amputations. Bromfield compressed the subclavia against the clavicle with the finger, and Richter in the most critical cases used the thumb in place of the tourniquet. A few German surgeons who would have nothing to do with ligature, employed compression in the form of the tampon, which was preferred by J. L. Petit to all other methods for stopping hemorrhage. Theden used a lance for this purpose. He had at first used the ligature in amputations, but never the detested ("vermaladeyeten") artery pincers—"my flesh creeps when I think of the notorious artery pincers"—because he saw contusion of the arteries and spasms of the nerves, swoons and great pain resulting from their use. He repeatedly asserted that he was able to stop every arterial hemorrhage in the extremities, even in case of the cruralis and axillaris, with the tampon, and in many violent hemorrhages he found no ligature necessary. He considered the successes of the English as of no value. When in 1745, after an amputation of the upper arm, he wished to constrict the artery, he pulled it violently back and the bleeding ceased, whereon he concluded that this drawing back action could be accomplished by the tampon, and the bleeding thus stopped. After a few successful amputations he discarded the ligature entirely, not even approving of it for after-hemorrhages. His practice was to place finely picked lint in balls about the size of a hazelnut, at the opening of every bleeding artery, and to constantly increase the size of the balls of lint so that altogether they represented the form of an inverted cone: besides this on both sides of the stump compression was exerted which increased the pressure upon the arteries. The pressure bandage, finished with a maltese cross, long narrow compresses and bandage, was moistened with arquebusade water. In case of possible transportation of the patient he had a fresh ox bladder fitted over this bandage, in order to prevent renewed hemorrhage This method of stopping hemorrhage he applied to all operations. His influence had the effect that in the Berlin schools, *needle and thread for fastening blood* vessels were discarded, as well as the artery pincers In the fifty years of rich practical experience following the first experiments, this method proved itsel so valuable that in 1795 Theden wrote: "I have performed this operation in this way when it was quit necessary. and up to this hour with the very best success." The *same opinion was held* by Schmucker who, moreover, considered tamponning by means o fine lint as altogether safer for the cruralis, and i amputations regarded it better than *ligature*, becaus of the painfulness of the latter. The two surgeons-general had become acquainted with the tampon through a city surgeon in Schweidnitz and had introduced it since 1744. Bilguer took a middle course and while for hemorrhages of the larger blood vessels he applied ligature to the isolated artery by means of pincers or a clasp, on the other hand, in the case of small blood vessels, he applied the tampon by means of a sponge and lint. With such recommendations one can readily picture the great disadvantages which resulted from the tampon in Germany, especially in military surgery. That Theden had no reason whatever to be satisfied with his results was demonstrated to him by A. F. Vogel. The latter saw five healed amputations of the upper thigh in London at one time, while Theden could only boast of two recoveries in all after this operation, which he had certainly often performed, whereupon Vogel declared that the great variance between the German and English results was because the German surgeons had discarded the ligature and arrested hemorrhages by compression and constriction of the stump.

Some surgeons applied the ligature only in case of the cruralis, and for the other arteries employed stricture and *styptics*. Indeed, the latter were so much in vogue that among the German barber-surgeons, especially in the first half of the century, almost nothing but this was talked of, aside from the hot iron. In later times also they were very much used by the best surgeons for arresting hemorrhages of the small blood vessels. Among the great number of them (vinegar, alum, vitriol, colophonium and others) the common wash sponge was very popular. Charles White arrested every hemorrhage with it, and in fifty cases of arterial injury, among them amputations of the upper thigh and of the mammæ, he required the ligature only twice. J. Bell considered it as the only rival of the ligature. A great sensation was made by the oak fungus, *agaricus*. Brossard, in 1751, had recommended this as the best remedy in amputations and for this had received a gift from the king of France. The Académie de Chirurgie had expressed a very favorable opinion of it and published the remedy after Faget and Morand had performed a successful operation with it in the presence of la Martinière. Agaricus spread quickly over European surgery and appeared to be about to supersede the ligature. Its warmest defenders were Faget and Morand, who argued as an especial feature of this "amadou" that it could be applied by any of the laity and only needed to be pressed upon the opening of the artery in order to effect a closure. The aged Moreau also preferred it because he observed that the pulse often returned after twenty-four hours, while, on the contrary, after the ligature it remained imperceptible for fourteen days. In Italy the agaricus was championed by Molinelli, and in England by Watson and Warner. The latter had, upon suggestion of the Royal Society in London, experimented with it and discovered that the agaricus arrested hemorrhage more certainly, caused less wound fever and did not retard healing so much as the ligature; it was insufficient, however, in case of injury to the large blood vessels. H. Parker opposed these indorsements (1755) and warned the surgeons; those operated upon by Faget had indeed died and Warner's patients had been so weak that even dust or flour might have stopped the flow of blood. To him the ligature was indispensable, was without danger, and the oak fungus was to be used only where ligature was impossible. Le Cat, Gooch, B. Bell and Acrel declared themselves in the same manner opposed to it. Richter denied to that agent all power of arresting hemorrhage; the arrest of the flow was caused by the simultaneous compression and not by the agaricus, for without the former the latter had no virtue and could be readily counteracted by the movements of the patient. His pupil, A. F. Vogel, held the same views. On the other hand, Theden preferred the new remedy to his hitherto used tampon with lint, and with it arrested hemorrhages of the art. mammaria, of branches of the carotis ext. and cruralis, as well as in castration. At the close of the century *cold water* for hemorrhage was introduced, especially by the Austrian surgeons Zeller and von Kern; they sought to arrest hemorrhages by cold poultices and suffusions or by a bath sponge saturated with ice-water.

Let us leave open wounds in order to contemplate the *precursors of subcutaneous surgery* a century ago. The first impetus to the subcutaneous idea had its birth in 1767 amid the clangor of music. It was J. Hunter who at a dance lacerated the tendon of Achilles and undertook a number of experiments in order to study the reuniting of the lacerated tendon. In dogs he severed the tendon of Achilles subcutaneously with a cataract needle, and in the sections observed the reuniting of the tendon taking place in the same manner as in a simple bone fracture. The principle of the exclusion of the air by means of displacement of the skin found its first practical application in the operation on the joints. Theden indeed already knew that one could open the kneecap without danger if the penetration of the air was only prevented; but when he had opened a suppurated knee joint he did nothing else than close the opening with a plaster, undoubtedly with success (1771). Bromfield for the first time, in 1773, in the extraction of a foreign body from the knee joint introduced displacement of the skin. He did this often with successful results, but did not consider it entirely without danger; indeed, B. Bell sometimes in this affection found amputation necessary. If the foreign body was located on one side of the patella, Bromfield had the skin drawn down as much as possible over the knee and tightly stretched; then he opened the skin and capsule upon the swelling, extracted the foreign body and immediately drew the skin back again toward the thigh. Compresses wet with brandy were laid upon the wound (another assistant should draw down the integuments with his hands till they form rugæ below the knee. . . Extension . . . This effected, the integuments are immediately to be drawn upward. "Chir. Observ.," I, p. 334). This displacement of the skin from above (B. Bell) or from below, in such a way that the opening in it should not correspond with the opening in the capsule, was considered by the English as the essential thing. Hunter, who had many times performed the above mentioned operation with success, laid great stress on the prevention of inflammation and the attainment of *prima intentio*, and therefore, when he closed the wound by suture, he never allowed the latter to penetrate into the hollow of the joint. In Germany Richter first grasped the subcutaneous idea and applied it (1782) in operations on the ganglia. If the sac could not be burst open a very small perforation was made before the lancet was used and the external skin was drawn aside as much as possible, so [illegible] it af[illegible]ard covere[illegible] an opening over the fragments; the patient was cured and could walk about after four months. Gypsum has been used in Europe for fractures only since the year 1814.

(To be continued.)

SOCIETY PROCEEDINGS.

National Confederation of State Medical Examining and Licensing Boards.

Abstract of the Proceedings of the seventh annual meeting, held at Hotel Walton, Philadelphia, May 31, 1897.

MORNING SESSION.

The Confederation met at 10 A.M. and was called to order by the President, Dr. WILLIAM WARREN POTTER of Buffalo, N. Y.

An address of welcome was delivered by Dr. A. H. Hulshizer of the Pennsylvania State Board of Examiners, which was responded to for the Confederation by Dr. Charles A. L. Reed of Cincinnati, Ohio.

At the conclusion of Dr. Reed's remarks, the President introduced Regent T. GUILFORD SMITH, representing the University of New York, who said, among other things, that he had been sent to attend the meeting of the Confederation with with a view to impressing the importance of preliminary education before entrance into a medical college. It was very essential to know first that the applicant is a man of good character, of good standing in the community where he lives, and furthermore, that he has a good plain English education as a minimum standard, and this in New York State was the high-school standard.

Dr. A. WALTER SUITER of Herkimer, N. Y., read his report as Secretary and Treasurer, in which he made a few references to such matters as concerned the organization as such, in the hope that the potency of its influence might thereby be increased toward the final accomplishment of the great mission which gave to it a corporate existence, namely, unification upon the broad lines of the highest standard of educational excellence of the medical profession of the country in which we live. The Confederation was now regarded by the medical public as the central head and exponent of the examining and licensing system now adopted by a large majority of the States. The report bristled with many excellent suggestions and, on motion was adopted.

The First Vice-President, Dr. CHARLES A. L. REED, then took the Chair and President POTTER delivered the annual address, selecting for his subject,

RECIPROCITY IN MEDICAL LICENSURE.

He first paid tribute to the memory of Dr. Perry H. Millard of St. Paul, then in an introduction reviewed some of the essential points of progress that have been made in State control of medical practice, and finally considered his subject.

The problem.—The most important question now to be discussed pertains to the interstate exchange of licenses and every friend of State control is interested in establishing this principle. It is one of the objects this Confederation is laboring to accomplish, but a most difficult problem for solution. A national registration bureau is desirable where legally qualified and reputable physicians may be recorded, physicians whose names appear on the register to be allowed to pass from State to State in the enjoyment of all privileges pertaining to the practice of medicine. Those chiefly agitating the question of reciprocity, however, are specialists who desire to spend profitable vacations at summer resorts and do not relish the idea of taking State examinations in the localities chosen for their holiday practice. Another class of men compelled by circumstances to change residence, is more deserving of sympathy; they take the examination uncomplainingly. Shall a State require of its own citizens a compliance with its practice laws while granting to thrifty summer specialists exemption from their operation? As the State laws forbid discrimination against the inhabitants of each there is both a legal and a moral bar to such exemptions.

Obstacles to reciprocity.—Equality of standards for admission to the study and practice of medicine is the only enduring basis on which reciprocity can be established. When the several States adopt a uniform level of preliminaries, a uniform period of collegiate training, [illegible] of methods of teaching, and finally, an [illegible] the methods of conducting State examinations and granting licenses, then reciprocity will be equitably and permanently established. It is important for the State medical examiners to come to an agreement on these several points that they may act with intelligence on a common platform. The State imposes a post-graduate examination, and none should be admitted to it who are not holders of diplomas legally obtained from registered and recognized colleges. It is understood that there must be established a uniform system of recognizing and registering medical schools in the several States.

The solution—Legislative enactments.—The remedies lie in legislative enactments. Those who most loudly and persistently demand interstate indorsement aim their criticisms at examining boards, whereas these have nothing to do with the question. The statutes in States that have established licensure prohibit interstate exchange except between such as have equality of standards. The demands of the restless and migratory doctors must be taken to the legislative halls. Meanwhile, the members of this Confederation may assist in bringing the matter to a more speedy conclusion by acquainting their legislatures with the difficulties to be overcome and by urgently recommending the adoption of such amendments to existing laws as will meet and remove the present defects. Great care must be exercised, however, in the preparation of amendments; the State laws are for the public weal, while reciprocity is only for the few. Amendments to the existing statutes should be proposed only through State medical examining boards or State medical societies; they are familiar with defects and best know the remedies needed. When legislatures can be persuaded to turn a deaf ear to all amendments that are proposed outside of official sources, it will be a happy day for the friends of State license. The object of this discussion is to divert further criticism of the delay of reciprocity into the proper channel. If legislators could be made to appreciate the fact that public health interests are involved in the question of State license, that every attempt to weaken the principle is a blow at public sanitation, and that higher standards of medical education mean better health to the people, then perhaps it would be easier to obtain and maintain the necessary laws to protect the commonwealths against that kind of ignorance, superstition or superrefinement that always lurks in the environment of quackery.

AFTERNOON SESSION.

The Confederation reassembled at 2:30 P.M. with President Potter in the chair.

Dr. EUGENE BEACH of New York, offered the following resolution, which was unanimously adopted.

Resolved, That when for any reason a license to practice medicine in any State has been revoked or suspended, the proper officer of Boards of Examiners in other States should be notified of the facts.

Prof. J. W. HOLLAND of Philadelphia, delivered an address in which, speaking as a teacher enthusiastic for higher medical education, he expressed the friendly intent of college men in the growth of the work of the medical examiners. He said: Conscientious teachers, who first looked askance, were now frankly recognizing that the State examinations had proved a stimulus to students and teachers. In fifteen States the regulations required that the medical degree should first be conferred by the college before the State Boards would consider the application for license. The examining professors must continue to meet this requirement, even while they recognize the fact that the teacher's bias in favor of his pupil tends to make a lenient examiner. The mere existence of the Confederation was significant of the unity of the medical profession and the desire for co operation in their functions. To secure uniformity among the States the prime requisite was to recognize the difference of ideals of education, not in medical qualifications so much as the preliminary branches of study. For any single licensing board to set up, as a standard preliminary to medical study, a graded curriculum requiring six or eight years and ending in a high school diploma, was to cut itself off from the satisfaction and rewards behind to attain reciprocity among the licensing boards. Was not such a standard too far in advance of the opinion of the people and the legislatures? Would not more important features of the work be imperiled by too great exaction in this particular? The task of educating each new legislature to appreciation of the needs of medical education was proving a difficult one in Michigan, Illinois and other States. Let us among ourselves prove that certain preliminary studies are *essential* to doctors everywhere and then be sure we hold fast that which is good.

Dr. WM. S. ELY of Rochester, said it was difficult for State Examining Boards to frame rules without doing injustice at some time or other to men who lacked the advantages of early education; and yet some of these men, by the possession of wonderful skill which amounts to genius, were able to make up for all the Latin and Greek and all the culture they may represent in the practical outcome of their work.

Dr. **William Bailey** of Louisville, in speaking of minimum requirements, said it was difficult to apply the principles that might be applicable to some districts, to Kentucky. He would like to see a graduate of Princeton or of Yale, after going through with his collegiate course, graduating with honor, spending four years in Jefferson Medical College, then going into one of the back counties of Kentucky, undertake to make a living. The people would not understand him. He was in sympathy with the most perfect advances that could be made in medical education, and he heartily approved of examining boards investigating medical colleges.

Dr. **N. R. Coleman** of Columbus, Ohio, read the preliminary

REPORT OF COMMITEEE ON MINIMUM STANDARD OF REQUIREMENTS FOR ADMISSION TO MEDICAL COLLEGES.

The object of this report was to prescribe such a standard as may serve as a common ground upon which all of the examining and licensing boards of the United States may unite, both with credit and protection to society. The question of practicability must take cognizance of the existing status not only of medical education, but of preliminary education in each of the several States of the Union. The present report was submitted only as one of progress, with the suggestion that the Committee on Minimum Requirements be continued for the ensuing year. It was important for the Confederation to consider the requirements already enjoined by the colleges themselves. These are as follows:

Section 1. Colleges, members of this Association, shall require of all matriculates an examination as follows: 1. An English composition in the handwriting of the applicant of not less than 200 words, said composition to include construction, punctuation and spelling. 2. Arithmetic, fundamental rules, common and decimal fractions, and ratio and proportion. 3. Algebra, through quadratics. 4. Physics, elementary (Gage). 5. Latin, an amount equal to one year's study as indicated in Harkness' Latin Reader.

Sec. 2. Graduates or matriculates of reputable colleges or high schools of the first grade, or normal schools established by State authority, or those who may have successfully passed the entrance examination provided by the statutes of the State of New York, may be exempted from the requirements enumerated in Section 1.

Sec. 3. Students conditioned in one or more of the branches enumerated as requirements for matriculation, shall have time until the beginning of the second year to make up such deficiencies; provided, however, that students who fail in any of the required branches in this second examination shall not be admitted to second course.

The foregoing extract, being Article III of the Constitution of the Association of American Medical Colleges, is to be accepted not only as the official declaration of the schools, but as the definition of the existing practice among them. It is the belief of the Committee that the colleges as a rule, particularly those of a higher class, are enforcing those regulations with a commendable degree of uniformity. Other schools are known to be lax in this particular. The supplementary evidence required by many of the licensing boards brings to the surface many examples of gross illiteracy which could not exist if the rules adopted by the College Association, as set forth above, were rigorously enforced. In the opinion of the Committee, no profession can maintain its pretension to be a learned profession, the preliminary educational requirements of which are placed upon the low plane indicated in the Constitution of the American College Association. The view is generally entertained, and the Committee is impressed that its position is a tenable one, that admission to a medical college ought to be based upon at least as high requirements as those for admission to an academic course in our universities. This view has been emphasized in the State of New York, in which, under the administration of the Regents of the University, the high school curriculum leads to the door of the academic facilities. This state of affairs, however, does not exist with any degree of uniformity in other parts of the United States. In certain of the States, education beyond the common school grade is by no means definitely organized. In others the standards are determined by municipal rather than State regulation. It is, therefore, important in designating a high school course, that the curriculum itself be specified; the general term is without specific significance. What is needed in the various States is a central body or authority which shall define and preside over the general educational interests of the State. In this way alone can the question of uniformity in educational requirements, as implied in a high school course, be determined. The Committee is of the opinion that it would not be well for the Confederation to employ the term "high school course" as definitive of the minimum requirements for admission to medical colleges without going a step further and defining just what is implied by the term "high school course."

The question of the conduct of examinations for admission, by independent examining boards, is a proposition which ought to be warmly supported by every right-thinking, honest-working medical faculty. The schools that come within the purview of such a law are relieved of all suspicions and imputations of commercialism. When such a proposition is advanced, the practical difficulty encountered in many of the States is the absence of the central authority vested with the power to conduct such examinations.

The Committee is deeply sensible of the fact that the matter of minimum requirements is one that should take precedence over all others in the general question of medical education. It is not, however, unmindful that much criticism that is effective with a legislative body, lies in the fact that a very long period of time is embraced in the academic and professional courses. The Committee commended the position taken by the Ohio State University in furnishing a course leading to the baccalaureate degree, especially adapted to the needs of medical students, and which course is covered in the period of three years. The practical character of this course can only be indicated by a specific enumeration of its studies, which we give below:

OHIO STATE UNIVERSITY. COURSE PREPARATORY TO THE STUDY OF MEDICINE.

Applicants must be at least seventeen years old, and must pass in grammar, geography, arithmetic, algebra (through quadratics), plane and solid geometry, physics, rhetoric, United States history and botany, and either astronomy, civil government or general history.

FIRST YEAR.

First Semester.	Credit hours.	*Second Semester.*	Credit hours.
Botany: Systematic and physiologic	4	Botany (½ semester): Medical	1
Latin: Pharmaceutic	5	Latin: Pharmaceutic	5
Physics: Mechanics, heat, etc	3	Physics: Electricity, magnetism, etc	3
		Physics: Laboratory	2
		Physiology (½ semester): Microscopy	1
Rhetoric: Paragraph writing	2	Rhetoric: Analysis of prose	2
Zoology: Comparative	3	Zoology: Comparative	3
Cadet service (men)		Cadet service (men)	
Hygiene and phys. train. (women)		Hygiene and phys. train. (women)	

SECOND YEAR.

First Semester.	Credit hours.	*Second Semester.*	Credit hours.
French: Elementary German: Elementary	4	French: Prose and plays German: Elementary	4
General chemistry: Inorganic	3	General chemistry: Inorganic	3
Physiology: Human anatomy	5	Rhetoric: Prose analysis	4
Zoology: Comparative anatomy	5	Zoology: Comparative anatomy	5
Cadet service (men)		Cadet service (men)	
Hygiene and phys. train. (women)		Hygiene and phys. train. (women)	

THIRD YEAR.

First Semester.	Credit hours.	*Second Semester.*	Credit hours.
French: Science reading, or German: Science reading	2	French: Science reading, or German: Science reading	2
Economics: Political economy	4	Economics: Political economy	4
Philosophy: Psychology	4	Philosophy: Logic and ethics	4
Pharmacy: General	3	Pharmacy: General laboratory	5
Physiology: Laboratory	5	Physiology: Laboratory	5

The Committee is of the opinion that a general adoption of the example set by the Ohio State University will presently bring us to contemplate the pleasant spectacle of the general adoption of an academic rather than a high school qualification for admission to medical colleges.

The report concluded with the recommendation that, as far as it be vested in the discretion of existing examining and licensing boards, the rule be enforced that any colleges to be considered in good standing must enforce an entrance requirement embracing the studies of English grammar, English composition, rhetoric, Latin (two years), arithmetic, algebra (through quadratics), plane and solid geometry, physics (especially in heat, light, sound and electricity), botany, zoology, United States history, civil government, one modern language other than English (two years); or a high school diploma issued after four years' attendance and based upon examinations in the foregoing subjects. These subjects are embraced in the courses of a large majority of high schools which require four years of study?

DISCUSSION.

Dr. **John A. Larrabee** of Louisville, said if the standard proposed and the conclusions reached be carried out, he feared the Confederation would be deprived of many of its valuable members, and that the Association of American Medical Colleges would be depleted to a considerable extent. In regard to the qualifications being equal to degrees in colleges at their close to the baccalaureate or A.M. degree, that would leave out all but two or three of the Faculty of the University of Pennsylvania. He cited this to show that there was danger in making progress too rapidly. If we have the minimum requirements of the College Association, we had a good academic education, and what more could be desired for commencing a four years' course of study?

Dr. T. J. Happel of Trenton, Tenn., said the idea of requiring the study of astronomy was something he did not understand. He failed to see what object it could serve, unless to tell us when we might do an operation in accordance with the signs of the almanac. With reference to a high school diploma or a certificate of graduation from a high school being accepted in lieu of an examination for entrance to a medical college, his experience for the last seven years as Secretary of the State Board of Tennessee, was that a certificate from the average high school was not worth much more than a diploma of the average medical school ten years ago. Let the medical colleges examine every young man regardless of what he brings with him in the way of a diploma or certificate.

Dr. L. B. Godfrey of Camden, N. J., referred to the interchange of certificates. New Jersey had been unable to effect an interchange of certificates with New York up to this time; yet he was prepared to say, that the New Jersey standard was higher than that of New York; that the former required a more thorough medical education.

Dr. J. P. Creveling of Auburn, N. Y., endorsed the report of the Committee. The State of New York rejects from 30 to 33 per cent. of applicants, while in the examinations in New Jersey they reject from 10 to 12 per cent. He could hardly believe that New Jersey was so rigid in its examinations.

Dr. Hugh M. Taylor of Richmond, Va., believes very little good can be accomplished by enacting laws to govern medical colleges, as they could not be controlled in that way.

Dr. Augustus Korndoerfer of Philadelphia, said the great difficulty which he had observed in all discussions upon the subject of preliminary examination was that the whole idea seems to be to expect from the candidate a general literary education rather than a preliminary preparation. The whole thought of the Committee should be centered in one line, namely, how to develop a course of preliminary study to fit a medical student for the reception of the lectures he hears in a medical college, etc. If proper preliminary qualifications were required of applicants seeking admission to our medical colleges, it would better fit them for the study of medicine.

Dr. Willis F. Westmoreland of Atlanta, Ga., said if history, geography, higher mathematics, modern languages, etc., were to be incorporated in the prelimary requirements, very few men in the Confederation would be competent to conduct the examination. If a physician went before the Georgia legislature and exacted of all applicants such qualifications before entering upon the study of medicine, it would mean the wiping out of existence everything that has been accomplished in the past few years.

Dr. S. R. Dunn of Mississippi, said that while he agreed with the proposed advancement, the work should be undertaken with great care. Medical colleges could make what rules they saw fit for the admission of applicants to their schools, and the legislatures of the various States could not abolish them, and were an attempt made by State examining boards to prevent graduates or non-graduates from coming forward to be examined under stringent rules, he fears it would result in the abolishment of State examining boards.

Dr. A. K. P. Merserve of Portland, Me., said State examining boards were appointed not to attend to medical education, but to see by thorough examination and to judge of the character of the men presented whether their education has been satisfactory. These boards had the power to reject men who could not spell such words as radius and ulna, and he thinks the colleges would learn a good deal by the rejection of such men.

Dr. Wm. S. Foster of Pittsburg read a paper on

SOME PRACTICAL EXPERIENCE WITH AND THE RESULTS OF THE MEDICAL LAW OF PENNSYLVANIA.

Reference was made to the present medical law of Pennsylvania, which went into effect March 1, 1891. The act provides for three boards of seven members each, representing the State Medical Society of Pennsylvania, the homeopathic and eclectic associations. The "regular" board, representing close to six sevenths of the physicians of the State, was accorded the privilege and responsibility of taking the lead in formulating suggestions and rules for the government of the respective boards, as well as details pertaining to the examinations. The entire field of medicine is divided, for examination, into seven departments or subjects. These departments and the subjects allotted to each were then taken up *seriatim*. The essayist closed by saying that the most serious deficiency in medical graduates today was the want of sufficient preliminary education.

Dr. W. H. Sanders of Montgomery, Ala., followed with a paper entitled

THE ALABAMA SYSTEM.

The author prefaced his remarks by giving a brief explanation of the fundamental principles underlying the organization of the medical profession of the State.

The Board of Censors of the State Medical Association acts as a committee of public health for the State, and in the intervals of the sessions of the State Association exercises all of the functions conferred upon that body. This same Board also acts as a State board of medical examiners. The authorized boards of medical examiners are: 1, the Board of Censors of the State Medical Association acting as a board of examiners, and known as the State Board; 2, the boards of censors, also acting as boards of examiners, of the several counties of the State, of which there are sixty-six, known as the County Boards.

In order to practice medicine in Alabama a successful examination must be passed before some one of these authorized boards. The standard of qualifications, the subjects and methods of examination and the rules for the government of the examining boards are such as may be from time to time prescribed by the State Medical Association.

The rules at present in force may be briefly stated as follows:

1. All examinations must be in writing, and must comprise ten branches, viz., chemistry, anatomy, physiology, natural history and diagnosis of diseases, physical diagnosis, surgery, mechanism of labor, obstetric operations, hygiene and medical jurisprudence. Materia medica and the practice of medicine are intentionally omitted from this schedule in order to avoid ground upon which different sects or schools of medicine disagree.
2. The examinations are conducted by a paid supervisor, and are intended to be so conducted as to render it impossible to obtain aid. The answers to the questions are separately valued, one hundred being the maximum. For an examination to be successful, the final average must not fall below seventy-five. The time consumed in an examination is usually from six to ten days.
3. Every written examination made by a county board must be reviewed and reported upon by the State Board.
4. The county boards are not allowed to examine any applicants for license unless they hold diplomas from reputable medical colleges, the State Medical Association determining the question of reputability. Non-graduates can be examined, but they must apply to the State Board.
5. If any applicant is rejected by a county board he can not obtain a second examination by any county board until after the lapse of twelve months, but he may forthwith appeal to the State Board, which will not review the previous examination, but proceed to give an entirely new one.
6. Eclectics and homeopaths must be subjected to the same examination as "regulars." The law does not recognize sectarian differences among doctors, but erects the same standard of qualifications for all.
7. Anyone proposing to locate in a given county of the State must apply for a license either to the Board of that county, or, if he prefers, he can apply directly to the State Board. From whichever source a certificate of qualification is obtained it must be recorded in the probate office. A certificate may be transferred from one county to another.
8. All examination papers are bound and so filed as to be of easy reference.
9. Fees: To the supervisor, ten dollars; for registering in probate office, one dollar.

A very natural criticism of the Alabama law would be that it creates a multiplicity of Boards, but viewed from another standpoint this is an element of strength rather than of weakness. The great aim is the organization and discipline of the medical profession throughout the State; and the most potent of all the factors is that the County Medical Societies, through their Boards of Censors, have been made the agents of the State for the administration of the law to regulate the practice of medicine.

The following preamble and resolution was introduced and adopted:

Whereas, There exists in this country, under full authority of law, every grade of medical school, from those which equal the best in the world, to those which have not even a pretense of teaching force or equipment. And,

Whereas, Little official or authentic information exists or is available relating to the methods or standing of the low grade and fraudulent schools in such form that it can be relied upon and used by licensing bodies and courts.

Now, Therefore, be it

Resolved, That a Committee of twelve be appointed by the Chair, so distributed geographically that convenient sub-committees of three may be formed, whose duty it shall be during terms to visit, inspect and report on the equipment, teaching methods and requirements of every medical college in the United States, said report to be made to this body at its next annual meeting.

The election of officers resulted as follows: President, Dr. Wm. Warren Potter, Buffalo, N. Y.; vice-presidents, Dr. E. L. B. Godfrey, Camden, N. J., and Dr. William Bailey, Louisville, Ky.; secretary and treasurer, Dr. A. Walter Suiter, Herkimer, N. Y.

The Confederation expressed its regret, in the form of a resolution, at the early death of one of its most active, companionable and accomplished members—Dr. James Mackintosh Hays, of Greenboro, N. C.

Adjourned.

SELECTION.

Suture of Arterial Wounds.—Djemil Pasha of Constantinople, reported at the Moscow Congress two cases, one in 1894 and the other in 1896, in which he had sutured the axillary artery in the course of an operation to extirpate a recurrent cancer of the mamma. He continued: It frequently happens that surgeons are compelled to ligate a large artery, either because it has been accidentally injured in the course of an operation, or on account of some small aneurysm or an arteriovenous aneurysm, when a few stitches would have made it possible to retain the physiologic functions of the artery and save a member from occasionally inevitable gangrene. For a certain number of years, thanks to the efforts of German surgeons, suturing wounds in the veins has become almost a classic procedure, and several communications on the subject have been published. On the other hand, very few observations of sutured arterial wounds have been reported, and almost all the classic works are dumb on this very important subject.

Glück was the first to call attention to the suture of arterial wounds, when he reported to the Berlin Medical Association a case of arteriovenous aneurysm in Scarpa's triangle, in which Jage-Charteuffel had successfully sutured the femoral artery. Israel reported a second case, in which the external iliac artery had been sutured in the course of a difficult operation for perityphlitic suppuration. Heidenhain also has reported the suture of the axillary artery for carcinoma of the right mamma.

Quite recently J. B. Murphy, in an important article in the *New York Medical Record*, of January, 1897, has demonstrated that it is not only possible to suture arterial wounds, but also to resect a considerable portion of the artery. After performing the operation thirty-four times on dogs and calves, he applied it to man with complete success. He proves that simple suture is impracticable, if more than half of the circumference of the artery is torn. In such a case he advocates resection of the injured portion, followed by suture of the ends of the artery after invagination. He reports the case of a young man of 29 who had been shot in Scarpa's triangle. The hole in the artery was three-eighths of an inch in length. He resected one-half inch and sutured the central to the peripheral end with invagination.

Before having any knowledge of the observations and labors of Heidenhain, Israel and Glück, we performed the operation of suturing a lacerated artery with perfect success, more than two years ago. The first observation was the case of a woman 49 years old, Mrs. Kristik, who had recurrence of a carcinoma of the left mamma extirpated six months before. The recurring tumor was firmly attached to the vasculo-nervous bundle in the axilla, the left superior member edematous, with violent pains in the axilla and member. A second operation was decided on and performed Feb. 5, 1895. As the tumor encircled almost the entire vasculo-nervous bundle, we were obliged to proceed to an actual anatomic dissection, during which the axillary artery was injured and the hemorrhage arrested by compression with the finger. I prepared a strong silk thread to ligate the artery, but recalling an unfortunate case of gangrene of the superior member consecutive to ligature of the axillary artery for a laceration that occurred during curettement of the axilla, I abandoned the idea of ligating and determined to suture the injured part of the artery, as had been done for venous lesions. The wound, 15 mm. long, was parallel to the longitudinal axis of the artery. After having wound the blades of a couple of pairs of long, flexible curved forceps with sterilized gauze, I applied them to the artery, one above and one below. The hemostasis was complete. With a very fine curved Reverdin needle, I took five stitches, with extremely fine silk thread, close to the edge of the tear, and two more stitches in the sheath of the artery. Immediately afterward the forceps were removed and the circulation proceeded quite regularly. A few minutes' compression was sufficient to arrest the slight oozing of blood through the stitch holes. The artery pulsated strongly; the lumen was not contracted and the sutures held perfectly. The skin was sutured, leaving a small strip of sterilized gauze over the suture, to produce a slight compression, and also to enable the artery to be seized in case of ulterior hemorrhage. The patient passed a good night.

The next day the dressings were renewed and the gauze removed. The superior member was not edematous. We removed the sutures in the skin February 13, and the wound healed by first intention. The patient left the hospital the fifteenth day after the operation, completely cured. The pulsations of the axillary and even of the radial artery could be distinctly felt, but not quite so forcibly as on the other side. It is now two years and a half since the operation. I saw the woman again recently, and examination showed that the axillary artery pulsated its entire length, without trace of traumatic aneurysm.

The second observation was a recurrence of a malignant tumor of the right mamma, which had been extirpated with the whole of the pectoralis major and the corresponding axilla curetted. The patient was a woman of 48 years. The second operation occurred Aug. 15, 1896. As all the vasculo-nervous bundle was firmly adherent to the tumor, I was obliged to resect a large piece of the axillary vein and the two branches of the median nerve. In the process the artery was torn. I succeeded in arresting the hemorrhage, as above described, and discovered a lesion a centimeter in length, which I closed with four stitches, using a Reverdin needle and fine silk, as before. I could not suture the sheath in this case, as that had been destroyed in extirpating the tumor. The forceps were removed at once and as the circulation was restored the artery beat its entire length, the lumen no smaller than before. The integument was sutured with silkworm gut, and a strip of sterilized gauze left near the suture. For more than a month the superior member remained edematous and the large wound which extended to the sternum cicatrized with suppuration, but the wound in the axilla healed by first intention. Two months later I examined the patient, finding that the axillary and radial artery pulsated perfectly, but not so forcibly as on the other side. There was no traumatic aneurysm. The patient died later from generalization into both lungs; a necropsy was impossible.

The observations published by Glück, Israel and Heidenhain and Murphy's experience, demonstrate very clearly that we can not only suture a wound in an artery as we would in a vein, but also resect and suture the stumps of an artery with perfect success and without inconveniences. The technique is extremely simple, the chief point [illegible] to secure absolute hemostasis in order to determine the extent of the wound and to take the stitches properly. This can be accomplished in two ways; by applying as I did long, flexible forceps wound with sterilized gauze or rubber; one 2 cm. above and the other the same distance below the wound; or as Schede recommends for suturing a vein by applying three or four pairs of Téan's forceps close together the entire length of the wound, removing one at a time as the stitches are taken. It seems to me that the hemostasis is more complete and certain, which is an indispensable factor in the suture of arterial wounds, if the forceps are applied above and below the wound with care not to compress the coats too tight.

After having cleared the field of blood and clots the suture is made with a very delicate, slightly curved Reverdin needle, and a strong, very fine silk thread. Four stitches are sufficient for a tear 1 cm. long. If the sheath has not been destroyed it is better to suture that also with two or three stitches to insure against secondary hemorrhage. It also provides a protecting rampart in case of eventual suppuration. If there is slight oozing after the suture, compression with a gauze tampon will check it. As soon as certainty in regard to the re-establishment of the circulation is attained, every precaution must be taken to insure cicatrization by first intention. A small strip of gauze must be left at the point of the suture. It acts as a tampon on the wound and also enables the artery to be seized in case of ulterior hemorrhage, but it should be removed in twenty-four hours after the operation to allow the wound to heal by first intention.

Conclusion.—When the tear in the large arteries: carotid, subclavicular, axillary, external iliac, femoral, etc., does not extend more than 2 cm. in length or more than three eighths of the circumference, the artery must be sutured instead of ligated, as ligatures entail distressing results in the majority of cases. In longitudinal tears more than 2 cm. in length, or in tears involving more than half of the circumference, resection and suture of the stumps by invagination according to Murphy's method should be attempted before resorting to the ligature. There need be no apprehension of a traumatic aneuryism, nor of an endarthritis with thrombosis after suture of an arterial wound.

Dr. J. B. Murphy of Chicago, also demonstrated before the Congress his method of suturing blood vessels after injuries and reported five operations in which he had sutured large vessels. He rejects the principle of provisional ligatures or compression as liable to injure the intima, and secures hemostasis by placing a strong silk thread around the vessel, with which it is held tight against the finger. In all longitudinal injuries, and when continuity is retained for half of the circumference, suture of the vessel should be attempted. In other cases it should be resected for a centimeter and reunited by invagination.

Nitze of Berlin exhibited a small apparatus which he has invented for the purpose of vascular sutures. It consists of a small ivory support on which the ends of the vessel are fitted, bringing the intima into contact. A circular ligature is then applied which holds after the support is removed; tested on animals.

PRACTICAL NOTES.

Parasite of Malarial Fevers at Sierra Leone.—At a meeting of the Royal Medical and Chirurgical Society, Surgeon-Captain C. W. Duggan read a paper on the "Parasite of the Malarial Fevers at Sierra Leone." He described the symptoms of the severe malarial fevers which prevail at Sierra Leone, and gave the results of his observations on the parasite of malaria which is associated with these fevers, from which both Europeans and natives suffer. During two years' residence there he examined blood from the finger in nearly 400 cases and made special duty of fifty cases. Eleven of these cases were given in some detail. His description of the symptoms which usher in and last during the attack did not differ materially from that given by previous observers. In all the cases he found parasites in the blood from the finger. The form in which they were seen was as a very minute ring-shaped body, which in a later stage slightly enlarged, and contained a few very minute grains of pigment. A more advanced stage than this was not observed in the freshly drawn peripheral blood, with one or two exceptions. In blood taken from the surface of the brain in a fatal case he found sporulating forms. The parasite is very small, and even in the sporulating stage only takes up about a third of the red corpuscle. He counted five spores in one parasite. In the majority of cases, after some days' fever, the crescent forms of the parasite were observed, and he described various stages in its development. In one case only did he observe appearances in the parasite which could be interpreted as being possibly due to spore formation. In all the cases observed by him the tertian parasite was observed once only. This occurred in a man who had suffered from malarial fever two years previously in the West Indies. The quartan parasite was never observed. All the appearances observed were analogous to similar appearances described by Marchiafava as being found in the summer-autum fevers of Rome, and, morphologically, Surgeon-Captain Duggan was not able to detect any difference between Marchiafava's parasite and that of Sierra Leone. The crescent body in shape and size resembled that described by Laveran and the Italian authors. In dried and stained preparations of the small parasite in the finger-blood, a deeply stained nucleolar body could sometimes be observed at one point in the periphery; at other times in the center of the parasite surrounded by an unstained zone, whilst the periphery stained; sometimes two such nucleolar bodies could be observed. In the stained preparations the very fine pigment was observed on the periphery of the parasite. Dr. Thin remarked on the importance of a microscopic examination, and mentioned a case in which there was no fever, but in which by careful searching Surgeon-Captain Duggan established the diagnosis by demonstrating the malarial parasite. The fevers on the west coast of Africa were extremely fatal as compared with those in the south of Europe, and this appeared to be due to a plurality of parasites. As illustrating the danger to Europeans he mentioned an instance in which four out of five artisans died from fever almost immediately after arrival in the country. One of them was attacked on the second day, showing an unusually short period of incubation. Death occurred on the fourth day. The regular administration of quinin had a most remarkable protective effect. Dr. Mansen drew attention to the previous work of Plehn in the Cameroons, which pointed in the same direction. Microscopic examination was of the utmost importance for purposes of diagnosis, as many of the cases now known to be instances of severe malaria would formerly have been returned as cases of sunstroke. He regarded the practice in the army, of discharging men from the hospital after three days treatment, as quite inadequate, as observations showed that the parasite recurred in the blood at the end of the week. Patients should be retained in the hospital for two or three weeks, until the parasite had entirely disappeared from the blood, and if the presence of the parasites was persistent the patient should be deported from the country. He was surprised that reference was only made to the crescentic forms, as the flagellated forms could easily be produced by placing the cover glass with the film of blood in a damp cell made with a piece of wet blotting-paper. With reference to transmission of the parasite by means of mosquitoes, he pointed out that the transference was not direct, as the mosquito did not suck blood more than once. He believed that this insect was the host in which the parasite developed, and he had specimens demonstrating the presence of the flagellated form of the parasite in its stomach.

Successful Operation for Rupture of the Liver.—Moore (*Lancet*, Sept. 18 1897, p. 722) reports the case of a boy 11 years old who was kicked in the lower part of the right side of the chest by a horse. He became completely collapsed and complained of great pain in the side, and a diagnosis of rupture of the liver was made. In the course of four or five hours the abdomen had become distended, the distension continuing for about five days, without the addition of other symptoms. The bowels acted after enemata. In a short while vomiting set in and was thought to be due to pressure on the duodenum or pyloric end of the stomach. The vomited matter was fluid and of a greenish color, with specks of blood in it. The bowels were now constipated, despite the administration of enemata and purgatives. The patient suffered from pains at times which appeared to occur in paroxysms. The child was pale and thin and lay on his back with his knees drawn up. The temperature was normal and the pulse accelerated, of small volume and easily compressible. There was no abdominal distension, but there was some fulness in the hepatic region and the area of liver dulness was increased. On percussion there was marked tenderness over the liver. Hot fomentations were applied over the upper part of the abdomen and for some days the boy then presented no symptoms of importance. The bowels acted and the temperature was normal. Shortly, however, the respiration became much quickened, and on examination it was found that there was a large rounded swelling below the ribs and just to the right of the mid-line. The liver dulness became gradually increased and there was dulness over the right side of the chest almost up to the clavicle. The abdomen was somewhat distended and tympanitic. These conditions grew slightly more marked, while the area of the liver dulness became a little increased downward in the mid-axillary line. The temperature was slightly elevated. On aspiration of the chest in the sixth right interspace, twenty-four ounces of yellowish-green (bile stained) fluid were withdrawn. The fluid was subsequently found to contain bile. The chest at once became resonant in front and in the axilla. The prominence in the epigastrium became slightly less. For the next two days there was no improvement in the patient's condition. His pulse was quick, feeble and irregular and he was very pale. In the epigastrium, a little to the right of the mid-line, the rounded swelling had become very prominent and distinct. The margin of the liver could be felt about two inches above the umbilicus. The abdomen became gradually distended all over and tympanitic except in the epigastric and right hypochondriac regions. At this time he lay generally with his knees drawn up. Under chloroform, a three-inch vertical incision was now made through the rectus muscle a little to the right of the mid-line, commencing just below the ribs. The parietal peritoneum appeared to be much thickened, and on opening it a cavity containing a large quantity of dark fluid, in which clotted blood and bile could be easily distinguished, was entered. This cavity was very large, at least six inches deep, and it extended upward toward the diaphragm. The upper convex surface of the liver could be felt forming its lower boundary, and it was shut off from the general peritoneum by adhesion of the liver to the anterior abdominal wall. The cavity was washed out with warm boracic lotion and drained with strips of iodoform gauze. Four horsehair sutures were used to close the ends of the incision. The wound was covered with dry antiseptic dressings. Even after this the boy's condition was not satisfactory. The discharge from the wound quickly diminished and in a few days almost ceased. The temperature was slightly raised. There was no increase of dulness in the front of the chest or in the axillary region, but the epigastric fulness was well marked and now it appeared to fluctuate distinctly. On introducing a hypodermic needle through the wound a little dark, bile-like fluid was withdrawn. As the patient was about to be taken to the operating room he was seized with vomiting and his temperature rose to 103.6 degrees. He was anesthetized and a trocar and canula were introduced through the wound into the fluctuating swelling in the epigastrium and dark fluid bile flowed through the canula. The latter was removed and forceps introduced, opened and withdrawn in order to enlarge the opening. In this way a very large quantity, probably several pints, of fluid was evacuated. A large rubber drainage tube was introduced and left in place. From this time the patient rapidly improved. He became less pale, his breathing was easier and the fulness in the epigastrium disappeared. The discharge of bile was very profuse for about a week, but subsequently the tube was removed and the discharge ceased entirely before the patient was dismissed.

Fatal Poisoning by Arsenic in the Vagina.—Haberda (*Centralbl. für Gynäkol.*) states that a maidservant from Styria, aged 25 years, was seized with vomiting and faintness on September 20, left her situation in Vienna on September 22, and was picked up prostrate a day later and sent to a hospital. She was almost pulseless and the abdomen very tender; she pretended that she was menstruating, and no pelvic examination was made, but as she stated that she was constipated, an enema was given and a stool with bloody mucus came away. There was scarcely any pulse, and she died on September 25. At the necropsy, acute fatty degeneration and hemorrhages in solid viscera were detected and phosphorous poisoning suspected, so Haberda made a closer examination of the subject on order from the magistrates. He found icterus and hemorrhages under the skin and in the muscles. The spleen was greatly enlarged and there was recent fibrinous pelvic peritonitis. Arsenic poisoning was suspected. On searching the vagina a paper bag was found containing still a quantity of white arsenic in fine crystals. Acute inflammation of the vagina with false membrane on the labia minora and incipient sloughing of the rectal mucosa over the rectovaginal septum were detected. The labia majora were very edematous. The case was probably suicidal, as the deceased had told the hospital authorities that she was menstruating so as to throw them off their guard, though the pain must have been intense and desire for relief urgent. Haberda states that in the last century a peasant murdered three of his wives by introducing arsenic into the vagina after connection. Another wife murder was effected in the same way in 1799. In 1864 a single woman, finding herself pregnant, attempted to produce abortion by this means, but killed herself thereby. In 1890 a prostitute was murdered by a man who by force introduced a quantity of arsenic into the vagina, wrapped up in a knot of horsehair.—*British Medical Journal.*

Gastro-Jejunostomy for the Relief of Gastrectasis.—In a communication presented to the Missouri State Medical Society, Cordier (*Medical Record*, Sept. 25, 1897, p. 441) offers the following conclusions: 1, Carcinoma of the pylorus, even though removed, returns quickly and always kills; 2, pylorectomy is attended with a high mortality and is not a justifiable surgical procedure in cases of advanced carcinoma of the pylorus; 3, gastrectasis due to malignant closure of the pylorus is best treated by gastro-jejunostomy; 4, the operation advised by von Hacker best meets the indications; 5, it is not necessary to twist the bowel in making an anastomosis to prevent the bile from entering the stomach; 6, the anastomotic opening in the stomach should be at the most dependent point of the dilated organ; 7, the operation is attended with a low mortality; 8, in all cases in which marked dilatation of the stomach exists and is accompanied by emaciation, pain and invalidity the operation of gastro jejunostomy should be performed; 9, the relief of pain due to the effort of the stomach to relieve itself follows this procedure at once, the patient gains rapidly in weight and if non-malignant disease be present his former good health is restored.

Treatment of Otitis in Children.—*Before suppuration:* Soothe the pain and disinfect with 10 drops of phenicated glycerin at 1 to 20, slightly warmed in a small spoon and poured into the ear, closing the orifice with a little boricated cotton. Otherwise leave the ear in repose; no injections, etc. If this is insufficient, relief from the pain can sometimes be obtained if the tympanum is not perforated, by a ten-minute local bath of 10 drops of the following solution, as hot as it can be borne: 1 per cent. phenicated water 10 grams; cocain hydrochlorate 2 grams; neutral sulphate of atropin 0.05. If pain persists, cover the region with a hot compress of boricated water. If the base of the mastoid apophysis becomes painful to pressure and swollen, keep an ice-bag on it continuously, with the phenicated glycerin in the ear. Prescribe at the same time 2 to 3 grams of antipyrin a day, with 1 gram of sulphate of quinin; also a saline purgative, hot foot baths and naso-buccal antisepsis. If pain persists forty-eight hours, puncture the tympanum. *After suppuration:* Continue the local antiseptic treatment of nose and throat, with injections of tepid boiled water and douches of air by the nose with a Politzer syringe. The dressings, injections, douches, etc., repeated twice a day, with the auditory canal kept full of phenicated glycerin in the interim. Continue this treatment for two to three weeks, the average duration of acute suppurating otitis.—Lermoyez in *Jour. Méd. de Paris*, August 15.

Herpes and Tuberculosis.—Rouher has recently published some interesting details bearing upon a possible relation between zona and tuberculosis. It may appear under three different conditions: First, toward the end of severe pulmonary tubercle, and it is then of no special interest, but in other cases it is a very early symptom, and may, according to the writer, be looked upon as a premonitory sign. Thus he quotes cases of patients subject to herpes zoster but who did not complain of any pulmonary affection. On examination of the lungs however, early tuberculosis was discovered. In other cases forming the third group, the signs of pulmonary tubercle may be discovered after a short interval, there being no physical indication at the time of the eruption. Although zona seems to affect neuropathic or neuro-arthritic subjects, it results from the author's observations that in every case of this disease the patient should be kept under observation more particularly as concerns the lungs. The author points out the extreme importance and utility of this question should it be supported by more extensive observations.—*Journal de Médecine.*

The Aseptic Sponge in the Treatment of Metritis.—Lutaud rejects the use of caustics and the curette, except for voluminous proliferations. After slow dilatation with two or three laminaria tents of increasing sizes, requiring three to six days, and swabbing out the uterus with 1 to 10 iodoformed ether, he irrigates with hot 3 per cent. solution of sodium carbonate, first the uterus and then the cervix, and swabs again. Then he introduces a compressed sponge, in severe cases dipped for two minutes in salicylic acid, 1; alcohol, 10; water, 240. He disinfects his sponges by soaking them in a solution of naphthol or sublimate at 1 to 1000, until they are fully expanded, when they are compressed and cut as usual and kept in a well-corked bottle filled with iodoform. The sponge can be left in the uterus for six to eight hours; it produces no pain. As it expands it fills the uterine cavity completely, and squeezes the application into the remotest crevices. If indicated, he performs the Emmett operation.—*Journal de Méd. de Paris*, August 22.

Exophthalmic Goiter Treated by Resection of the Two Cervical Sympathetics.—Gerard-Marchant (*La Presse Médicale*) treated a patient with exophthalmic goiter by resection of the inferior portion of the right and left superior cervical ganglia with about two inches of the nerves; an improvement in the eye condition was noticeable almost immediately, and this increased until the exophthalmos was very slight indeed. The pulse decreased from 80 to 100 to a constant rate of 80. In the same number of this journal, Chauffard mentions a similar case occurring in a man. Quenu performed a bilateral operation as above described. The immediate results were scarcely noticeable. Two and one-half months later an attack of tachycardia came on, and the patient was given a bottle of digitalis with instructions regarding its use. He took nearly the whole contents of the bottle and died some hours later of acute digitalism. However, he lived long enough to demonstrate the failure of the operation.—*Medical News*, September 25.

Improvement in Sounds, etc.—One of the little annoyances that bother the busy practitioner is the difficulty of screwing a metal sound into its conductor at the bedside; the screw never catches in the thread at first. Gourdet has obviated this difficulty by having his sounds, etc., made with a smooth continuation of the screw part, extending about the same distance below, the diameter just large enough to allow its being slipped into and beyond the female screw in the conductor into a corresponding hole below, bringing the two long axes of the sound and conductor into line at the first contact.—*Presse Médicale*, July 28.

Treatment of Anal Pruritus.—Make frequent lavages with chamomile water, boricated or combined with saponined coal tar; afterward apply a soothing salve of vaselin and zinc oxid, and powder profusely with the following powder: pulverized camphor, 2 grams: zinc oxid, 30 grams; bismuth subnitrate, 30 grams; talc, 40 grams, holding the powder in place with absorbent cotton. When the parts are less irritated, paint every other day with a 25 per cent. solution of nitrate of silver. A suppository of cocoa butter, cocain and belladonna can also be inserted every night.—L. Brocq, in *Jour. de Méd. de Paris*, August 8.

Flexion Cure for Sciatica.—P. Bonuzzi reports ten absolute cures in fourteen cases of obstinate sciatica, treated by his method of forced anterior flexion of the body preceded and followed by massage at intervals of one to five days. Improvement commences with five or six, and the longest time required was twenty *séances*. When all other means have failed he recommends this treatment, which is merely the bloodless stretching of the nerves involved in the neuralgia. He never uses chloroform, but advises it in extremely painful cases. Only one case resisted the treatment completely.—*Gazz. d. O. e d. C.*, August 22.

Oil Injected into the Vasa Deferentia, Resected for Prostatic Troubles.—The patient was a man 77 years old whose prostate was so hypertrophied that each lobe felt as large as a hen's egg by rectal palpation; for two years he had had difficulty in urinating. After bilateral section of the vasa Jaboulay continued by injecting iodoformed oil inserted without pressure into the peripheral and central end of each canal, ligating the four ends to prevent the escape of the fluid. A few days afterward the patient was able to urinate freely and the hypertrophy of the prostate had entirely disappeared.—*Semaine Méd.*, August 4.

Suppositories for Dysentery in Children.—Neutral sulphate of aluminum and potassium, 20 centigrams; lead acetate, .05 centigrams; cocoa butter, 20 grams; melted wax, 20 drops; to make 10 suppositories. Insert one every three to four hours. Especially beneficial after intestinal irrigation with a 1 per cent. solution of tannin, to which a few drops of Sydenham's laudanum are added.—T. Guida, *Semaine Méd.*, August 4.

The X-Ray in Food Inspection.—It has been found that with a little experience adulterations in tea, coffee, flour, beans, *etc.*, and old and wormy nuts can be readily detected with the X-ray.—*Therap. Woch.*, August 22.

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THE VISCERAL CHANGES IN EXTENSIVE SUPERFICIAL BURNS.

Many hypotheses have been brought forward to account for the constitutional symptoms following extensive superficial burns. Thus almost every writer on the subject advances a theory of his own as to their general pathology. Recently C. R. BARDEEN[1] reviews these various theories and finds it possible to group them somewhat like this: 1. Theories that involve the idea that burns are due to loss of normal cutaneous activity, especially as regards, *a*, the respiratory function; *b*, the perspiration; *c*, the heat regulating functions, and *d*, the protective functions. 2. Theories based on the idea that death is due to excitation of the nervous system, such as shock or reflex exhaustion and loss of vascular forces. 3. Theories urging death as due to cardiac paralysis caused by cooled blood, overheated blood or poisonous substances in the blood. 4. Theories that explain death as due to alterations in the circulation, because the blood is "driven in" by the heat (earlier writers), or because it accumulates in the peripheral vessels or on account of thrombosis. 5. Theories that claim the fatal result is due to alterations in the blood itself due to destruction or loss of function of red corpuscles. 6. Theories that attribute death to the presence of poisonous substances in the blood produced directly or indirectly in the burned areas.

"The clinical picture presented after extensive cutaneous burns is a striking one. The unfortunate victim, after a brief period of excitement and agony caused by the extreme pain, soon loses the power of much movement or resistance. The intelligence, at first fairly clear in spite of the great shock, gradually becomes beclouded. At times there may be delirium and cramps. The skin in the burned areas usually rapidly undergoes premature swelling. The pulse becomes very weak and rapid. . . . The respiration becomes rapid, irregular and shallow. The temperature, at first rising quickly above the normal, soon becomes subnormal in the rapidly fatal cases. There may be vomiting and diarrhea. The urine often shows traces of hemoglobin and albumin."

Now, after death, especially if this occurs soon after the burn, there may be no striking internal pathologic lesions, and irregularly distributed passive hyperemia of varying degree and small extravasations are often observed and cloudy swelling is usual. Occasionally gastric and duodenal ulcers are present. The blood shows well marked alterations, among which may be mentioned some rise of specific gravity, structural and also functional changes in the red corpuscles and a marked polymorphonuclear leucocytosis. Fragments of red blood corpuscles and blood pigment are found in the spleen, bone-marrow and lymphatic glands; thrombosis occurs occasionally in the capillaries and veins of some of the internal organs, and the majority of current text-books attribute death after burns to thrombosis.

Recently the view has become prominent that after burns toxic substances enter the circulation and cause the symptoms above quoted. This toxemia might be caused in various ways, but definite proof of the existence of toxic substances has not yet been offered. We know that in many infections and intoxications, spontaneous and experimental, certain quite typical lesions in the form of foci of necrosis may develop. BARDEEN's demonstration[2] of similar areas of cell death in the lymph follicles after burns is therefore very suggestive and point, in truth, to the existence of a veritable toxemia.

BARDEEN had a chance to examine systematically the organs of five children that died at intervals of from four to nine and one-half hours after extensive cutaneous burns. Without going into details, the microscopic findings may be summed up as consisting of parenchymatous degenerations in the liver, the kidneys and the lymphatic tissues. Of these changes those in the lymphatic tissues are the most interesting because they were so widely distributed, because of their severity in spite of the short time between the death and the burn, and because of their specific and focal nature, pointing to the presence of toxic substances in the plasma. Thus there were found numerous areas of cell fragmentation essentially like those produced by the toxic substances in diphtheria in children as well as in experimental inoculations in animals with various so-called toxalbumins. The character of the lesions described by BARDEEN furnish, therefore, important additional evidence of a toxemia after burns; destruction of red blood corpuscles and thrombosis did not seem to play so prominent a part in producing death as did the poisons in the blood plasma.

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[1] Journal of Experimental Medicine, vol. ii, No. 5, 1897.

[2] Loc. cit.

THE PHYSICIAN'S PRIVATE DIAGNOSTIC LABORATORY.

The exactions of modern clinical diagnosis through the application of pathologic and bacteriologic methods have imposed new obligations upon medical practitioners. A few test-tubes and a spirit lamp no longer constitute a satisfactory laboratory outfit for a physician's office. To be abreast of the times, and to give his patients the benefit of the progress in medical science, a physician who conscientiously feels his obligations, must extend his laboratory practice far beyond the old confines of a search for albumin and sugar in the urine. The old microscope which has so long stood under the protection of a bell-glass, or has accumulated the dust of years in the closet, must be resurrected not alone to search for tube-casts and spermatozoa, but to take a place beside the thermometer and the stethoscope in daily practice.

The microscope, the test-tubes and the spirit lamp by no means constitute the requisite outfit. A number of additional pieces of laboratory equipment are required, until the office laboratory of the progressive physician becomes a miniature chemic, bacteriologic and pathologic laboratory. A small microtome and the centrifuge with its hematocrite are desirable; a simple sterilizer, incubator and paraffin bath are absolutely necessary; along with such glassware as test-tubes, flasks, slides and cover-glasses and a number of reagents. It fortunately happens that, aside from the microscope and microtome, the material necessary to equip a small working laboratory for purposes of clinical diagnosis is comparatively inexpensive, providing material of a simple character be chosen. A judicious outlay of $25 would supply the material necessary for a useful nucleus.

No doubt there are hundreds of physicians over the land who appreciate more or less keenly the desirability of employing laboratory methods in medical and surgical diagnosis, and to these individuals the item of expense in laboratory equipment would offer no obstacle. More serious objections are raised, and notably the one which confesses total ignorance of the methods of modern laboratory work. Here is indeed a serious stumbling block—one, unfortunately, which lies in the way not only of the older practitioner, but also before the majority of recent graduates in medicine, who imagined while they were in college that they were receiving "practical laboratory instruction," but who find themselves utterly helpless when the first tumor or the first case of diphtheria presents itself for diagnosis. The fault lies in an ignorance of laboratory technique which makes the would-be laboratory worker quite as helpless as one who aspired to do modern surgery while ignorant of the technique of hemostasis or of aseptic procedure.

How can this essential knowledge of laboratory manipulation be obtained? Obviously, by practice alone. This means that a reform should be inaugurated in a large portion of the laboratory instruction, as given today by medical schools, so that each student will be provided with a complete, simple laboratory outfit, and enabled to pursue all the steps of technical detail involved in an elementary study of such subjects as histology, bacteriology and pathology. Moreover, for graduates in medicine, identical courses should be offered involving the various methods of a laboratory diagnosis, until the steps in manipulation and the tools required become thoroughly familiar. Post-graduate laboratory courses should be made thoroughly practical in the full sense of the word, and thus attractive; and that army of graduates in medicine who are unfamiliar with laboratory methods should avail themselves of such courses instead of haunting the surgical and gynecologic clinics as is now the fashion. If more rural practitioners aspired to give their patients the benefit of a thorough diagnosis, and trained themselves for this purpose, the public and the profession would alike be benefited.

It is objected that laboratory work in medicine has become a specialty, and that it should be entrusted to the specialists in medical colleges, hospitals and boards of health. So far as advanced work is concerned this is true, and it is very desirable that laboratory specialism be recognized and duly encouraged. But there is no excuse for a physician who does not prepare himself to do the work demanded in routine daily practice. It would be quite as reasonable to argue that since there are cosmopolitan specialists in surgery no practitioner should open a boil; or because there are specialists in physical diagnosis no physician need possess, or perfect himself in the use of, the stethoscope and thermometer.

THE CONSERVATION OF THE OVARIES.

The reflex influence of the ovaries and testicles upon the animal organism has been so long a matter of common observation in the lower animals, that it would seem needless to offer any argument in favor of any question based upon it. The effects in the human species of castration in the male are also matters of common knowledge, but those of the corresponding operation on the human female seem to be still largely a matter in dispute. At least, such would be the inference from reading a discussion at the recent meeting of the American Association of Obstetricians and Gynecologists, reported in the October number of the *American Journal of Obstetrics*, where a paper on the conservation of the ovary, by Dr. B. SHERWOOD DUNN, was read and called forth various expressions of widely differing opinion. Dr. DUNN opened his communication with a reference to the opinion of BROWN-SÉQUARD that every gland, ductless or otherwise, gives to the blood some useful product, the loss of which by its extirpation is more or less severely felt in the economy, and after alluding to the researches of MOND, CHROBAK, MAINZER and others, gave the results of his own observations upon one hundred cases of complete oöphorectomy observed by him in the Broca and St. Louis Hospitals in Paris. In 78 per cent. there was subsequent loss of memory, in 60 per cent. vertigoes and heat flashes, in 50 per cent. change of character. Forty-two cases suffered from mental depression and ten were close upon melancholia. In 75 per cent. there was diminution of sexual desire, and varying percentages had other inconvenient symptoms after the operation. The troubles were generally the more marked in women under 30 or 35 years of age, and the deduction was that the theory of BROWN-SÉQUARD had a substantial basis of truth, and that removal of the ovaries in women before the menopause was undesirable.

In the discussion that followed, Dr. DUNN's views were supported by Drs. M. D. MANN, L. S. MCMURTRY and A. GOLDSPOHN, but the opinions of the majority of the speakers were more or less at variance with his ideas. It was held that castration did not make a woman feel unsexed, that conservatism often or even generally necessitated later operations, that the reported effects on the mental and emotional nature were not common and that the nervous and other symptoms described by the author of the paper were not observed in the general experience of gynecologic surgeons. Indeed, good results were claimed by some to be the more frequent the more thorough the extirpation, and the weight of opinion appeared to be against the conservatism recommended. The danger of the need of a subsequent operation was especially emphasized, and appeared to be, in the opinion of the majority of the speakers, a sufficient contraindication to such measures as the retention of a portion of the ovary that seemed unaffected by the disease requiring the removal of the remainder.

The psychic and physical consequences of castration in the male are so well known and evident that one would naturally expect to find something equivalent in the female from a like operation. It must be remembered, however, that these effects are less pronounced the later in life the operation is performed, and it is quite conceivable that many women who have suffered oophorectomy after the full establishment of the sexual functions may feel no special loss of womanhood and exhibit no marked physical indications of the change. Conventional notions have also less play in regard to this deprivation in the female than in the male, and this, as Dr. CUSHING suggested in the discussion, as reported, has an important bearing. In the woman, moreover, it is only an anticipation of a physiologic change which occurs before a very advanced age, and which has no exact analogue in the male, at least to any marked extent. These facts may therefore be taken as legitimately modifying the estimate we should put upon castration in the female as compared with the same operation in the other sex. Having said this much, however, we have made all the legitimate allowance that is required for the operation when not imperatively demanded by disease, and the statistics offered by Dr. DUNN are abundantly supported by other evidence of the serious functional and organic alterations that are liable to follow the too early induction of the menopause by operative interference. When it is spoken of, as it sometimes is, as justifiable in young girls, or its consequences in such are made light of, one is excusable in reserving a doubt and questioning whether the operative furor may not have had too full play and there may not have been less than the full judicial consideration of the circumstances that ought to have been given. Women suffer many inconveniences and pains connected with their sexual organization that they do not report even to physicians, and it is perfectly within the bounds of possibility that many symptoms following oöphorectomy are overlooked by operators. It is not easy to suppose that the operation which, however slight in its consequences in later life, cuts off the whole sexual life of a female, can be entirely without unpleasant results.

The fashion, for such it has been at one time, of removing ovaries for hysteria and other conditions without actual organic disease, has no good excuse, unless it may be the Malthusian one or that of preventing a perpetuation of a degenerate stock—both of them rather questionable reasons for any such procedures. Any undervaluation also of the possible moral, psychic or physical symptoms following castration in women is a result to be deprecated. If we are to accept, which it is to be hoped is not the case, the general tone of the discussion referred to as indicating that such is a prevalent tendency amongst gynecologists, the fact is one that is to be regretted.

RACE PROGRESS AND RACE DEGENERACY.

A paragraph has been going the rounds of the lay press stating that a distinguished paleontologist and professor in Yale University has pronounced that the Japanese at the present day possess the largest brains, and that therefore they are the coming race that are to rule the world in the near future. Whether he is correctly quoted or not can only be told by seeing his original publication, but the proverbial accuracy of the daily papers in publishing sensational items leaves an uncertainty in regard to this point. On top of this however, we find in a recent work by a presumedly prominent anthropologist, Prof. CHAS. PEARSON, that in his opinion the dark-skinned races are destined to outlast the lighter or Aryan group, and still another anthropologic specialist pronounces the opinion long since favored by certain of his European confrères, that in this country we are reverting to the type of the red man, thus affording us Americans at least a chance to get into the ranks of the majority when Truthful James' question as to whether the Caucasian is "played out" is finally answered in the affirmative.

Possibly, however, the future of the human race is not so altogether dark; there may be something better ahead than these scientists can forsee, that is, looking at it from our point of view. Just now it seems to be the fashion to take a pessimistic view of things; the times are out of joint to a large class of modern thinkers on social and other topics, and this may be only one of the signs of the times in this particular line. Degeneration of individuals and races is much more the theme of popularizing writers at least, and these prophecies may be rather incidents of the prevalent tendency than the results of the fullest scientific consideration of all the facts and possibilities.

It is a well-known and established principle that race progress and race retrogression depend rather on adaptation to environment than directly on cerebral development, however marked that may be. Europeans degenerate in the tropics and the Aryan Hindoo with all his metaphysical subtility, is, in all essentials, an inferior to his more practical Anglo-Saxon rulers. In the human species, moreover, the law of natural selection is only in part efficient; to a certain extent it is annulled, as Lawson Tait and others have long since pointed out, and there are a host of moral, social and political conditions that make or mar its progress. The environment therefore is a complex of conditions, only a small part of which are so thoroughly understood as to afford a basis for foretelling the outcome of any race or people beyond their immediate future. A scientific authority will hardly add materially to his reputation by venturing such prophetic utterances, except it be avowedly as a mere tentative opinion.

A recent French writer, Professor Schrader, has, in the *Revue Mensuelle* of the Paris School of Anthropology, offered some views in regard to this question of race advance or retrogression that are at least hopeful as to the future possibilities of what we have been accustomed to call the inferior races. He holds that, given a better environment, the most inferior race may become superior to all others, and that a race long resident in a certain *milieu* becomes best suited to it and, granted equal facilities, has the advantage over all others there resident; as an example he refers to the native population of Mexico, which though conquered and oppressed for centuries is now rising and furnishing the ruling class again in their country. There appears to be a degree of truth in this last statement, but the view he with others seems to hold, that the climate and soil affect the race type to produce that most suitable to them, which is that of the aboriginal inhabitants, is less encouraging. "Is it an illusion," he says, "that reveals to us in the physiognomy of the Yankee the hard bony face of the redskin?" This generalization of the idea that physical environment molds the human type is a favorite one with some European anthropologists, and its particular application is almost invariably made to this country and its European descended population. The physical peculiarities of the American aborigines are, after all, not so altogether objectionable; we can endure at least the contemplation of this prophesied fate of our race in this country, when we think of that of the portion of it that has displaced the Bushman and the Hottentot.

Speaking seriously, however, it may be repeated that speculations of this character are too indefinite and uncertain to be depended upon; they are much like Mark Twain's figurings on the length of the Mississippi—attempts to furnish the largest returns of theory from a minimal investment of facts. When in the distant future they, or anything like them, come to realization it will be as probably the result of factors not yet imagined as along the lines fancied by these prophets of science of the present. It is perfectly possible even that events may occur, as they have in the past, to check civilization and put the world some steps backward in its march, but it does not seem very probable that any very serious retrogression is at present imminent or that the inferior races are just now very rapidly coming to the top. It is safer and really more scientific to watch developments and to let such uncertain generalizations from the limited facts alone.

CORRESPONDENCE.

Treatment of Typhoid Fever.

Cleveland, Ohio, Oct. 12, 1897.

To the Editor:—Will you permit me to second the wise suggestion which appears in the Journal, of October 2, under the caption "A Way to Settle the Respective Merits of the 'Brand' and 'Woodbridge' Treatment of Typhoid Fever." Permit me, also, to assure your correspondent that I cheerfully accept all of his conditions and I will meet such a commission as he advises, whenever it may command my services and wherever it may choose to hold its sessions, whether in some typhoid stricken city in the United States, in England, on the Plains of Thessaly, or wherever the disease may occur; only show me the patients and I will supervise the treatment of as many cases of typhoid as may be necessary to enable the commission to make a *final* and *decisive* report. No one shall be taxed either for my services or for my expenses.

With the possibility of verifying the clinical diagnosis of typhoid fever by the diazo-reaction of Ehrlich and by the serum test of Widal, it ought to be possible to "settle" this much discussed question at once and forever. After having expressed myself in full accord with "M." on all of the essential points of his communication will he permit me to enter a mild protest against the, no doubt, unintentional injustice of including me in the deprecation of "the redolent with personalities" phase of a recent controversy. No one can abominate more than I do the "bitter personalities," yet it has been my lot to have been the recipient of more captious, unreasoning and even insulting criticisms, than perhaps, any other living man, and I would have been more than human or less than man if I had not resented some of them, but I appeal to the medical profession to witness that even in the heat of debate, and under the provocation of the grossest misrepresentations my speeches and my written communications have always been as free as possible from "offensive personalities," even in the controversy to which "M." alludes. I did not correct the erroneous statements or false inferences which referred to myself alone, although some then were calculated, if given credence, to do me grievous harm and as soon as the "mud pelting" was directed toward me alone, I at once *dropped* the correspondence.

Again placing myself at the command of the commission suggested by "M." I remain

Your most obedient servant,

JOHN ELIOT WOODBRIDGE, M.D.

Woodbridge Versus Typhoid Fever.

SAN DIEGO, CAL., Oct. 9, 1897.

To the Editor:—I heartily concur with your correspondent 'M." that the time is opportune to determine the status of Woodbridge's method as an abortifacient of typhoid fever. Certain it is that no just conclusion can be attained through acrimonious discussions in the medical journals, and meanwhile, possibly, humanity suffers. I would therefore suggest an appeal to the Académie de Médecine of Paris, members of which would doubtless be willing to pass upon a subject of such importance. There hospital and other facilities are unsurpassed, and it is well known that in times past its members have solved many problems of interest to the medical and scientific world.

For example, says Pereira, homeopathy has been fairly put to the test of experiment by some of the members of the Académie, and the result was a failure. Andral tried it on 140 patients, in the presence of the homeopathists themselves, adopting every requisite care and precaution, yet in not one instance was he successful!

At a later period, I believe members of the same distinguished body, with the active concurrence of Gull and Spurzheim, investigated the claims of phrenology and declared many of them untenable.

Within the recollection of the writer, specimens (roots) of the sarracenia purpurea, at that time a much vaunted remedy for smallpox among whites and Indians of Canada, were forwarded to the Académie and after a thorough trial were found to be inert.

I propose then that Parke, Davis & Co., already widely and favorably known for their interest in the advancement of materia medica, etc., transmit the necessary literature and a sufficiency of their Woodbridge tablets to the Académie de Médecine, requesting a thorough investigation of their possibilities in typhoid fever. I am sufficiently interested to assist in paying the expense if necessary. C. M. FENN, M.D.

An Interesting Case.

FORT SMITH, ARK., Sept. 28, 1897.

To the Editor:—In 1895, while in charge of the U. S. Jail at this place, I treated a very interesting case. A strong, robust young man, during the progress of a fight, received a severe contused wound about two inches in length and laying bare the frontal bone just over the right eye, which in spite of the ordinary antiseptic treatment proceeded to suppurate very freely, and, notwithstanding bichlorid douches and iodoform dressings were faithfully employed, the process was not stayed, but rather increased. On the third day after the injury, in an insignificant little scratch on the cheek two or three inches below and to the outer side of the eye, erysipelas developed and rapidly spread until the whole face was involved, and at the second removal of the dressing after the wound became involved in the erysipelatous process, I found it firmly sealed by a dry scab and presenting no evidence of pus. Being anxious to see the outcome this was not disturbed and the face was lightly covered with absorbent cotton saturated with bichlorid of mercury 1 to 2,000, which application I had been using in the treatment of the erysipelas. Now from this fourth day there was not an untoward symptom or a drop of pus in or about this wound, and when the scab dropped off I found a nicely and perfectly cicatrized scar. The stitches were allowed to remain in the wound nineteen days, and when removed, notwithstanding there had been stitch abscesses developed during the first two or three days, were found firmly inpacted in the tissues, requiring some little effort in their removal, and I firmly believe had they not been reinfected from without they would have remained indefinitely in the tissues without producing any irritation or inflammation.

This case was reported at the time at our local medical society with the prediction that a toxin would be found which when introduced into the body would be fatal to the germs of suppuration and infection, and it seems that my prediction is thus early about to be verified. W. R. BROOKSHER, M.D.

Report of Three Cases of Asphyxia from Submersion.

GREENVILLE, TEXAS, Oct. 16, 1897.

To the Editor:—I deem it necessary to preface this letter with some preliminary remarks bearing upon this unfortunate affair. These cases consisted of one prominent wealthy man, and two young women. There are various rumors and finespun theories by the laity, relative to the causes and reasons why this drowning occurred.

The examination of the bodies was not made at the place of drowning, which was due to oversight on the part of the coroner. I was summoned to make examination of the bodies after they were brought to town, which was about ten hours after the accident.

I obtained the following facts from reliable members of the searching party, as follows: The drowning occurred Wednesday about 10 P.M. on June 18, 1897, about six miles northwest of Greenville, in a "pasture pool." There were two men and two women, and one of the men was fortunate to escape alive and report the affair.

One of the searching parties arrived from the neighborhood about two hours afterward and they observed one of the bodies floating. The searching party from Greenville arrived upon the scene about 1 A.M. and immediately removed the floating body, it being in shallow water. Rigor mortis had not set in in this case. The other two bodies were not removed until 4 A.M., and they were found in ten feet of water and rigor mortis had taken place. I made a careful examination of the bodies and found that all three of these cases presented practically all the external signs of asphyxia due to submersion and gave my opinion, based upon the statement of the only eye witness and searching parties, that they met their death by accidental drowning.

The special point of scientific interest was why one of these bodies was found floating two hours after accident, and two were at the bottom of pool. The floating one was found in about five feet of water at an inclined angle, with the face at the surface of the water. The other two (the man and the most corpulent woman) were close to each other in about ten feet of water at the bottom of the pool.

These people drowned at the same time in close proximity to each other in the same pool. The water was clear and not stagnant, and the temperature of air and water was the same for each case. The women had on loose wrappers and the man an undershirt and an old pair of trousers when found.

The time for submerged bodies to float depends upon such varied conditions that no absolute period can be fixed for all cases.

It is my purpose to call attention to the unusual occurrence of one of these bodies floating at least two hours after the accident.

The specific gravity of a human body is slightly heavier than water, and it will not float immediately. I present the following reasons as the cause of this body floating:

1. She was found in shallow water, and the weight of the superimposed water may have kept the other two bodies from rising.
2. The body being in shallow water, putrefaction, with formation of gases, would be more apt to take place than in those completely submerged.
3. I learned from a colleague of mine that this person was being treated for fermentative or flatulent dyspepsia, and this, in connection with beverages and lunch prior to bathing, may have caused excessive formation of gases in the stomach, also in the small intestine.
4. If no water was taken into the lungs and she died with the lungs full of air, then the specific gravity of the body would be made lighter than otherwise.

The day after the inquest, it was alleged by some of the laity that the reason the woman floated was due to pregnancy. I am not in a position to state whether she was in that condition, as a postmortem was not made. Now to the point: Will a pregnant woman be more liable to float than if she was not pregnant, conditions being the same?

J. R. Nichols, M.D.

Goat's Blood and Milk.

Reply to Dr. Parker's Inquiry as to the Use of Goat's Blood and Milk in the Treatment of Disease. Translated from the French (Transactions Congress for the Study of Tuberculosis, Session of 1891.)

New York City, October, 1897.

To the Edtor:—"In a work published last year we have shown that it is advantageous to substitute the goat to the cow for vaccinating purposes. The goat is refractory to tuberculosis, not when she is inoculated only, but in the ordinary tenor of its existence. When rabbits were inoculated with tuberculosis, if goat's blood was transfused into them the same day, these rabbits resisted inoculation; if the transfusion was strong after inoculation the tuberculous processes retrograded and were cured. The transfused goat's blood determines then, in the rabbits, a bactericide condition. Could not it act similarly on man? As the transfusion of animal blood to man was not without danger, we recurred to subcutaneous injections or even intramuscular injections of goat's blood, complete and fresh. The injections were of 15 to 20 gr. and repeated three or four times in the same patient with intervals of ten to fifteen days. Of 110 patients, 10 had abscesses, 50 to 60 urticaria. The patients who suffered with laryngeal phthisis reaped no benefit from these injections; in the cases of pulmonary caverns there were some ameliorations. The amelioration was evident in the cases of tubercular bronchitis, tuberculosis of the first degree, ganglionary tuberculosis, osseous tuberculosis and the lupus."—Bertin and Picq.

Transfusion of goat's blood in pulmonary tuberculosis.—"The goat is refractory to tuberculosis as I have seen by the autopsies of forty-eight individuals and by the injection (intravenal) of bacilli into four others. While the rabbits inoculated with tuberculosis die within two months if they are left without treatment, those injected with goat's blood die less quickly, and those into which this blood is transfused present caseous foci but without generalization. I have satisfied myself by other experiments that the transfusion of blood from one animal to the other is not dangerous. I have, therefore, transfused goat's blood into man. The apparatus which I used consists of two trocars, joined by a rubber tube; the one, rather voluminous, is introduced into the carotid of the goat, the other, capillary, into the cephalic vein of the patient; 100 to 120 grams of blood may be transfused in one minute. The first sittings must not last longer than fifteen to thirty seconds, the subsequent ones more than one minute. I have thus treated two chloro-anemics, who were cured; seven tuberculous of the second, one of the first degree, who may be considered as cured, inasmuch as their general condition is good and the physical symptoms as well as the bacilli have disappeared; three more tuberculous who were ameliorated; finally two, who at first ameliorated, have since died rather rapidly. A last patient who had reached the last degree of cachexia, died of syncope in the course of the transfusion."—M. Bernheim.

Immunity against cholera by goat's milk.—M. Gamaleia presents a work on the immunity against cholera imparted by the milk of goats, composed on his advice and under his direction by Dr. Ketscher of St. Petersburg. In the present time the pandemic extension of cholera has specially directed the efforts of bacteriologists to discovering effective means of combating this scourge. Thus have been imagined of late, divers methods of vaccination, which have more or less in common with the well known studies of Ferrau. But despite the innocuousness of most of these methods they have not been practically applied even during the most devastating epidemics, as that of Hamburg; for preventive vaccination is not a national measure, adapted to a struggle against an acute disease like cholera, which affect only a minority of the population. The less so that bacteriology, not content with its ability to obviate infectious diseases, has made important progress, allowing it to defeat even declared affections. Everyone knows something about serotherapy, or the treatment of infections by the serum of vaccinated animals. But the use of serum presents a certain number of drawbacks which hinders its introduction into practice, especially for cholera. Another immunizing fluid furnished by the vaccinated animal's milk is without any of them. It is for this reason that M. Ketscher has studied the immunizing properties of milk in cholera. For these experiments he has employed the most virulent cultures of cholera, sent him from Massua. The goats were vaccinated by subcutaneous, *intraperitoneal* and *intravenous injection* of these cultures. The immunizing power of their milk was observed in the following series of experiments by means of its introduction into the peritoneum of the guinea pigs. The chief results of his experiences are as follows: The milk of the vaccinated goat injected at the doses of 5 c.c. has the property of vaccinating the guinea pigs against a mortal dose of cholera (½ c.c. injected into the peritoneum). The guinea pigs which had received the milk remained well, while the witnesses succumbed in the first six to ten hours after the inoculation of the virus. In order to make out whether the milk acts only directly upon the cholera vibriones or also upon the whole vaccinated organism, M. Ketscher varied his experiments by injecting the cholera cultures in another place than in the peritoneum, especially in the muscles of the posterior extremities; this mode of infection gave exactly the same results as the preceding. The guinea pigs prepared by the milk lived, the witnesses succumbed six to eight hours after the infection. These experiments show that the milk of vaccinated goat injected into the peritoneum of the guinea pigs renders them *refractory to a mor-*

tal dose of cholera. It is not without importance to add that the milk of the non-vaccinated goats, which M. Ketscher has repeatedly tried, possesses no immunizing power. By another series of experiments he has studied the curative power of milk. For this purpose he injected a mortal dose of cholera into the muscles or peritoneum of the guinea pigs and then treated them by the intraperitoneal introduction of goat's milk. In these cases the guinea pigs treated showed some symptoms of infection, for instance, a slight edema on the inoculated thigh. But these symptoms vanished altogether in a short while and the guinea pigs survived. The witnesses invariably perished. It follows that the milk of a vaccinated goat injected into the peritoneum of guinea pigs not only vaccinates them against future infection, but cures even the declared disease."

Albert S. Ashmead, M.D.

Surgical Treatment of Impotence.

Chicago, Oct. 9, 1897.

To the Editor:—In your Journal of Oct. 9, 1897, you published an article by J. A. Murray, M.D., entitled "Ligation of the Dorsal Vein of the Penis for Functional Impotence With Report of five Cases."

In this article the Doctor states that he has seen no literature on the subject, but further says that he does not claim priority of discovery for the operation.

The first case reported advocating this operation was by Dr. Waugh formerly of Philadelphia, and now of this city, in the *Southern Clinic*, 1893, Vol. xvi.

In 1893 I did the operation for the first time after having seen Dr. Waugh's article, and have since then performed it twice. In all three cases I had good results.

Evert E. Tracy, M.D.

NECROLOGY.

Surgeon General Newton L. Bates of the navy, the President's family physician, died at the Shoreham hotel, Washington, D. C., October 18, at half-past nine, of a renal trouble. He was appointed Surgeon General about two weeks ago, to succeed Surgeon General Tryon, and was obliged on account of the illness which finally resulted in his death to take the oath of office in bed. He entered the navy from New York State in June, 1861, and prior to his appointment as Surgeon General was a medical director, with the relative rank of Captain, and was on duty at the Naval Museum of Hygiene in Washington.

Rodolphe Heidenhain, M.D., incumbent of the Chair of Physiology at the University of Breslau, according to a cablegram dated October 14, is dead. He was born at Marienwerder, Jan. 19, 1834, studied medicine and natural science at the Universities of Koenigsberg, Halle and Berlin, and after receiving his diploma in 1854, entered the laboratory of Professor Du Bois-Reymond, under whose direction he conducted his researches in experimental physiology. He was appointed to the chair of Physiology at Breslau in 1859. Among his best known publications are: "Studies in Physiology," "The Physiology of Secretion," "Animal Magnetism, so-called," and "Vivisection Applied to Medical Art."

Walter E. Anthony, M.D., New York University, 1867, at his home in Providence, R. I., aged 50 years.——Oliver M. Doyle, M.D., University of Pennsylvania, 1856, died at Calhoun, S. C., October 6.——George R. Hunt, M.D., at Warrensburg, Mo., October 4, aged 73 years.——Timothy D. Connor, M.D., Springwater, N. Y., October 8, aged 65 years.——Richard D. Cowan, M.D., Rolla, N. D., October 7, aged 42 years.——Theodore Munro, M.D., Union, S. C., October 10.——Vespasian Smith, M.D., Duluth, Minn., October 11, aged 79 years.——Andrew J. Spalding, M.D., Leonardtown, Md., October 5.

PUBLIC HEALTH.

Yellow Fever.—The dispatches of the 12th closed our record in last week's Journal. This week we have the following data: October 13.—New Orleans, 9 deaths, 27 new cases; Mobile, 7 new cases in the city proper, and 6 brought in from Magazine Point; Wagar, Ala., 1 death, 1 new case; Nittayuma, 1 new case; Edwards, 3 new cases and and 1 death, October 14.—New Orleans, 4 deaths, 41 new cases. The "suspicious" cases at San Antonio, Tex., were on this date claimed not to be yellow fever, and there were no new cases at Galveston. Mobile, 5 new cases, 1 death; Flomatom Junction, Ala., 8 cases; Franklin, La., 1 death; Bayminette, Ala., 1 death; McHenry, Miss., 6 cases; Edwards, 6 cases; Clinton, 1 death; Biloxi, 13 cases and 1 death. October 15.—New Orleans, 44 new cases, 3 deaths; Mobile, 5 new cases. October 16.—New Orleans, 22 new cases, 1 death; McHenry, Miss., 1 new case; Edwards, 5 new cases, 1 death; Nittayuma, 1 new case; Cayuga, 4 new cases; Mobile, 7 new cases; Wagar, Ala., 1 death. October 17, the deaths at New Orleans numbered 5, with 24 new cases; Bay St. Louis, 7 new cases and 1 "suspicious" case. October 18, the death list at New Orleans reached the hundred mark, as 7 deaths were reported on this date. The new cases numbered 37, bringing the total cases at New Orleans, to date up to 865, of which 322 are still under treatment. At McHenry, 2 new cases were reported; 12 new cases at Scranton; 2 new cases at Pascagoula; 16 new cases at Biloxi; Mobile, 6 new cases, and 1 death, making the total cases there to date, 170, and the total deaths, 22. Cayuga reports 2 new cases and 2 "suspicious" cases, with 1 death. Edwards reports 2 new cases, and 3 deaths. Montgomery, Ala., reports 2 cases, with a few "suspicious" cases. Franklin, La., 2 cases, and 1 death near Patterson, La. Dispatches of October 19 give no encouragement in the situation at New Orleans, there being 56 new cases and 4 deaths reported.

The Cost of the Yellow Fever.—Although there has been comparatively little loss of life in yellow fever districts of the South, there has been a tremendous loss of money to the community because of the contagion. The New York *Herald* says it is estimated that the loss to the business men in New Orleans alone will amount to $25,000,000, while the losses in other directions and the cost of maintaining the quarantine will run the total up to $38,000,000. Most of this loss is the result of the wild and unreasonable excitement of the neighboring towns and villages that have shut off all supplies shipped from New Orleans and have absolutely paralyzed business in that city.

Typhoid Fever and Damage Suits Against Municipalities.—The *Lancet* remarks that the city fathers of Yarmouth, England, have, by a narrow margin, escaped being mulcted in damages for having been the unwitting means of causing fatality by typhoid fever, in the course of their construction of a very necessary sanitary improvement, which was intended to have a precisely contrary result. The Court of Queen's Bench was occupied for three days in hearing the evidence on this point. It appears that a new sewer was being laid down in Queen street, and that shortly afterward a resident in this street complained that the water in a well situated in the basement of his house was foul and that he and others had been made ill by its consumption. He attributed the contamination of the water to percolation of sewage, which was alleged to have found its way into the trench dug for the reception of the new sewer. A month later the complainant, Mr. Durrant, sickened with typhoid fever, from which he died. An action was brought by his executors claiming damages from the corporation for having, through their negligence, caused the pollution of the well and the death of Mr. Durrant. Without entering into the question as to whether the consumption of this water was the cause of his fatal illness or not, and even admitting this possibility, the defence went to show that the well could not have been contaminated by the temporary disturbance of the soil thirty-six feet distant, but that it was, and probably had been long fouled by leakage from a privy situated at a higher level, only sixteen feet away. For after the well had been daily pumped out for a month the water remained still highly impure. As Mr. Justice Hawkins remarked, the poisonous contamination of the well was a singular coincidence at the time of the progress of the works, and the jury gave a verdict for the defendant.

The Home in Its Relations to Tubercular Consumption.—Dr. R. Thorne Thorne, in the "St. Bartholomew's Hospital Reports," thus states the case as to phthisis in the domicile: Conditions of dwelling house tending to the promotion of tubercular consumption.—1. A soil either naturally damp and cold or subject to the influence of the rise and fall of a subsoil water lying within a few feet of the surface. 2. A dwelling house of which either the foundations, the area they inclose, or the walls are, by reason of faulty construction or otherwise, liable to dampness. 3. Such immediate surroundings of the dwelling house as tend to prevent the free movement of air about it, and its ample exposure to the influence of sunlight. 4. Such structural defects as would prevent the maintenance within all parts of the dwelling house of ample movement of air by day and by night, and free exposure of its habitable rooms to daylight.

Conditions of dwelling house tending to the prevention of tubercular consumption.—1. A soil which is dry naturally, or freed by artificial means from the injurious influence of dampness and of the oscillations of underlying subsoil water. 2. A dwelling house so constructed as to be protected against dampness of site, foundations and walls. 3. Such open space on at least the two opposite sides of the dwelling house as shall secure ample movement of air about it, together with its free exposure to the influence of sunlight. 4. Such construction of the dwelling house as will secure for its habitable rooms, and throughout its interior, free movement of air by day and by night, and free access of daylight.

On the Convection of Plague by Merchandise.—The editor of the *Lancet* considers the above subject in a leader designed to set forth the kind of proof that is offered to prove the affirmative of the question as against merchandise, such as cotton, wool, etc., from the Orient. At the present time, when we read of the action of certain European powers in respect to cargoes of cotton from plague-invaded ports, it may not be out of place to inquire briefly on what evidence this fear of the importation of plague through the agency of such articles as cotton or wool is based. It is an easy matter to assume that when an infectious disease is prevalent within any given district, there may be fear of such disease being conveyed through the agency of merchandise from the invaded center; but when we ask upon what evidence this fear is based, we are not so easily supplied with an answer which is proof against destructive criticism. We read in the text-books, of plague having been conveyed from one place to another through the agency of bales of cotton or wool, but the evidence which is given as supporting this statement is, as a rule, somewhat scanty. Indeed, it seems that when some of these questions are approached in a spirit of unbiased inquiry there is but little evidence tending to support the text-book statements. For instance, among European nations the French are not behindhand in their dread of the importation of infection through the agency of certain merchandise from infected Indian ports, but it does not seem that the French in taking up this attitude, are mindful of a certain report which was made to the French government in 1846, by a Special Commission appointed by the French Academy of Medicine, upon this very subject, and which report was brought before the Lord President of the Privy Council by Sir John Simon in 1875. In bringing forward the evidence adduced in this report, Sir John Simon pointed out that western Europe had not suffered from plague for more than one hundred and fifty years, and that up till quite recently the disease had been frequent in the Levant, from which plague-invaded district wool had in all times been exported without apparently any case of plague having been caused thereby. We are far from asserting that it is impossible for plague, when its virus is in a certain phase of activity, to be conveyed through the agency of cotton or wool, but in endeavoring to arrive at any conclusion on this question the very important negative evidence furnished above should receive its due share of consideration; and it is to be regretted that articles on plague in the textbooks are, for the most part, silent as to the conclusions of the French Commission, although at least sufficient prominence is given to "reports" in the other direction. If action were taken upon the statements contained in some of the textbooks, it is conceivable that under certain circumstances much misery might be produced in some of the manufacturing districts of England, loss and misery which would be, perhaps, hardly justified upon the evidence obtainable on this point.

The Malarial Hand.—Dr. Edward Craster, a governmental officer, resident on the West coast of Africa, invites attention to a diagnostic coloration of the hand that is, in his opinion, malarial in origin. He says, in the London *Lancet*, for September 4: "It is well known that long residence in a malarial climate causes, in a large majority of cases, such changes in the coloring matter of the skin that, instead of 'sunburn' a peculiar 'putty-like' appearance is produced. With some this appearance disappears after a short residence at home, with others it is permanent. This 'West-coast complexion' is so commonly recognized as to need no comment here. The peculiar phenomenon to which I wish to draw the attention of the profession is one which I have called 'the malarial hand.' I have noticed during my sojourn in the Niger territories, among those Europeans who have resided on the Niger more than two years, a singular rose-pink coloration of the skin over the thenar and hypothenar eminences and also over the under surfaces of the last phalanges of both hands. This coloration comes on imperceptibly and increases gradually until the appearance is as if these surfaces had been dipped in red ink. I have not noticed it in persons of any particular complexion, but it seems to affect fair and dark alike, and it always appears simultaneously on both hands, never on one alone or on one before the other. It would be very interesting to hear if a similar manifestation exists in other malarial climates, and if so to what it has been ascribed. Personally I am not yet in a position to give an opinion on the subject, but would be much interested to hear that of confrères who have noticed the peculiarity."

SOCIETY NEWS.

The Newport Sanitary Protective Association met at Newport, R. I., October 8. The following were elected officers for the ensuing year: President, Elbridge T. Gerry; first vice president, James J. Van Alen; second vice-president, A. B. Almon; treasurer, Peter F. Curley, M.D.; recording secretary, Creighton Withers; corresponding secretary, H. R. Storer, M.D.; honorary counsel, Samuel R. Honey; consulting engineer, George E. Waring, Jr.; inspectors, William H. Chapman and George W. Farquhar.

The National Sanitary Association met at Nashville, Tenn., October 13. Papers by Dr. Charles S. Benedict, Dr. Thomas C. Craig and President Young were read and discussed. The Association elected the following officers: President, Dr. Charles E. Benedict; vice presidents, Dr. H. C. McLean and Dr. F. L. Jewett, both of Brooklyn; Dr. E. A. Wilson, Meriden, Conn.; secretary and treasurer, Dr. Thomas E. Veal of Atlanta, Ga. New York City was selected as the next place of meeting.

MISCELLANY.

Personal.—H. Augustus Wilson, M.D., has severed his connection with the Polyclinic Staff, Philadelphia.

New Journals.—*Edwards' Journal of Health*, Vol. i, No. 1, October, 1897, has been received. It is edited and published monthly by Joseph F. Edwards, A.M., M.D., Atlantic City, N. J. *The National Hospital and Sanitarium Record* is a new publication published in Detroit, Mich., Vol. i, No. 2, September, 1897, being noted among our exchanges.

Death from Ivy Poisoning.—A death is reported from Chester, near Middletown, N. Y., from rather an unusual cause, the effects of ivy poisoning. The patient was a female, 69 years of age, who came in contact with the plant early in July. Her whole system seemed to be profoundly affected by the poison and death resulted after two months of great suffering.—*Boston Medical and Surgical Journal.*

Not an Unreasonable Contract.—There is no manifest unreasonableness, the supreme court of Rhode Island holds, Tillinghast vs. Boothby, in such a contract as one by which a certain person was employed to work as a dentist, with a stipulation that he would not, after the termination of the contract, "either directly or indirectly, carry on, or be employed or concerned in, the practice of dentistry in the county of Providence, Rhode Island."

Intracorpuscular Parasites in Birds.—Danilewsky, who first observed intracorpuscular parasites in the blood of birds, believes that these organisms are identical with those of the malarial fevers. Certain subsequent observers have attempted to establish an analogy between the different varieties of the malarial parasites and forms which they find in birds. Others have considered the parasites in birds to be entirely independent of those of man. It seems probable that there are in birds at least two distinct species of intracorpuscular parasites. In almost every detail of structure they very closely resemble the malarial organisms of man, but they are, nevertheless, essentially distinct.

Observation of Conduct.—In Burt v. State, a murder case, where the defense was insanity, the court of criminal appeals of Texas says that it is not informed of any case holding that because a prisoner is in jail, unwarned, therefore his conduct can not be observed, so that an expert can give an opinion as to his sanity. It would be a remarkable case, indeed, the court goes on to say, in which the accused, if insane, would simulate sanity. Nor can it comprehend how the fact that he was in jail could affect his conduct in this particular in any manner. Consequently, it holds that the testimony of a medical expert who has carefully observed the conduct of a prisoner under such circumstances is admissible in evidence on the question of his sanity.

A Diagnostic Point Worth Knowing.—A young physician of East Liberty, who was called to see a consumptive patient in the absence of the family doctor, was asked by the patient's sister, in anxious tones: "Doctor, are consumptive persons full of bugs?" "Bugs?" repeated the physician, doubtfully. "Yes; our doctor says they are full of bugs." "Oh," he replied, "your doctor probably told you of the bacilli tuberculosis, but they can't be called bugs. They are very small creatures. I forget their exact size, but it would take probably 10,000 to make an inch, and they can not be seen except by the highest power of the most powerful telescope." The questioner listened doubtfully and then said: "Well, anyhow, my sister can feel them crawling inside her."—*Pittsburg Chronicle-Telegraph.*

Statements to Physicians.—The Court of Appeals of Kentucky takes the position, in the case of Omberg v. United States Mutual Association, that the declarations of a patient to his attending physician with regard to what his injury is or was caused by are competent evidence where the cause of his injury is in issue. A narrative of the events attending the mishap, it goes on to state, would not be competent, but the patient may tell what the injury is, if he knows. He is suffering, and is seeking relief. To get it he must tell the truth. Any other course would mislead his physician, and might result disastrously. But the court says that it is not disposed, for obvious reasons, to extend this doctrine so as to embrace declarations made to others than the patient's physicians.

Rectal Feeding in Typhoid Fever.—For some time past Dr. Queirolo, Professor of Clinical Medicine in the University of Pisa, has been in the habit of feeding his cases of typhoid fever entirely by the rectum in order to afford the diseased bowel complete rest. The nutrient enemata are given four times daily, and consists of triturated meat and pancreas with a few drops of laudanum, each injection being preceded by irrigation of the bowel with boracic acid—the plan, in fact, advocated by Leube. The patients are allowed to drink hydrochloric acid lemonade. In this way the digestive tract is preserved from putrescible substances, and this Dr. Queirolo considers obviates one of the most fruitful sources of auto-toxic action. All the cases treated on this system, many of them a very severe type, are stated to have recovered.—London *Lancet.*

A Danger from the Underground Wire.—Electrolysis is damaging the water-pipes at Springfield, Mass., as well as elswhere. A water engineer of that city in describing a volt meter test of an affected pipe, says: "To my mind the solution of these queer antics is that the return wire at the point where the current showed was not as good a conductor as the iron pipe which runs along Belmont Avenue. When the current neared the pipe which we are discussing, the ground was wet and the current left the main pipe and entered this one. The current does no harm so long as it runs along the pipe, but when it leaves the pipe for some other connection it raises mischief. Iron pipe is affected as badly as lead pipe. Sometimes a pipe will be ruined in three or four weeks. In Brooklyn, cases have been reported where three or four days have spoiled the pipe. But this is not a circumstance to what happened on State Street. There a pipe had been cut off and plugged in close proximity to another line. The amount of electricity in the plugged line pipe was something remarkable. I took and wired a pen to it and held it with a rubber mitten, and it would emit sparks two or three feet long. I then held the pen a short distance from the second line of pipe and found that I could mark the pipe, in fact, could write my name as easily as a diamond writes upon the glass."

Power of Railway Officials to Employ Physicians.—A judgment for the value of medical services rendered railway employes was affirmed by the appellate court of Indiana in the case of Bedford Belt Railway Company v. McDonald. The court said that a railway corporation is under no different obligation to procure medical and surgical aid for its employes than is any other corporation or person under like circumstances. At the same time it is well settled that the general officers of a railway company have power to employ medical attendance for workmen injured in the performance of duty in the company's service. Subordinate officers or agents can only do so in cases of urgent exigency. The court further said that it failed to see any difference, in effect, between a corporation, through its general officers, employing a surgeon at the time an employe is injured and employing him in advance to render services to an employe only in the event that the employe is injured. But it would not decide here whether a corporation has power to employ a surgeon at a stated salary, which he is to receive in any event, though it stated that it did not consider that such a contract would be against public policy or an invasion of the rights of injured employes. There can be no presumption that the amount paid the surgeon by the company is deducted from the wages of the injured employes, nor that such a contract as the foregoing cuts off the right of an injured employe to call in any surgeon he may choose.

Termination of Liability for Care at Hospital.—St. Barnabas Hospital v. Minneapolis Electric Company, is the title of an action brought to recover for the care and treatment of one of the employes of the defendant company, whom it had taken, after he had been seriously injured, to the hospital named, where he was received as a patient for an indefinite period, no length of time being mentioned, at the company's request and upon its promise to pay for his care and treatment. Subsequently, and while the patient was yet incapable of being removed or discharged from the hospital without great danger to his life or health, the company gave notice that thereafter it would not be responsible for his care or treatment. Could the company thus terminate its liability, especially at such a time? The supreme court of Minnesota holds not. It holds that under the circumstances it was an implied condition of the contract that the company could only terminate its liability by removing the patient or when he could be dismissed by the hospital without serious danger to his life or health. In order to relieve itself from liability for care and treatment furnished after the notice on the ground that the patient had means of his own to pay for it, the court further holds that the burden was on the company to prove that he had means out of which the hospital could and should have collected its pay. But for the hospital to maintain its action, the court intimates that the burden belonged to it to prove that the patient could not have been dismissed without great danger to his health or life until the date of his dismissal, or that at least it could not recover pay after the notice against the company beyond the time to which it proved that such condition extended.

X-ray Photographs as Evidence.—In the course of the trial of the personal injury case of Bruce v. Beall, a medical expert, Dr. Galtman, was introduced as a witness, and he was permitted to submit to the jury an X-ray photograph taken by him, showing the overlapping bones of one of the plaintiff's legs, at the point where it was broken by the fall which was charged to the defendant's negligence. This was objected to by the defendant's counsel. The photograph was taken by the witness, who was a physician and surgeon, not only familiar with fractures, but with the new and interesting process by which this particular impression was secured. He testified that this photograph accurately represented the condition of the leg at the point of fracture in question, and, as a fact, that by the aid of X-rays he was enabled to see the broken and overlapping bones with his own eyes, exactly as if stripped of the skin and tissues they were uncovered to the sight. After calling attention to these facts the supreme court of Tennessee says that it might, if it so desired, rest its conclusions on the general character of the exceptions taken to this testimony, but that it prefers to place it on the ground that, verified by this picture, it was altogether competent for the purpose for which it was offered. New as this process is, continues the court, experiments made by scientific men, as shown by this record, have demonstrated its power to reveal to the natural eye the entire structure of the human body, and that its various parts can be photographed as its exterior surface has been and now is. No sound reason was assigned at the bar why a civil court should not avail itself of this invention, when it was apparent that it would serve to throw light on the matter in controversy. Maps and diagrams, drawn by hand, and photographs of exterior surfaces have been admissible in numerous cases. It is not to be understood, however, adds the court, that every photograph offered as taken by the cathode or X-ray process would be admissible. Its competency, to be first determined by the trial judge, depends upon the science, skill, experience and intelligence of the party making the picture and testifying with regard to it, and, lacking these important qualifications, it should not be admitted; and, again, even when it is not conclusive upon the triers of fact, it is to be weighed like other competent evidence.

Insanity Abroad on the Increase.—There has been a deal of comment of late on the increase of insanity in England. It seems from an official report that a similar, if not a worse, condition of affairs exists in Prussia, where the lunatic asylums find difficulty in providing accommodations for the crowds of applicants for admission. In 1871 the total number of lunatics in Prussia was 55,063, in 1880 it had risen to 66,345, while in 1896 it had gone up to 82,850. It is interesting to note also that, while the growth of insanity is general, it is more marked among men than among women. Of 100,000 Prussian males it seems 278 are found insane; but in a like number of women only 243. From figures given in the same return it appears that blindness is diminishing, while the number of deaf mutes is rather increasing.—*N. Y. Evening Post.*

Classification of Epilepsy.—Dr. Frederick Peterson, President of the Board of Managers of the Craig Colony of Epileptics, has the following to say in his third annual report regarding the classification of this disease: "So little is known of the etiology of epilepsy that it is not possible, in the light of present knowledge, to make a satisfactory classification of its forms. The terms grand mal, petit mal, psychic and Jacksonian are largely symptomatic designations, and bear little relation to causative factors. A classification based strictly on etiology is not possible, but none will deny that such a classification would be more scientific and valuable. The classification here offered is not held to be perfect or even satisfactory, but is used as a working basis for future improvement: 1, genitoneuropathic; 2, post-paralytic; 3, traumatic; 4, hystero-epilepsy; 5, hereditary; 6, imbecilic; 7, acquired; 8, senile."

Limit to Power of Health Officers.—The question was presented in the case of Eckhardt v. City of Buffalo, whether, under a general power to declare certain matters and things to be nuisances, and to abate the same in such manner as the official may deem expedient, the power may be implied to cause new erections to be made, new appliances, apparatus and contrivances to be used and new improvements to be adopted, all in accordance with supposed scientific principles of sanitation, and to charge the expense, however costly it may be, to the landowner, whether he will or no? This, the fourth appellate division of the supreme court of New York answers in the negative. Or, to be more specific, the court holds that a health commissioner, given by statute only power to abate nuisances, has not the right or power to force on a landowner the mechanical contrivance of water-closets, with all their requisites and accessories, instead of privies, which, sufficient as privies, if kept in the condition proper for such conveniences, are on his lands for the purposes of his building there. No such extensive powers exist at common law. The conservation of public interests and the people's health and safety, says the court, must be looked to, but at the same time private rights of property must be guarded and protected against unwarrantable invasion, and the undue exercise of authority must be restrained within reasonable and proper bounds. The fact that a privy may not conform in all its appointments and accessories to the most approved modes of scientific sanitary plumbing does not of itself condemn it as a nuisance. Besides, the right to abate is limited to the removal of that in which the nuisance consists. Nor does the court think that the existence of Asiatic cholera in the seaports of Europe, having connection with the city of Buffalo, N. Y., would put inhabitants of the latter place in great and imminent peril, such as to warrant the health commissioner compelling them to incur large expenses in the improvement of their property, far beyond what the ordinary exigencies or necessities would require.

Danger from Gauze Tampons in Postpartum Hemorrhage.—Schaeffer regards with disfavor the use of gauze as a material for uterine tampons in cases of flooding. If impregnated with iodoform or some other antiseptic, there is no danger of sepsis. If, however, it should happen, as is often the case, that the tampon fails to stimulate uterine contractions, and if when the bleeding is from a lacerated cervix the plug does not cause the torn artery to close by thrombosis, the gauze increases the danger, for it acts as a capillary drain and takes up much blood. All who have attended many labors know that the tolerance of hemorrhage is very irregular in different subjects, and an apparently trifling loss will kill certain women. Hence, the best rule in flooding is not to allow one drop more to be shed, if possible. Gauze, above all, if "absorbent," which simply means more absorbent than commoner material, at least takes up many drops of blood. Schaeffer now uses non-absorbent gauze, prepared by impregnating it with gutta-percha. It can be mixed with iodoform or airol. By rolling it up into a ball it can be passed into the uterus, which it distends without absorbing any more blood. As a tampon the gutta-percha gauze retains its elasticity. Hence Schaeffer finds it suitable for inducing abortion.—*British Medical Journal.*

Carcinoma of the Rectum.—Prof. J. Hochenegg concludes a review (prepared for the Moscow Congress) of his 129 operations for cancer and 173 for other troubles of the rectum, with the remark that we seem now to have reached the limit of what we can do for patients in an operative way, with the exception of locating and removing affected lymphatics as in carcinoma of mamma. He found the glands involved in far more than half of his cases. Future progress will be in earlier diagnosis, as surgeons are not to blame for the small percentage of permanent recoveries, the patients being sent to them altogether too late. He rejects the use of the mirror as directly injurious and needless, when the carcinoma is below the sphincter at the edge of the anus, where it can be easily seen; also for carcinoma located in the ampulla, usually in the anterior wall, which is characterized by level, soon ulcerating prominences, spreading later into a ring of infiltration around the whole rectum with a tendency to hemorrhage, slimy diarrheic passages and pain in the lumbar region, the rigid carcinomatous growth holding the lumen open. When located at the sphincter tertius it tends rapidly to a ring formation, with stenosis, violent constipation alternating with diarrhea, and hemorrhage, as fragments of the neoplasm are torn away by some violent evacuation. A specific symptom with this form is the presence of gas in the ampulla, which is very much distended although empty of solid contents. The sensation to the investigating finger is that of a gas-filled balloon. Irrigation, etc., liberates the gases but the condition recurs again in two to three hours, and is a characteristic indication of this form of carcinoma, which is very deceptive to palpation. One day it feels like a solid body projecting into the gas-filled ampulla like the vaginal portion of the uterus into the vagina; another day, after an evacuation usually, it is not to be felt at all. The amount of water that can be injected is an unreliable method of locating the stenosis. A better means is Otis's improved endoscopy, which requires care and experience. There are no typical carcinomatous feces. Mucus merely indicates catarrh, and hemorrhage before, during or after an evacuation may be produced by hemorrhoids. Microscopic investigation also fails to reveal cancerous particles in most cases, and the pains at first are too slight to drive the patient to the physician. Digital investigation and palpation are therefore the chief if not the sole reliance in diagnosing. Where a pelotte is necessary after an operation, he orders for his hospital patients a large sponge, wet and well wrung out, held by an elastic band. In eighty-nine extirpations by the sacral method, since 1887, thirty-two are still living without a relapse, five with relapse, thirty-three died from relapse, seven from an intercurrent disease and four have been lost track of. In two cases there have been normal pregnancies and deliveries. The article is published complete in the *Wien. Klin. Woch.* of August 12.

Constitutionality of Laws Regulating Practice of Medicine.—Under the civil law no barriers were drawn around either professions of law or medicine. Any one who pleased might practice them without any previous qualification, subject always for injuries inflicted upon others. The common law, having an habitual regard for the widest freedom of action and borrowing from the civil law, always favored the right of any man to practice in any profession or business in which he was competent. It was a right inherent in every man to practice the art of medicine. But in modern times the tendency of legislation is to prescribe qualifications for the practice of the professions of law and medicine. Its competency can not be successfully impugned. Learning and good moral character may be required as a condition to the exercise of the rights to practice them. A law enjoining reasonable requirements as to learning and character is simply an exercise of the police power. This power may be exercised in barring from admission those who apply for the right to practice the profession of medicine, and also in excluding those who have been practicing it. Such legislation is justified by the safety of the lives, health and comfort of the people, which is the supreme law. In no case is the practice of medicine a property right. Nor is it a vested right. But it is a valuable right; and no one can, arbitrarily and without reason, be deprived of it. Such is the general statement made by Judge Pugh of the court of common pleas of Franklin county, Ohio, in the case of State v. Ottman, where he holds the law of that State passed February, 1896, entitled "an act to regulate the practice of medicine," constitutional. That it authorizes the medical board to refuse to grant or to revoke a certificate to practice "to any person guilty of felony or gross immorality," he does not consider in violation of the provision of the constitution of the United States which prohibits the passage of any *ex post facto* law or bill of attainder, though it was argued that this was a deprivation of a civil right for past conduct. Neither does he think that it violates the provision which ordains that the citizens of each State shall be entitled to all privileges and immunities of citizens of the several States; nor anything in the fourteenth amendment; nor the constitution of the State, especially in its provisions as to appeals.

Cheap Sanatoria for Consumptives.—Unterberger in the *St. Petersburger med. Wochenschrift* argues that the part played by the bacillus of tubercle in the spreading of the infection of phthisis has been over-estimated. He refers to Riffel's case as a case in point, namely, the instance of a consumptive family occupying for thirty years a small house; several children and five adults died of phthisis in the house. The house was then immediately occupied by another (large) family, and although no kind of disinfection had been undertaken and many years have elapsed, none of the second family have yet developed phthisis. As an instance of what he means by the cure of phthisis, Unterberger narrates the history of Dr. Dettweiler. This physician, aged 58 years, has a family history of phthisis. At 17 years of age (1859) he had chronic pleurisy on the right side; hemoptysis in 1860. In 1867 there were signs of a cavity at the apex of the right lung and much hemoptysis. In 1868 he improved during treatment at Goerbersdorf, but had an attack of pleuropneumonia after giving lectures at Darmstadt. He then became assistant to Brehmer at Goerbersdorf. In May, 1870, he had severe typhlitis, and then, during service in the Franco-German war, had fresh hemoptysis and pulmonary inflammation. After six weeks' rest at Goerbersdorf he was able to return to the war, but on the way back from France had again the signs of a cavity at the right pulmonary apex. He remained at Goerbersdorf, improving slowly, but had an exacerbation in 1875. In this year he went over to Falkenstein, where he has had occasionally hemoptysis or fever, and in 1883 a left pleuritic exudation. In 1884 no tubercule bacilli could be found in the sputum, but after a fresh cold they were again present. Since 1885 no bacilli have been found in the sputum, although there have been occasional slight hemorrhages. He also treats of the experiments that have been made in Europe in organizing simple and cheap sanatoria for phthisic patients. In Russia there are two such sanatoria; Halila in Finland founded by Dittmann in 1883, and Lindheim in Livonia founded by Trew in 1895. The great expense hinders the erection of many large sanatoria, but he maintains that little houses or cottages might be erected at less expense, where consumptive patients might have pure country, dust-free air, good food and hydrotherapeutic treatment and remain under medical supervision as at larger sanatoria. The air may be artificially scented with the aroma of pine trees if the latter are insufficient. With Winternitz he believes that the hydrotherapeutic processes act by increasing phagocytosis. Employers of labor might even be induced to erect small sanatoria of this kind from purely economic considerations.—*British Medical Journal.*

Longevity a Feature of Temperate Climates.—During 1896 the death of 188 persons over 90 years of age, fourteen of them being over 100, was recorded in Great Britain and Ireland. It is a somewhat curious circumstance that the average longevity is greater in Scotland than it is in England, and greater in Ireland than in Scotland, the birth-rate being largest in England and least in Ireland. Of a thousand persons, men, women and children, resident in England, the average number over 60 years of age is seventy-two or somewhat more than 7 per cent. In Scotland the proportion over 60 years of age is 7.7 per cent., and in Ireland it is 10.5 per cent. Ireland stands second to France as regards the longevity of its inhabitants, the proportion of men and women in France over sixty years old being by the last census 12.7 per cent., or 127 of each 1,000 of population. The official figures of the census report show that longevity is, to a considerable extent, regulated by climate, that is, in countries within the temperate zone, the duration of life is greater than in warmer or semitropical countries. The average number of persons over 60 years old in 1,000 inhabitants in the United Kingdom is seventy-seven, and in the German Empire, the climate of which is similar, it is the same. In Holland it is also seventy-seven; in Denmark, eighty-four; in Sweden, eighty-eight, and in Norway, ninety. In Russia the longevity of the inhabitants is greatest in the northern provinces and lowest in the southern ones. The average of European countries in the north temperate zones, England, Germany and Holland, seventy-seven a thousand falls to seventy-one in Austria and in Portugal. In Spain, where the climate is generally milder than in Portugal, the number over 60 years of age, in a thousand, is fifty-eight only, and in Greece it is fifty-six. In the East Indies, as far as there are any authentic figures, the average is only forty in a thousand inhabitants. In South America the average is about fifty, though there are, of course, many exceptional cases.

The Surgical Attributes of the Southern Negro.—Dr. Rudolph Matas, of the Charity Hospital of New Orleans, has made a very thorough statistic study of the records of that hospital as to the surgical peculiarities of the negro of Louisiana. His research, which covers a period of ten years ending 1894, has warranted the conclusion that the race of the patients play little or no part in the prognosis of surgical operations, except in so far as it is influenced by degenerative tendencies due to the hygienic, social and moral environment. He holds the opinion that the colored man of his section is at nearly all points, whether anthropologically, physiologically and pathologically, different from his original African ancestors and from his uncivilized brothers on the west coast of Africa of the present generation. A residence of nearly three hundred years in the southern States of North America, in contact with the white man and under the influence of civilization, has produced a marked change in the mental and physical organization of the negro. This change is evidently due to the combined influences of acclimatization and adaptation to surroundings, and especially miscegenation with the white race. The *International Journal of Surgery* weighs the argument of Dr. Matas and with him concedes that the general morbidity and mortality of the colored race was less than that of the white population in the South, during the whole period of slavery and up to emancipation; but concludes that since the colored race has been thrown upon its own resources, its morbidity and mortality have enormously increased, and are now much greater than those of the white population. While the more typical African diseases are rapidly disappearing, the general liability of the negro to the common diseases of this country is rapidly increasing, so that many immunities which he formerly enjoyed have been lost, and new predispositions to disease have been acquired. There are no conditions, continues the author, which prevail exclusively in the colored race, any more than there are diseases which prevail exclusively in the white race. The differences, pathologically speaking, that do exist between the white and colored population, lie only in their relative predispositions to some of the diseases that prevail in *this country, and in their relative immunity from* others. When viewed from the purely surgical operative standpoint, the white and colored races are practically alike, especially when individuals of both races, taken from the same social environment, are compared. There are no apparent differences between the races on the operating table; the same technique applies to both equally as well, and often, especially in the matter of resistance to shock, the negro appears to better advantage than the white man. *In the general and local reactions of* the tissues to infection, there are some differences in the races. It is in the histogenetic tendencies of the tissues that we find the real surgical contrast between them. If we are to judge from this alone, the colored race reveals in this last particular a marked tendency to degeneration.

English Governmental Report on Glycerinated Vaccine.—The researches of Sir R. Thorne Thorne, M.D., and Dr. Copeman, upon the newer preparations of bovine vaccine, have been reported to the Local Government Board. These reporters visited Paris, Berlin, Brussels and several other cities of central Europe in order to investigate the laboratories where the glycerination of vaccine lymph has been conducted on an extensive scale. Since 1891, Germany especially has been engaged in perfecting a system of vaccination in which the English method of arm-to-arm operations plays no part, and these reporters state that in that nation the laboratories have found it possible to obtain from a single calf sufficient vaccine to vaccinate 6,000 to 15,000 individuals. Whereas, says the *Lancet*, the English governmental vaccine establishment has been content to obtain 200 or 300 vaccinations from each animal operated upon for lymph production. These reporters brought back with them from Berlin a quantity of the glycerinated and most highly diluted lymph and made test vaccinations after intervals of nine to thirty-seven days after collection, and obtained a success of 92 per cent. in their series of seventy-six individuals. With other samples less highly diluted with glycerin there were obtained successes in 100 to 97 per cent., when the lymph had not been subject to a longer interval after collection than thirty-one days. Not only is the activity of the lymph not impaired by the addition of very considerable proportions of glycerin, but this latter agent exerts a distinct bactericidal effect on organisms that accidentally find their way into the vaccine, inclusive of the pus producing germs, which are more or less resistant to many bactericidal agents other than glycerin. Lymph containing an aqueous solution of glycerin has also been experimentally proved to have the property of destroying the vitality of the bacillus of tuberculosis. It is not in terms stated that the glycerinated lymphs were found to be sterile, but that they did not contain those pathogenic forms that may possibly produce erysipelas, suppuration and tuberculosis, the three conditions that have been said to be possibly communicable by the use of the non-glycerinated bovine virus. Economy and a greater safety both point the same way, namely, to the use of glycerin in the preparation and storage of vaccine. The proportion of glycerin added in the different laboratories varies greatly. In Paris the lymph is diluted with equal parts of the agent; in Brussels about two parts thereof are added; in Berlin fourteen parts of a solution of equal parts of glycerin and boiled water are added to one part of the epithelial pulp scraped from the vesicles. These differences can only be settled to the satisfaction of the profession and of interested officials by continued laboratory work, and the reporters point out the necessity for the prompt establishment, in England, of a home laboratory to aid in the settlement of this and allied problems. The question of the centrifugalization of the lymph has been experimented upon in Berlin, but the desirability of this additional measure of purification has not been demonstrated. It is true that the vaccine has a better appearance and shows a smaller amount of micro-organisms, even before the addition of the solution of glycerin, but it is argued that if the activity of the lymph depends upon a particular body "and is locked up specially in the epithelial cells, continued centrifugalization would remove it and the lymph would lose its activity." This is another phase of the question that can only be cleared up by laboratory work. In some of the laboratories the tuberculin test is applied to the calf. In others of the places the reliance as against possible tuberculosis in the animal is placed in the postmortem. The selected animal is closely followed from the time of purchase until that of slaughter. This latter is done in the presence of experts and none of the collected lymph is allowed to leave the establishment until after a thorough examination has been made upon the producing animal and it has been pronounced to be free from tuberculosis.

Bites of Insects and Serpents.—Dr. Gonin of Lyons, sends a note to the Paris Academy of Medicine recommending formol for mosquito and gnat bites, also for bites from small animals. The bites should be covered with formol by a small brush or the surface of the cork of the bottle containing it. After evaporation the formol is again applied. The soothing effect is instantaneous: there is never any inflammation. M. Gonin asserts that formol is efficacious for serpent and scorpion bites.

Hospitals.

The Virginia Hospital and the Richmond (Va.) Male Orphan Asylum each received $10,000 from the late Major Lewis Ginter. St. Luke's Home for the Sick, the Sheltering Arms Hospital and the Richmond Eye and Ear and Throat Infirmary each receive $5,000, while $2,500 goes to Maternity Hospital and $1,000 to Foundling Hospital.——The corner stone of the new Jamaica (L. I.) Emergency Hospital was laid, with appropriate ceremonies, October [illegible].

Societies.

The following meetings are noted:

Connecticut.—New Haven Medical Association, October [illegible]

District of Columbia.—The Alexandria Medical Society, October 5.

Illinois.—Clinton County Medical Association, Clinton, October 5. Medico-Legal Society, Chicago, October 14.

Iowa.—Dubois County Medical Association, October [illegible] Iowa State Medical Association, Des Moines, October 13 and 14. Polk County Medical Association, Des Moines, October 12.

Kentucky.—The Kentucky Medical Association, Richmond, October 5. Southern Medical Association, Bowling Green, November 3 and 4.

Michigan.—Saginaw Medical Society, Saginaw, October 6.

Minnesota.—Minnesota Academy of Medicine, Minneapolis, October 6.

Missouri.—Southwest Missouri Medical Society, Springfield, October 14 and 15.

New York.—Broome County Medical Society, Binghamton, October 5. New York State Medical Association, New York City, October 13, 14 and 15.

Ohio.—Association of Surgeons of the Pennsylvania Railroad Company, Zanesville, October 12. Clark County Medical Society, Springfield, October 7. Columbus Academy of Medicine, October 4. Pickaway County Medical Society, Circleville, October 6.

Pennsylvania.—Luzerne County Medical Society, Wilkesbarre, October 6.

Tennessee.—American Association of Colored Physicians, Nashville, October 15. East Tennessee Medical Society, Knoxville, October 5. Tri-State Medical Society, Nashville, October 12, 13 and 14.

Utah.—State Medical Society, Salt Lake City, October 5.

Wisconsin.—Northwestern Wisconsin Medical Association, Marshfield, October 12.

Ontario, Canada.—Chatham Medical and Surgical Society, October 7.

Washington.

Health of the District.—The report of Health Officer Woodward for the week ended October 9, shows the total number of deaths to have been 97, of which number 51 were white and 46 colored. There were 16 deaths from diseases of the nervous system; 7 of the circulatory; 7 from diseases of the kidney; and 19 from diseases of the respiratory system. There were 5 cases of fatal diphtheria and 3 of typhoid fever.

Central Dispensary and Emergency Hospital.—At the meeting of the Attending Staff recently held, the resignation of Dr. George Byrd Harrison was received and accepted. The Staff tendered him a vote of thanks for his faithful and efficient services and expressed regret at his severing his connection with the institution. Dr. Harrison was director of the clinic of General Medicine, Skin and Venereal Diseases. Dr. Hawkes, who has been traveling in Europe for the past several months, has returned and assumed charge of his department in the Hospital.

Public Health Committee.—A meeting of the Public Health Committee of the Washington Board of Trade was called to order on October 13, by the president, Dr. Samuel C. Busey, for the purpose of preparing the annual report for the year 1897. The principal recommendations, unanimously agreed to, and earnestly recommended, were the reclamation of the Anacostia Flats (Washington's Black Hole of Calcutta), the sewage disposal and water purification work.

Medical Society.—At the regular meeting of the Society, held October 13, Dr. Claytor read a scientific and instructive paper entitled "A contribution to [illegible] of the pulse and its significance." The subject was made further interesting by the exhibition of charts explanatory of the subject. Dr. D. S. Lamb presented some very interesting specimens and gave the histories of hemorrhage into the spinal cord, and human bones excavated from mounds in Florida, [illegible] pre-Columbian syphilis.

Washington Obstetrical and Gynecological Society.—The annual meeting of the Washington Obstetrical and Gynecological Society was held on October [illegible] at the residence of Dr. Magruder, a retired member of the Society. The [illegible] of officers for the ensuing year [illegible]: President, Dr. Thomas C. Smith; vice-presidents, [illegible] and John T. Winter; recording secretary, [illegible] corresponding secretary, [illegible] The following committees were formed: [illegible] Tompkins and Bovee; [illegible] Drs. [illegible] treasurer: publication [illegible] Drs. [illegible]

County Medical Society, held Oct. 7, 1897, the following officers were elected: President, L. E. Maire, M.D.; vice-president, A. H. Steinbrecher, M.D.; secretary, J. H. Sanderson, M.D.; treasurer, C. H. Leonard, M.D.; board of directors, Drs. R. Hislop, R. H. Honner, Dayton Parker, J. A. Patton, C. D. Aaron. The secretary reported the society in a flourishing condition, with a membership of 211.

The Detroit Medical and Library Association at its regular meeting, Oct. 11, 1897, listened to an interesting paper by Dr. Charles D. Aaron entitled "Intestinal Auto-intoxication," in which the Doctor made the statement that the meaning of auto-intoxication was not yet definitely agreed upon, but that it consisted of the retention of normal and abnormal material in the intestines, the result of which is decomposition, putrefaction and fermentation, and that the products of the carbohydrate fermentation gives formic, butyric, lactic and acetic acids, with gases, etc. In albuminous decomposition we get NH_3, leucin, tyrolin, cystin, phenol, indol, skatol, tyrosin, acetan, etc. The Doctor alluded to the fact that a great number of microbes within the intestinal canal generate poisonous ptomains and toxins, which are quickly absorbed, and that when we get this production with the retention in the intestinal tract certain symptoms which show a condition of the digestive, respiratory, circulatory, uropoietic and nervous systems takes place. While there is no proof that this is due to auto-intoxication, yet it is certain that when these poisons are removed the different symptoms disappear. In vertigo we have a symptom which shows itself in the poisoning due to alcohol, nicotin, etc., also headache, neuralgia and vomiting due to cerebral retention. The author stated that constipation was not always necessary in auto-intoxication and said that the more fluid-like the contents of the intestines were the more rapid were the absorption of the toxins, as the urine in diarrheic condition has been found to be quite poisonous, and that patients in a condition of auto-intoxication feel better when constipated than when they have frequent evacuations. The Doctor stated that in cholera patients the absorption of toxins is kept up even when there is frequent evacuations. He cited the digestive disturbances of children, which he claimed could be more easily explained on the lines of auto-intoxication than on the reflex theory, and said that such disturbances of the circulation as tachycardia and other symptoms of vasomotor disturbances are very often due to intestinal auto-intoxication. In certain skin affections as urticaria, this matter is not now recognized as being due to idiosyncrasy, but rather to the intestinal auto-intoxication. He also argued that asthmatic dyspepsia, symptoms of collapse produced by obstruction of the bowel and sclerosis, depended somewhat upon auto-intoxication.

CHANGE OF ADDRESS.

Alford, R. Lee, from Laddonia to Vandalia, Mo.
Allen, W. H., from Horr to Joliet, Mont.
Billig, A., from 300 E. 42d St. to 3310½ Rhodes Ave., Chicago, Ill.
Boyer, E. N., from Missouri House to 601½ Hamp St., Quincy, Ill.
Claussen, J. E., from Ware Bldg to 2205 Cuming St., Omaha, Neb.
Clark, M. S., from 13 W. Federal St. to 213 Mill St., Youngstown, Ohio.
De Witt, T. B., from 1609 Jackson Boul. to 1613 Polk St., Chicago, Ill.
Davis, W. M., from Blackfoot, Texas, to 311 E. Madison St., Louisville, Ky.
Dion, D., from 376 Bowen Ave. to 88 Eighteenth St., Chicago, Ill.
Fulke, Joseph, from Buckingham, Pa., to 1709 Race St., Philadelphia.
Horwitz, O., from 1115 to 1721 Walnut St., Philadelphia, Pa.
Kneedler, W. L., from 2003 D St. to San Diego Barracks, San Diego, Cal.
Kaczynski, J., from 635 Noble St. to 19th St. and Hoyne Ave., Chicago.
Knerr, C. B., from 858 to 1710 E. Washington St., Indianapolis, Ind.
Lehan, J. W., from Aurora, Iowa, to 127 Congress St., Chicago, Ill.
Nolan, E. C., from Mt. Pulaski to [illegible] State St., Chicago, Ill.
Oren, S. A., from Lanark, Ill., to Laporte City, Iowa.
Page, J. F., from Mystic, Iowa, to Bellevue Hospital Medical College, New York, N. Y.
Piper, J. R., from Mansfield, Ohio, to 129 Prospect St., Cleveland, Ohio.
Steadman, T. E., from 329 Amsterdam Ave. to 53 E. 76th St., New York.
Sadtler, C. E., from [illegible] to [illegible] Bolton St., Baltimore, Md.
Wetz, J. A., from Montpelier, Vt., to 309 Third Ave., Detroit, Mich.
Warden, A. W., from 170 W. 104th to 115 W. 82d St., New York, N. Y.
Wolfender, J. N., from 1102 N. Halsted St. to 759 Evanston Ave., Chicago, Ill.

LETTERS RECEIVED.

Alkire, J. P., Columbus, Ohio; Abbott, E. H., Chicago, Ill.
[illegible], F. J., New York, N. Y.; Breedlove, J. W., Fort Smith, Ark.; Battle & Co., St. Louis, Mo.; Brown, A., [illegible], Wis.
Carry, C. J., [illegible], Tenn.; Criswell, G. H., [illegible], Wyo.; Consumers' Company, The, Chicago, Ill.
Etheridge, J. H., Chicago, Ill.; Edson, Carroll E., Denver, Colo.; Eason, J. T., Grand Lake, Ark.
Foster, Burnside, St. Paul, Minn.
Holland, J. W., Philadelphia, Pa.
Jones, Asa, Flemington, N. J.
Kelley, Maus & Co., Chicago, Ill.; Kneedler, W. S., San Diego, Cal.; Knopf, S. A., New York, N. Y.
Little, C. H., Piqua, Ohio.
Montgomery, L. H., Chicago, Ill.; Munson, E. L., Fort Assiniboine, Mont.; McReynolds, J. O., Dallas, Texas; Martin, Thomas Charles, Cleveland, Ohio; Mattison, J. B., Brooklyn, N. Y.
Newell & Heldman, Chicago, Ill.; Nelson, H. S., Minneapolis, Minn.; Nixon, J. W., Soldier, Kan.
Ohlmacher, A. P., Gallipolis, Ohio.
Pantagraph Printing Co., Bloomington, Ill.; Porter, W. D., Cincinnati, Ohio.
Snyder, D. J., Scio, Ohio; Steele, D. A. K., Chicago, Ill.; Shilling, G. W., Sharon, Pa.; Sander, Enno, St. Louis, Mo.
Ulrich, C. F., Wheeling, W. Va.
Wilcox, R. W., New York, N. Y.

PAMPHLETS RECEIVED.

An Inheritance for the Waifs. By C. F. Taylor, M.D. Paper, 8 pages. Philadelphia.
An Operation for the Correction of a Saddle-back Deformity of the Nose; Two Cases of Abscess of the Nasal Septum; A Modification of Horner's Mastoid Retractor. By E. C. Ellet, M.D. Reprints.
Auditory Aphasia. By H. T. Pershing, M.D. Paper, 16 pages. Reprinted from Jour. of Nervous and Mental Disease.
Early History of Ophthalmology and Otology in Baltimore (1800-1850). By Harry Friedenwald, A.B., M.D. Paper, 20 pages. Reprinted from Johns Hopkins Hosp. Bulletin.
Four Lectures on the Sympathetic Nervous System. Paper, 118 pages, illustrated. By G. Carl Huber, M.D. Reprinted from Jour. of Comp. Neur.
Joseph Friederich Peringer: His Methods and Investigations. By G. Carl Huber, M.D. Paper, 16 pages. Reprinted from Johns Hopkins Hosp. Bulletin.
Notes on Suicide. By C. C. Mapes. Paper, 16 pages. Reprinted from The Medical Age.
Ovariotomy in a Child Thirty-three Months Old. By C. S. Hoffman, M.D. Paper. Reprinted from Am. Jour. of Obstetrics.
Physical Proportions of the American Soldier. By Major H. S. Kilbourne. Paper, 12 pages. Columbus, Ohio: Berlin Printing Company, 1897.
Resorcin in Dermotherapy, Histologic Researches Upon its Action on the Healthy Skin. By James C. Kellogg, M.D. Paper, 16 pages. Illustrated. Reprinted from St. Louis Med. and Surg. Jour.
Some Relations of Author, Publisher, Editor and Profession. By George M. Gould, M.D. Paper, 12 pages. Reprinted from Bulletin of Amer. Acad. of Med.
Structure and Function of the Tube and Loop of Henle. By Rosalie Ladolf. Paper, 8 pages. Reprinted from Medical Standard.
A Case of Pyemia in a Young Infant. By John C. Da Costa, M.D. Paper, 5 pages. Reprinted from American Journal of Obstetrics.
A Criticism of Modified Milk and of Modern Dairy Methods; Personal Observations on Effects of Changes of Climate upon Men and Animals. By Richard Cole Newton, M.D. Reprints.
Medio-Bilateral Lithotomy; Operative Indications in Appendicitis; Report of Operations at Private Surgical Infirmary, 1896-97. By Charles S. Briggs, M.D. Reprints.
Morphinism; Diagnosis of Morphin Disease; Post active Treatment of Narcotic Habitués. By J. B. Mattison, M.D. Reprints.
New Mexico Medical Society; Report of Sixteenth Annual Meeting. Paper.
Streptococcic Infection and Marmorek's Serum. By George W. Cox, M.D. Paper, 18 pages. Reprinted from Journal of American Medical Association.
Surgical Clinic. By F. C. Schaefer, M.D. Paper, 8 pages. Reprinted from Chicago Clinical Review.
The Treatment of Malaria. By Judson Daland, M.D. Paper, 16 pages. Reprinted from International Clinics.

THE PUBLIC SERVICE.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the two weeks ending October 16, 1897.

Medical Inspector J. C. Wise, P. A. Surgeon F. A. Hesler, Asst. Surgeon B. K. Smith, detached from the "Philadelphia" and ordered to the "Baltimore."

Medical Director N. L. Bates, detached from the Museum of Hygiene and ordered to duty as chief of the Bureau of Medicine and Surgery.

Medical Director J. R. Tryon, detached from the Bureau of Medicine and Surgery and ordered to New York as general inspector of United States naval hospitals.

Medical Inspector H. J. Babin, ordered as president of the naval examining board, New York, October 9.

Medical Director C. H. White, detached as president of naval examining board, New York, October 9, and ordered to Washington in charge of Naval Museum of Hygiene.

Asst. Surgeon J. C. Pryor, detached from the naval hospital, Mare Island, and ordered to the "Adams."

Asst. Surgeon A. Farenholt, detached from the "Vermont" and ordered to New York navy yard.

Surgeon C. G. Herndon, ordered on temporary duty at the Naval Museum of Hygiene.

Asst. Surgeon W. B. Grove, detached from naval laboratory, New York, and ordered to Mare Island hospital.

P. A. Surgeon C. P. Bagg, detached from the "Marion" and ordered to the "Adams."

Asst. Surgeon M. K. Johnson, detached from the "New York" and ordered to duty with the "Vicksburg."

Asst. Surgeon R. Spear, detached from the naval laboratory, New York, and ordered to the "New York."

Surgeon C. Biddle, detached from marine rendezvous, San Francisco, ordered to Washington in charge of patient, then report at the Navy Department.

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ORIGINAL ARTICLES.

THE PRESENT STATUS OF PREVENTIVE MEANS AGAINST THE SPREAD OF TUBERCULOSIS IN THE VARIOUS STATES OF THE UNION CRITICALLY REVIEWED.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY S. A. KNOPF, M.D. (Paris and Bellevue, N. Y.)

PHYSICIAN TO THE LUNG DEPARTMENT OF THE NEW YORK THROAT AND NOSE HOSPITAL; FORMER ASSISTANT TO PROFESSOR DETTWEILER, FALKENSTEIN SANATORIUM, GERMANY; FELLOW OF THE NEW YORK ACADEMY OF MEDICINE, ETC., NEW YORK.

In order to ascertain the exact condition of prophylaxis in regard to tuberculosis, I have addressed letters of inquiry to all the secretaries of the State boards of health of all the States and Territories of the Union, and to the health officers of forty of the largest cities. To all the gentlemen who by their prompt replies so kindly aided me in compiling this report, I wish to express my sincere thanks and appreciation. Here are the results of my inquiries:

Alabama.—No laws or regulations concerning tuberculosis in man or beast, and no circulars issued.

Arkansas.—No laws, regulations or circulars concerning tuberculosis. Dr. Jennings, the executive officer, writes that the State not having made any appropriation, the board is handicapped for want of funds.

California.—Good bovine laws and regulations, circular issued on consumption.

Colorado.—Good bovine laws and regulations and a special circular, "How to prevent the spread of consumption in Colorado."

Connecticut.—Good bovine laws enforced by the State Board of Agriculture, and a circular on consumption, its cause and means of prevention.

Delaware.—Circular on the prevention of consumption.

District of Columbia.—Only one law in regard to tuberculosis, which forbids the sale of milk that may be tuberculous. No circulars or public notices.

Georgia.—There was formerly a State board of health but it has been allowed to become extinct for lack of appropriation.

Idaho.—No State board of health. Provision is made for the appointment of health officers by the various boards of county commissioners, but they are answerable to the local authority only.

Illinois.—The board has never passed any laws or resolutions concerning tuberculosis and no circulars have been issued.

Indiana.—No bovine laws yet, but the question is agitated. The board issues 2,000 quarterly bulletins free to all county, city and town health officers, and to others who may subscribe for them.

Iowa.—The board is very active in educating physicians and laity in regard to tuberculosis and is enforcing its bovine laws with vigor.

Kansas.—No laws, regulations nor circulars concerning tuberculosis in man or beast. The legislature failed to make any appropriation and the State veterinary office is abolished.

Kentucky.—For want of appropriation, the board has undertaken no work in regard to bovine tuberculosis, but a circular on consumption has been issued.

Louisiana.—Circulars are sent to physicians, and stations for the free examination of sputum have been established, but *the attempts of the board to* secure legislation in regard to bovine tuberculosis have been thwarted by concert of action on the part of the ignorant and prejudiced Creoles, who have almost entire control of the dairy business.

Maine.—The cattle commissioners are authorized to slaughter tuberculous cattle and reimburse the owners, and the board has issued a circular on consumption.

Maryland.—No laws, regulations or circulars on tuberculosis.

Massachusetts.—Five cattle commissioners appointed by the Governor are entrusted with the suppression of bovine tuberculosis. A circular on the best means of preventing consumption is issued.

Michigan.—The State Live Stock Commission is entrusted with the work concerning the suppression of bovine tuberculosis. Circulars for public instruction are issued. Sept. 30, 1893, resolutions were adopted *to include consumption in the official list of* diseases dangerous to the public health.

Minnesota.—Good bovine laws. I received no report in regard to provisions concerning tuberculosis in man.

Mississippi.—No laws, regulations or circulars concerning tuberculosis in man or beast. With the reorganization of the board, better work is hoped for.

Missouri.—No answer to my inquiries, but I learn from the daily paper that the State Board recommends public lectures on the question in the more populous centers, and all pupils of the public schools throughout the State be given a course of instruction in the causes of consumption and means by which it may be prevented.

Montana.—No State board of health.

Nebraska.—The board at present is a mere licensing body without sanitary powers.

New Hampshire.—No special regulations on the prevention or restriction of tuberculosis, but some papers on the subject have been printed. In 1891 the legislature enacted a law creating a State Board of Cattle Commissioners.

New Jersey.—The State Board of Agriculture enforces the bovine laws and a circular on consumption has been issued.

New Mex[illegible] e Te[illegible] oard has noti[illegible]d the increase of phthisis among natives of the Territory and has traced many cases to an exposure to possible infection, New Mexico being a favorite resort for consumptives. Circulars on consumption are profusely distributed and last year the board passed resolutions encouraging the testing of domestic animals with tuberculin.

New York.—Good bovine laws not very rigidly enforced because the State appropriation is small. Most efficient work was done at first by the Tuberculosis Committee of the board, but there was no appropriation last year, in spite of the fact that it has been demonstrated that there are at this time 75,000 tuberculous cows in the State.[1] Circulars like those of the New York City Board have been issued. To New York belongs the credit of having done the pioneer work in educating the public to the dangers of tuberculosis. The State board requests all local health officers to register name and address of every person suffering from tuberculosis within their respective jurisdictions.

North Carolina.—No laws, regulations or circulars concerning tuberculosis in man or beast.

North Dakota.—No laws, regulations or circulars concerning tuberculosis in man or beast.

Ohio.—No bovine laws. A circular on the prevention of consumption has been issued.

Oklahoma.—There is a law prohibiting the sale and use of milk from cows not in proper condition of health. Nothing else is done in regard to the prevention of tuberculosis.

Oregon.—No State board.

Pennsylvania.—The State Live Stock Sanitary Board is entrusted with full power to suppress bovine tuberculosis. The Board of Health has passed resolutions that tuberculosis be added to the list of communicable diseases dangerous to the public health. Circulars are issued and the Pennsylvania Society for the Prevention of Tuberculosis is in a flourishing condition, although it does not receive any aid or encouragement from the State.

Rhode Island.—Circulars are freely issued. Sputum is examined free of charge and $10,000 yearly is expended to enforce bovine regulations.

South Carolina.—No bovine laws. Some years ago circulars were printed and distributed, but no more appropriation for this purpose having been forthcoming nothing is now done.

South Dakota.—There is a law providing for the destruction of tuberculous animals and carcasses; nothing concerning tuberculosis in man. Provision is hoped for from the next legislature.

Tennessee.—Circulars on the prevention of tuberculosis in man and beast have been issued. There are bovine laws, but owing to want of funds the board has been deterred from formal action up to this time.

Texas.—The Quarantine Department is the highest sanitary authority. Its powers are limited to epidemic diseases. Circulars on tuberculosis have been sent to physicians. There are no bovine laws.

Utah.—No board of health or any organization of a similar kind whatsoever.

Vermont.—No answer, but I learn indirectly that this State kills tuberculous cattle and recompenses the owner.

Virginia.—Bovine laws are enforced by the Board of Control of the Experimental Station of the Virginia Agricultural and Mechanical College at Blacksburg. Circulars on the restriction of consumption are issued.

West Virginia.—No bovine laws. Circulars on consumption have been issued.

Wisconsin.—The board of health and the State Veterinarian co-operate in destroying milch cows that are tuberculous. Circulars on tuberculosis in man are issued.

Wyoming.—No State board of health. During the legislative sessions of 1895 a bill was introduced to create one, but it was not passed. Sanitary regulations are left to the cities, some of which have boards appointed by ordinance.

This gives us: Fourteen States which have bovine laws and regulations and in which circulars are issued for public instruction in regard to tuberculosis in man, viz.: California, Colorado, Connecticut, Iowa, Maine, Massachusetts, Michigan, New Jersey, New Hampshire, New York, Pennsylvania, Rhode Island, Virginia and Wisconsin; two which have bovine laws but where apparently nothing is done to stop the spread of tuberculosis in man, viz.: Minnesota and South Dakota; one which has bovine laws but can not enforce them for lack of funds and where thus far the board has only issued circulars on the prevention of tuberculosis in man and beast, viz.: Tennessee; two (the District of Columbia and Oklahoma Territory) which have a law prohibiting the sale of tuberculous milk, but nothing else concerning tuberculosis in man or beast; eight which issues circulars of instruction concerning tuberculosis in man, but where nothing is done in regard to bovine tuberculosis, viz.: Delaware, Indiana, Kentucky, Louisiana, New Mexico Territory, Ohio, Texas and West Virginia; nine where nothing is done to stop the spread of tuberculosis in either man or beast, viz.: Alabama, Arkansas, Illinois, Kansas, Maryland, Mississippi, North Carolina, North Dakota and South Carolina; seven which have no board of health, viz.: Georgia, Idaho, Montana, Nebraska, Oregon, Utah and Wyoming; five from which I have received no answer, viz., Florida, Missouri, Nevada, Vermont and Washington.

To the letters addressed to the health officers of forty of our largest cities I received twenty-nine answers. In one-third of these it was stated that nothing at all had been done concerning the prophylaxis of tuberculosis.

This state of affairs speaks for itself and shows that as a nation we have a most limited protection from tuberculosis in man and beast.

Let us consider for a moment the injustice done to States with good laws in regard to bovine tuberculosis by those which have no such laws. Where interstate traffic exists it will be well-nigh impossible for the States with good sanitary laws to suppress bovine tuberculosis within their borders. The following incident which I have from a reliable source will show a danger and injustice to which a State with good laws is no doubt frequently exposed: A farmer in a State with no laws to suppress bovine tuberculosis entered into a compact with a friend residing in a neighboring State where the government kills all tuberculous cattle and recompenses the owner; all the worthless cattle which he can procure are driven across the line to the friend. At the next visit of the State veterinary surgeon these cattle are found tuberculous, ordered killed and, considering their real value, handsomely paid for. The farmer and his friend divide the profit. This may be the first direct loss in money to the State with good laws, but how many times may not these diseased cows, secretly imported, be the cause of infecting whole herds of valuable cattle? And yet the citizens of the State with good laws in regard to tuberculous cattle, though imposed upon, are to be envied, for the State with no such laws is an unsafe place to live in. The following extract from the "Eighth Biennial Report of the Iowa State Board of Health" will show how true this is. "Some time since the State veterinary surgeon found a lot of cattle which he condemned as tuberculous, placing them under quarantine and expecting in a day or two to slaughter them. Upon his return he found that the cattle had been sold to be shipped out of the State for food." The seller claimed that he had fully made known the condition of the cattle to the buyer and thus the law could not reach him. The danger from tuberculous meat, milk and butter has been, I fear, underestimated in years past, and I am willing to admit that I, myself, in previous publications, have considered with many others the dissemination of the germs contained in carelessly deposited sputum of tuberculosis patients the prime and most important factor in communicating the disease to others, but I recently undertook to trace the etiology in regard to antecedents, environments, personal and family history, in as many published cases as I could procure accounts of, and I was surprised to find in how large a number one was justified in excluding the inhalation of bacilli, as the etiologic factor. A farmer, cowboy, gardener, wood-chopper or any other individual living most of the time in the open air, residing in an isolated district where consumption is rare or almost unknown, with no family history of tuberculosis, sickens and dies of pulmonary phthisis. Now, while it is true that primary intestinal tuberculosis is of relatively rare occurrence in adults, we can account for this by the fact that they do not take tuberculous milk as their exclusive nourishment as may be the case with an unfortunate child whose delicate intestinal epithelium becomes the abiding place of the tubercle bacillus contained in countless quantities in every meal the child takes. In the adult the ingested bacillus, in the majority of cases, seems to pass through the lymphatic system into the circulation of the blood to find its favorite lodging place in the badly ventilated apices. It is well known that the bactericidal quality of the gastric secretions is insufficient to destroy the germ of tuberculosis[2] and the only defence against this mode of invasion seems to be the good phagocytic power of the blood of the healthy individual. Now when we consider that milk, butter and meat of cattle constitute the most important and universally used articles of food for man and how relatively recently laws in regard to bovine tuberculosis have been enacted at all, and in how many States such laws do not yet exist, I think it is not surprising when looking into the exact etiology of cases of pulmonary consumption that we find a very large number must certainly have been caused by the ingestion and not the inhalation of the bacillus.

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[1] Cassidy and Smith: "Tuberculosis—It is the Duty of the State to Suppress the Greatest Destroyer of the Human Race."

After arriving at this conclusion, I was much gratified on a recent visit to Dr. von Ruck's sanatorium in Asheville, N. C., to hear his opinion in this matter. He told me that to judge from a carefully kept history of many thousand cases from all over the United States which have come under his observation, the majority of cases of pulmonary tuberculosis, in his opinion, had their origin in the ingestion of tuberculous food of some kind. Dr. F. W. Smith of the Tuberculosis Committee of the State Board of Health of New York seems to be of a similar opinion, for he wrote me, "the first great step toward the prophylaxis of tuberculosis in man is to stamp out the disease in cattle."

Let us then, in our war against tuberculosis, divide our attention equally between the bacilli which may be ingested and the bacilli which may be inhaled, and we may then perhaps hope for a victory.

To effectually combat tuberculosis in cattle and other domestic animals, the Federal Government, having equal jurisdiction over all the States and Territories, is alone capable to do the work. How this should be accomplished enters not into the scope of this paper. Abler men than myself will outline the workings of such a National institution which might justly have its center in the Bureau of Animal Industry in Washington, which has already done such excellent work in the direction of preventing bovine tuberculosis.[3] But as physicians entrusted with the care and preservation of the lives of American citizens, we should appeal to the United States Government to take the matter of stopping the spread of tuberculosis through the bovine race into its own powerful hands. By a judicious legislation and proper enforcement of laws in this direction thousands of precious human lives would be saved, and individuals and communities would ultimately be spared the loss and destruction of valuable livestock and property.

While the advisability of Federal laws in regard to the prevention of human tuberculosis may be contested, there is one feature of the prophylaxis of consumption which seems to me should enter into the domain of Government supervision. I refer to the disinfection of passenger and sleeping cars. This seems to me especially desirable and needful on roads much frequented by pulmonary invalids. The insanitary arrangement of these vehicles, especially the sleeping cars, must be evident to any one who has given the matter any attention. Only a few weeks ago when going south I had three traveling companions in the more advanced stages of pulmonary tuberculosis, one unable to leave his berth during the daytime. They were all male patients, and with them the rest of the male passengers, the conductor, the trainman and the colored porter enjoyed the privilege of one drinking glass. The patients coughed and expectorated a good deal, sometimes hitting and sometimes missing the small hole in the flat cuspidor, which contained no liquid whatsoever. Draw your conclusions from this as to the safety of the innocent traveler with a little bronchitis entering this car in a condition of accidently enfeebled health, or with a natural predisposition to consumption. A few days later I returned with the same car and I am sure it had not been disinfected since I traveled in it southward.

Now I am told that it is impossible to hinder a consumptive from entering a Pullman car, and that if there were a law whereby he could be prevented from doing so, it would be well nigh impossible to enforce it. I grant this to be true, but if our wealthy railroad corporations which habitually carry consumptives to and from health resorts could be induced to run ambulance cars, especially adapted to the purpose, a good deal of danger now existing would be done away with. If these ambulance cars would offer to the traveling consumptive only twice the ordinary breathing space, and if the railroad company would be magnanimous enough to have a trained nurse in charge of each car, the accommodations thus offered would be eagerly sought by all invalids; even an additional price would not deter the average patient from making use of this mode of travel, which would certainly lessen to a marked degree the many discomforts from which he has to suffer in the ordinary sleeping car. Wire mattresses, leather cushions, linen curtains, special cuspidors, and linoleum instead of carpets, with better ventilation generally, could make of such a "Pullman" a model ambulance car, easily disinfected, and a credit to the respective company. But a regular, thorough cleaning and disinfection of all passenger cars at stated intervals should be made obligatory.

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[2] Straus et Wurtz: "De l'action du suc gastrique sur le bacille de la tuberculose" (Arch. de méd. expérim., 1889, p. 370).

[3] Salmon, D. E., D.V.M., Chief of the Bureau of Animal Industry. "The Federal Meat Inspection."

Smith, Theobald, M.D., *Chief of the Division of Animal Pathology*, Bureau of Animal Industry: "Some Practical Suggestions for the Suppression and Prevention of Bovine Tuberculosis."

We now come to the subject of tuberculosis as transmitted from man to man in the ordinary walks of life. As to the mode of transmission there is no longer a doubt; all the circulars issued agree on the fact that the main danger lies in the dried and pulverized tuberculous expectorations; but as to the mode of preventing a tuberculous patient from communicating his disease the recommendations vary. Some are simply impossible to carry out, some are useless, and some not without danger.

It is in a spirit of kindness and in the interest of all that I venture the few following criticisms:

All the circulars issued have already done a great deal of good, but the more practicable and feasible the prophylactic measures recommended therein, the more their usefulness will be increased. Prophylaxis in theory is one thing, but put into practice in everyday life it is another.

In the circular issued by the State Board of Health of California we read as follows: "Persons inheriting the liability to consumption should, above all things, avoid the presence and habitations of persons afflicted with consumption." Now who are the persons inheriting the liability to consumption? They are the sons and daughters of tuberculous parents; and they should, above all things, avoid the presence and habitations of persons afflicted with consumption! If the parents are dead, these children may be able to avoid those afflicted with pulmonary phthisis, but if the parents are living, and especially if in poor circumstances, it will be very difficult, often well nigh impossible, for them to avoid the presence and habitations of the unfortunate ones afflicted with the disease. I am convinced that a practical instruction how to live and remain well, even when obliged to live with consumptives, and even if from tuberculous parentage, would be of more real value. In Europe and in the United States the positions as internes in sanatoriums for consumptives are eagerly sought by many of our unfortunate colleagues who have a hereditary taint, or who have often already developed the disease, and I am glad to say that they often get well in these institutions.

The State Board of Delaware recommends that in case the house has no drain, the contents of the spit-cups be buried in ground that will not soon be turned up. Now Lortet and Despeignes[4] have shown by experiments that the earthworm is instrumental in bringing to the surface the bacilli from buried tuberculous substances, and that the bacillus does not lose its virulence from its sojourn in the earth or in the interior of the earthworm. This mode of disposing of the tuberculous material is then hardly recommendable, and it is certainly not safe for animals to pasture in the vicinity of spots used for the purpose of burying tuberculous expectorations. A previous destruction of the bacilli by boiling or addition of a 5 per cent. carbolic acid solution would certainly be the safer way.

The otherwise excellent circular issued by the State Board of Health of Maine contains exactly the same provision in regard to the sputum of tuberculous patients.

The New Jersey State Board recommends that tuberculous patients should not empty their pocket cups, which are to be carried to receive their expectorations when on the street or when traveling, until boiling water has been poured over the contents, and that the water should be allowed to cool in the cup. What is the poor fellow to do when his little cup is filled and he is still away from home or not in a place where he can procure boiling water to pour over the contents of his cup and wait for it to cool? Even if the water is really boiling the contents of the cup will cool it somewhat, and even a temperature of 100 degrees C. will not kill the bacilli at once. From the experiments of Schill and Fischer[5] one must conclude that it takes at least five minutes of steady boiling to destroy the virulence of the tubercle bacilli contained in fresh sputum. The addition of some some bicarbonate of soda will raise the boiling point to a degree (102 or 103 degrees C.) where the bacilli will be quickly and surely killed.

But all we can reasonably expect of a tuberculous patient is that when he expects to be long away from home, he shall provide himself with a small bottle of carbolic acid, 5 per cent. solution, a small quantity of which he will put in his pocket flask every morning before leaving the house. When it becomes necessary to empty the flask he will do so in the water-closet, or if he is on the street and this is not possible, in the gutter at the mouth of the drain. He will then put another small quantity of carbolic acid in the cup.

In this same New Jersey circular I miss the very important caution about the danger of kissing on the mouth, and that spoons, forks, glasses, napkins, etc., through the medium of the saliva of tuberculous patients may become the vehicles of transmitting the disease.

The Ohio State Board circular on "How to Avoid Consumption" says: "In selecting a mate in marriage choose one free from any inherited scrofulous or tuberculous taint." How many will this deter from marrying whomever they please? And if we could, have we a right to debar an individual with an inherited taint from ever marrying? Have not thousands been cured from such a taint? I would rather say that people who have inherited such a taint can, by a judicious mode of living and with proper medical care, overcome such a condition: but they should never marry until their medical adviser finds them completely recovered from that peculiar state known as predisposition. I would further plainly state that for people suffering from tuberculosis, or not completely cured, to marry with the idea of raising a family, means in the majority of cases, the rapid shortening of the wife's life and the probable bringing forth of diseased children. A tuberculous mother rarely lives more than a few months after the birth of her child.

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[4] *Lortet and Despeignes: Académie des sciences, Paris, January 2 and July 4, 1892.*

[5] Straus, "La Tuberculose et son Bacille." Paris, 1895.

At its regular meeting, May 10, 1894, the State Board of Health of Pennsylvania passed the following resolution: "That this board strongly recommends to all local Boards of Health that they require returns of tuberculosis when it has reached the infectious stage, from all physicians and householders, in the same manner that the returns of other infectious diseases are now required." Is tuberculosis not an infectious (*i. e.*, communicable) disease the moment the presence of the bacillus can be demonstrated in the saliva or expectoration? Tuberculosis must be considered a communicable or infectious disease at all times and stages, and the greatest danger from tuberculous patients is at the time when they are still up and around, following their usual vocations but disseminating at the same time through careless expectoration, myriads of bacilli every day, until they become too weak to walk about and are obliged to confine their insanitary habits to one room. If prophylactic measures are to be effectual, they must be instituted at the earliest possible moment in the course of the disease.

In nearly all the movements inaugurated by the State Boards of Health to prevent the spread of consumption, there is a conspicuous lack of regulations concerning hospitals, public or private, which receive tuberculous patients. How necessary such regulations are, I felt when visiting recently an institution in a State where much is done in the direction of prophylaxis. This institution receives nearly 200 patients annually, the majority being consumptives. The following is one of the rules conspicuously posted throughout the house: "Patients must at all times, when in the institution or on the verandas, expectorate in the sputa cups provided. They must never expectorate in the sinks, wash-basins, closets, or on the floor or in their handkerchiefs." Outside the institution the patients are not restricted, they may expectorate wherever they please and I have no doubt they do. I was told that a neighboring farmer who had some time ago bought five healthy cows had them tested recently with the result that three were found tuberculous. I wonder if at times man is not responsible for transmitting his disease to animals.

I may say here, that in nearly all the institutions I visited I noticed the most frequent sanitary defects whenever the institution was without a house physician. It seems to me it should be obligatory for such establishments to provide a resident physician. A minister, matron or a sister superior is hardly the proper person to see that the hygienic and prophylactic demands of modern phthisio-therapy are carried out to the letter.

Well conducted special hospitals for the consumptive poor are the urgent need of all our great cities. Their usefulness would be many times increased if each State would provide a suitable sanatorium for the convalescent and early cases.

The Board of Health of the City of New York has endeavored to inforce registration of all tuberculous cases. The great majority of the profession has opposed any attempt in that direction as untimely. Still, the careless and ignorant consumptives should be controlled and prevented from doing harm by some restrictive measures. The same Board and many other city boards have passed ordinances forbidding expectorating in street cars or on the floors of public buildings, and some even make it punishable to expectorate in the street. But any one who observes at all will be surprised to note how little these ordinances are heeded.

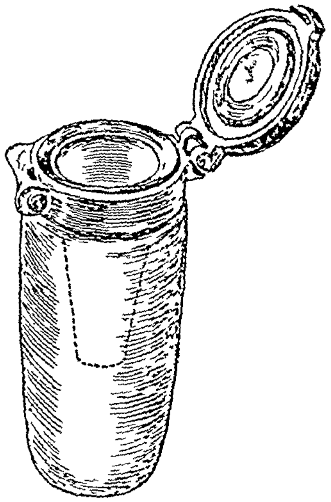


Fig. 1.—Dr. Knopf's modified pocket flask for tuberculous patients.

But do we ever think how really hard it is for a naturally sensitive consumptive to be a law-abiding citizen in this respect? Not to expectorate on the floor or in a handkerchief, but to attract the attention of everybody to his infirmity by his peculiar mode of disposing of his expectorations? Try it once yourself. I occasionally carry a pocket flask and expectorate intentionally therein when riding in the street cars. I wish you could see the eyes sometimes turned on me. And still, I think a more universal use of the pocket flask, not only if we are tuberculous, but also when we have a simple cold, would solve the problem of promiscuous spitting in public and in private.

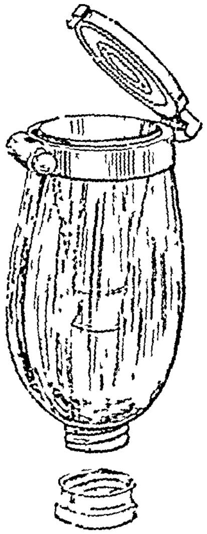


Fig. 2.—Dr. Dettweiler's "Hustenflaeschchen."

The use of the handkerchief for the purpose of expectorating, while better than spitting on the floor, is certainly not very sanitary [illegible] hav [illegible] loubt, at times, is the cause of a sev [illegible] ti [illegible] e nasal mucous membrane. And [illegible] n [illegible] thing unesthetic in the discreet use of a neat pocket flask, such for example as the one you see here.

It is a modification of Dettweiler's celebrated "Hustenflaeschchen," which I also show you.

My flask differs from Dettweiler's inasmuch as it is made of aluminum instead of glass, weighs two ounces instead of six, is of two pieces instead of three and is not patented. It is unbreakable and easily cleaned. Like Dettweiler's, it is constructed on the principle of the irreversible inkstand. It has a nearly uniform diameter of one and three-fourths inches and is about four inches long. It is less bulky than the oval glass flask. Since we must consider the proper spittoon, properly placed, as an important factor in the prophylaxis of tuberculosis, allow me to present you with two drawings, one showing Predoehl's practical cuspidor of enameled iron for factory and workshop use, which can be attached to any height, and the other my own elevated spittoon for hospitals or sanitariums, only visible when in use.

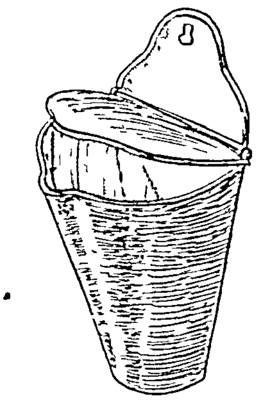
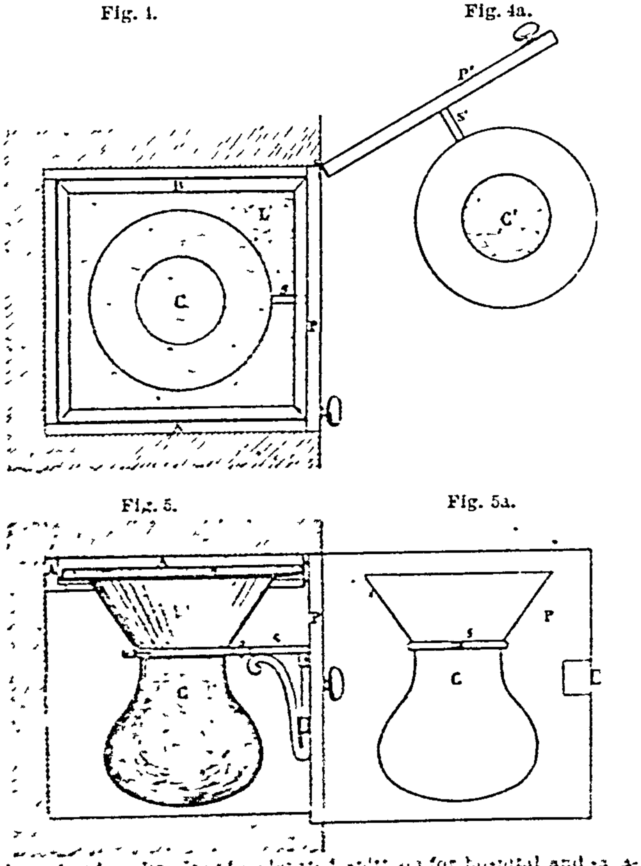


Fig. 3.—Dr. Predoehl's spittoon for factories and workshops.

Fig. 4. Fig. 4a. Fig. 5. Fig. 5a.



Figs. 4 and 5.—Dr. Knopf's elevated spittoon for hospital and sanatorium use. Spittoon elevated some feet from the floor and inclosed in the wall. P, door or hinged support. C, spittoon. B, cover. [illegible] 4 and 4a, plan, 5 and 5a, elevation. Figs. 4 and 5 represent the door closed, 4a and 5a represent door open.

Our dispensaries should be supplied with pocket flasks to be distributed gratuitously, or at cost price, to all coughing patients, with instructions for using them.

At the close of my criticism, I have but two more suggestions to offer, the more universal instruction in public schools in physical exercises, breathing exercises especially, and lessons how not to become consumptive and lessons on hygiene in general; and lastly, the creation of a National Board of Health, the equivalent of the "Deutsche Reichsgesundheitsamt" of Berlin or the "Direction d'Hygiène Publique" of Paris with its "Comité Consultatif" under the direction of the Minister of the Interior. Such an institution, with its seat at Washington, could give uniform hygienic laws, and being counseled by the most competent in the profession, would aid us best in our struggle against this most deadly of all diseases. By requiring health officers all over the United States to take a course in practical hygiene, it would give a great impulse to sanitary science. We might then hope for effective work, and for thorough and feasible methods to combat tuberculosis in man and beast through the length and breadth of our beautiful land.

955 Madison Avenue.

THE PRESENT ATTITUDE OF SANITARIANS AND BOARDS OF HEALTH IN REGARD TO PULMONARY TUBERCULOSIS.

Presented in the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY BENJAMIN LEE, A.M., M.D., Ph.D.
PHILADELPHIA, PA.

The question of the communicability of pulmonary tuberculosis, consumption of the lungs or pulmonary phthisis, has long passed the boundary of discussion with the great mass of the medical profession.

Here and there an individual who places a very high estimate on his reputation for consistency persists in attempting to controvert it, because it was not the belief in which he was educated, and because he opposed it when, in consequence of the researches of the bacteriologic investigators, it was first resuscitated. But, in the main, the consensus of professional opinion strongly supports it. Those who take an intelligent interest in the promotion of public health and have thus been led to give the subject more especial attention are even more thoroughly convinced of the fact than are those who confine their studies strictly to therapeutics and the daily routine of practice; while those whose official positions make it their duty to do all in their power to extinguish disease, diminish the death-rate, and promote longevity, entertain convictions so positive as to lead them to believe in the possibility of the adoption of measures which shall restrict the spread of the disease and thus add an incalculable number of years to the aggregate of human life. Holding such convictions they would be false to their consciences and to their official oaths did they hesitate to formulate such measures and to urge their adoption on the law-making power. Such efforts of course provoke opposition, and the form which that opposition takes is that of attempting to create a public sentiment averse to the adoption of any restrictions whatever by misrepresenting the character of the regulations proposed and magnifying the discomforts and annoyances which would result from their enforcement. Even if the proposed measures were as unwise and as rigorous as they have been distorted into appearing, I doubt if any one is so bold as to deny that they should be adopted, if there be reasonable ground to hope that by such means, and by no others, could the terrible ravages of this affection be materially checked. Fortunately, however, these are not the views of sanitarians and of boards of health.

The more carefully the mode of propagation of the disease is studied the simpler becomes the problem of its legal restriction. No Board of Health, so far as I know, has promulgated the dogma attributed to those who are in favor of giving the knowledge which we now possess a legal expression that shall make it of use to the community, that "these unfortunates should be isolated from family or friends and treated as creatures disseminating a contagious disease, like smallpox, yellow fever, scarlet fever or diphtheria." What then can sanitary authorities do, and what do they propose to do, to diminish the prevalence of consumption and therefore all forms of tuberculosis, whether attacking the pulmonary or other tissue of the body?

1. They can and should formally and publicly announce their belief that, after a certain stage of tubercular phthisis has been reached, namely, that of softening, breaking down or suppuration, the individual affected becomes a source of danger to those immediately surrounding him and to the public, and of infection of material objects, such as walls, bedding and furniture.

2. They can and should formulate and disseminate as widely as possible, simple, concise instructions as to the precautions which such patients should themselves take in order to prevent or minimize these dangers.

3. They can and should have a knowledge of every case of consumption which has reached the stage referred to, existing within the limits of their respective jurisdictions and, as this information can be obtained in no other way, they can and should require physicians to report to them all such cases occurring in their practice, whether privately or in public institutions, within a certain definite time after the diagnosis had been established.

4. They can and should offer to aid the physician in any case where he is doubt, by affording facilities for the bacteriologic diagnosis of the disease.

5. They can and should insist on the disinfection, by such means as they deem most effective, of every apartment from which such a patient has been removed, whether by death or otherwise.

6. They can and should insist on the disinfection of berths and state rooms in public conveyances, whether on land or water, in which such patients have passed one or more nights.

7. They can and should in every possible way disseminate information as to the dangers arising from the habit of spitting in public places and especially on the floors of public conveyances, whether on land or water.

8. They can and should formulate municipal ordinances and State laws for the restriction of this dangerous habit and urge the passage of the same.

The following are copies of resolutions and an ordinance framed with this object, by the Board of Health of the City of Philadelphia, and presented to the councils but not yet adopted:

> WHEREAS, The habit of spitting in frequented public places, particularly when such places are enclosed, is not only uncleanly and unnecessary, but prejudicial to health; and
>
> WHEREAS, It is proved that certain diseases, as consumption, are mostly propagated by dried expectorations, and for this reason alone should be condemned; it is therefore
>
> *Resolved*, That city councils be respectfully requested to coöperate with the Board of Health in their endeavors to restrict, if not prevent, this pernicious habit, and they are hereby earnestly solicited to pass the following ordinance, not only to promote cleanliness, but to safeguard the public health:
>
> An Ordinance Forbidding Spitting in Public Buildings and Passenger Railway Cars.
>
> WHEREAS, Spitting in public building and passenger railway cars has been declared by Boards of Health of different cities in the United States to be prejudicial to the health of the people who visit such buildings or ride in such cars; and
>
> WHEREAS, This practice is not only unhealthy, but uncleanly, offensive and filthy, and injurious to wearing apparel, especially of women, and therefore, a common nuisance; therefore
>
> SECTION 1. The Select and Common Councils of the City of Philadelphia do ordain: That spitting upon the floors of public buildings and of passenger railway-cars is hereby declared to be a nuisance and prejudicial to health, and is hereby prohibited under a penalty of $5 for each and every offense, to be recovered as penalties of like amount are by law recoverable."

The value of such an ordinance as an education would be even greater than that which it would possess in the direct restriction of disease.

9. They can and should do all in their power to promote the establishment of hospitals and sanatoria for consumptives both by State and municipal authorities, with large provision for such persons as are unable for pecunary reasons, to avail themselves of such refuges already established by private enterprise. This measure should be urged not on the score of humanity or charity, but simply as the most effective means of protecting the public health, so far as the spread of tuberculosis is concerned, that has yet been devised. There would be no necessity for dragging these unfortunates from their families and homes to place them in such institutions. There are multitudes waiting for just such opportunities, who would be only too glad to embrace them.

10. They can and should do all in their power to promote such legislation as would ensure the systematic inspection of dairies and dairy-farms, in order that all cattle giving evidence in any way of being affected with tuberculosis may be at once isolated and the quarters which they occupied thoroughly disinfected.

It will be gathered from this hasty résumé of the responsibilities which health authorities feel to be resting upon them in this regard, that it is by no means contemplated to use the same precautions and restrictions for consumption, such as placarding or guarding houses, and isolating patients, as are in force for smallpox and diphtheria.

Section 225, of the Sanitary Code of the City of New York adopted in January of the present year, may be fairly taken as an exponent of the general feeling of sanitary officials on this subject. It read as follows:

> That pulmonary tuberculosis is hereby declared to be an infectious and communicable disease dangerous to the public health. It shall be the duty of every physician in this city to report to the Sanitary Bureau in writing, the name, age, sex, occupation and address of every person having such disease who has been attended by or who has come under the observation of such physician for the first time, within one week of such time. It shall also be the duty of the commissioners or managers or the principal, superintendent or physician of such and every public or private institution c [illegible] in this city, to report to the Sanitary Bur[illegible] use such report to be made by some [illegible] on, the name age, sex, occupation [illegible] on

afflicted with this disease who is in their care or has come under their observation within one week of such time. It shall be the duty of every person sick with this disease and of the authorities of public and private institutions or dispensaries, to observe and enforce all the sanitary rules and regulations of the Board of Health for preventing the spread of pulmonary tuberculosis.

(L. S) Charles G. Wilson, President.
Emmons Clark, Secretary.

It will be observed that this regulation limits itself to declaring that pulmonary tuberculosis is an infectious and communicable disease, to requiring its occurrence to be reported, and to insisting on the observation of the precautions of the Board for preventing the spread *not of the acute contagious diseases*, but of this one particular disease.

The nature of these precautions may be gathered from the following circular of the Board, entitled "Information for Consumptives and Those Living with Them."

HEALTH DEPARTMENT, CRIMINAL COURT BUILDING, CENTER, WHITE, ELM AND FRANKLIN STREETS, NEW YORK.

Consumption is a disease which can be taken from others and is not simply caused by colds. A cold may make it easier to take the disease. It is usually caused by germs which enter the body with the air breathed. The matter which consumptives cough or spit up contains the germs in great numbers; frequently millions are discharged in a single day. This matter, spit upon the floor, wall or elsewhere, is apt to dry, become pulverized and float in the air as dust. The dust contains the germs, and thus they enter the body with the air breathed. The breath of a consumptive dees not contain the germs and will not produce the disease. A well person catches the disease from the consumptive only by in some way taking in the matter coughed up by the consumptive.

Consumption can often be cured if its nature is recognized early and proper means are taken for its treatment. *In a majority of cases it is not a fatal disease.*

It is not dangerous for other persons to live with a consumptive, if the matter coughed up by the consumptive is at once destroyed. This matter should not be spit upon the floor, carpet, stove, wall, or anywhere except into a cup kept for the purpose. The cup should contain water so that the matter may not dry, and should be emptied into the closet at least twice a day and carefully washed with hot water. Great care should be taken by a consumptive that his hands, face and clothing do not become soiled with the matter coughed up. If they do become soiled they should be at once washed with hot soap and water. When consumptives are away from home, the matter coughed up may be received on cloths, which should be at once burned on returning home. If handkerchiefs are used (worthless cloths which can be burned are far better), they should be boiled in water by themselves before being washed.

It is better for a consumptive to sleep alone, and his bedclothing and personal clothing should be boiled and washed separately from the clothing belonging to other people.

Whenever a person is thought to be suffering from consumption, the name and address should be at once sent to the Health Department, on a postal card with a statement of the facts. A medical inspector from the Health Department will then call and examine the person to see if he has consumption, providing he has no physician, and, if necessary, will give proper directions to prevent others from catching the disease.

Frequently a person suffering from consumption may not only do his usual work without giving the disease to others, but may also get well if the matter coughed up is properly destroyed.

Rooms that have been occupied by consumptives should be thoroughly cleaned, scrubbed, whitewashed, painted, or papered before they are again occupied. Carpets, rugs, bedding, etc., from rooms which have been occupied by consumptives, should be disinfected. The Health Department should be notified, when they will be sent for, disinfected and returned to the owner free of charge, or, if he so desires, they will be destroyed.

By order of the Board of Health,
Charles G. Wilson, President.
Emmons Clark, Secretary.

The State Board of Health of Pennsylvania has contented itself, so far, with adopting a resolution advising all local boards to place tuberculosis on the list of communicable diseases, to be reported, and issuing a precautionary circular for the information of local boards, and also of those who may be suffering from the disease. By such sufferers these circulars are, as a rule, gratefully received. This circular is No. 28, entitled "Precautions Against Consumption" and treats of the history and nature of the disease; how the disease is spread or acquired; precautions with regard to cattle; precautions to be observed by the patient; disease germs; precautions to be taken in the sick-room; precautions to be taken after the death of the patient; and precautions to be taken by the proprietors of public houses and public conveyances.

THE ANTITOXIC AND BACTERICIDAL PROPERTIES OF THE SERUM OF HORSES TREATED WITH KOCH'S NEW TUBERCULIN.

Read at the Twenty-third Annual Meeting of the Mississippi Valley Medical Association, held at Louisville, Ky., Oct. 5-8, 1897.

BY CARL FISCH, M.D.
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All attempts at establishing a serotherapy in tuberculosis have hitherto failed, that means, if we understand by serotherapy a specific prophylactic or curative treatment, like the one established in diphtheria or tetanus. So decided and pronounced has this failure been that in the mind of many observers a strong prejudice has been created, a prejudice that appears the more justifiable since commercialism has not hesitated in exploiting so promising a field. We would however be very hasty in drawing from these failures the conclusion that serotherapy in consumption is not a thing to be hoped for, as has been done by many writers. We can not be too chary in making final statements, a postulate that at this very time emphasizes itself with particular weight by the discovery made by Kitasato of an antitoxic typhoid serum. Has it not been for some time past one of our axioms, that in typhoid and cholera only bactericidal and no antitoxic properties were developed? The less we try to encase new ideas, and serotherapy is a new idea, in the forms of old conceptions, the less frequently we will have to retrace our steps. No metewand has as yet been discovered to point out the limits and boundaries of this new idea; whoever talks about the limits of serotherapy confesses that he does not or will not understand its origin.

For these very reasons it is an unpromising task to foretell by logic reasoning, whether or to what degree serum treatment will influence tuberculosis. Nobody ever expected that it would bring about a *restitutio ad integrum* in advanced cases, or redress the ravages of septic complications. It is certainly absolutely erroneous to insist that the anatomo-pathologic phenomena of pure tuberculosis, are not indicative of a toxic process which might be amenable to antitoxic impressions. Such intoxication exists from the very first hour, I might say, of the beginning of tuberculous infection, a fact that is not only evidenced by histologic changes, but that can also be proven by physiologic reactions. To say that the early tuberculous changes are simply of an inflammatory character expresses only a morphologic phenomenon. Physiologically they are as pronouncedly caused by bacterial toxins as are any other bacterial intoxications. It is true this toxic inflammatory process is little noticeable in its early stages and becomes mostly chronic, gradually undermining the vital vigor and leading to fatal loss of substance or secondary infections (in fact, very few persons die of chronic tuberculosis), but in this very chronicity the battle waged between the human organism and the array of bacterial toxins expresses itself; very often the former remains victorious perhaps in a majority of cases. In our language such a victory means immunization although only for the time being.

It is not here the place to enter more fully into these exceedingly interesting questions. I had to touch upon them because it has ever and again been contested that theoretically there were no prospects for serotherapy in this disease. Valuable remarks regarding this topic may be found in an able paper of Joseph McFarland.[1]

But we would be wrong if we attributed this reserve to well conceived and understood pathologic considerations alone; behind them there lurks a preconceived idea of self-limitedness; and above all a mysterious predisposition for the disease. This hereditary predisposition would be well worth to be looked into a little more thoroughly; I can not do it here, and must confine myself to the statement that a scientific base for the tubercular predisposition still is wanting.[2]

Not mentioning those attempts at putting forth an antitubercular serum that were only prompted by mercenary motives, the number of honest workers in this field is quite large. Since Richet and Hericourt first began their experiments an enormous amount of persevering and unselfish work has been done. I will only mention the names of Courmont, Babes, Niemann, Maragliano, Schweinitz, etc. Admitting that there are considerable differences between the several methods employed by these investigators, entering into which would lead us too far here, there is one source of error common to all, that is the material used for immunizing the animals which were used for the purpose. If we look over the laborious experiments of Koch to establish immunity by means of tubercle bacilli or of their products, we find that the chief difficulty was to cause the tubercle bacilli to be absorbed by the tissues or to chemically so act on the bacilli that their immunizing ingredients were contained in a fluid extract. The peculiar morphologic and chemic constitution of the tubercle bacilli made, indeed, all these experiments unsuccessful. Koch had finally to destroy the morphologic entity of the bacilli in order to obtain unobjectionable results. In other words the essential toxins (some writers it is true, assert that there are no essential tubercle toxins) are not excreted like they are in cultures of diphtheria bacilli, but they are to the far greatest extent enclosed within the membrane of the bacterial cell. The culture fluids contain none, or very little of these specific toxic substances; they may be injected in comparatively large doses into animals without causing serious damage.[3] We may add right here that it seems that there are produced a number of different toxic substances, at least this would best explain the contradictory results of some observers; but we must not forget that ferments or enzymes, like the bacterial toxins, are very unstable compounds and are easily changed in their chemic nature by all kinds of artificial procedures. It is, therefore, more than likely that the different bodies isolated from tubercle bacilli or their culture media, are not pre-existing, but represent ingredients of the former in a changed form.

Surely this holds good for the old tuberculin, which has mostly been used as an immunizing agent. How little this fluid represents the active principles of the live tubercle bacillus is well illustrated by the following observation. If some of the dead and extracted bacilli which remain as residue after the preparation of tuberculin are injected into suitable animals, they not only cause the formation of typical tubercles, but even prompt these animals to yield a typical tuberculin reaction. It is well known, furthermore, that this tuberculin reaction, the nature of which has by no means as yet been explained, may be obtained by several other similar bacterial compounds (proteins) and even by heterogeneous albuminous bodies (deutero-albumoses). No matter in which way the tuberculin was prepared it is *a priori* impossible that the serum of animals immunized against it possesses any antitoxic properties as far as the tuberculosis *toxins* are concerned. A certain antituberculinic power may be exhibited by it (this is apparent especially by experiments made by Schweinitz[4], Babes[5] and others), and by it some influence on tuberculous processes may be now and then explained. In general, the results obtained with such a serum have been discouraging. The same obtains for those modifications of antitubercular sera, for the preparation of which in addition to tuberculin cultures of the bacilli, dead or alive, have been utilized. As said above these bacilli are very slowly resorbed, the greater part of them is ejected in the pus of abcesses formed at the site of the injection. It must not be denied, however, that in some instances the results thus reached were fairly promising. This refers especially to the work of Niemann[6] and Babes[7], who really repeatedly immunized guinea pigs in this way against inoculation with living bacilli. This proves that the serum prepared by them possessed distinct antitoxic (according to Babes even bactericidal) properties. But they also operated only with a part of the active principles of the tubercle bacillus, and accordingly the outcome of their labors lacks consistency and certainty. In no case out of the great number of respective investigations was a stage reached in which the observer could with certainty foretell the result of an experiment.

That both antitoxic as well as bactericidal potencies must be qualities of an antitubercular serum, is shown by the well-known phenomenon that we sometimes have to deal with an infectious, mostly with a toxic type of the disease; that living bacilli, furthermore, as such are less apt for the production of such a serum than dead ones (that means bacilli easier accessible to disintegrating influences) is indicated by the enormously larger toxicity of dead bacilli[8]. It may be well in this connection to mention the important fact that from the tuberculous organs of infected animals an extract can be prepared, that while being exceedingly toxic when injected in gradually increasing doses into guinea pigs, in a short time immunizes them against the introduction of virulent cultures[9].

If so it goes without saying that "antituberculin sera" are not what must be claimed from an antitubercular serum; there are certain direct drawbacks attached to them, that under circumstances have proved very obnoxious. In the first place the assimilation of the tuberculin by the animal organism is a slow process; it may happen that the serum of these animals contains unchanged tuberculin instead of antituberculin. The following experiment illustrates this fact: A healthy guinea pig received in seven doses during twenty days as much as 10 c.c. of tuberculin. Ten days after the last injection some blood was drawn from this animal; 1 c.c. of the serum of this blood was sufficient to produce a typical and very violent tuberculin reaction in a tuberculous guinea pig. This phenomenon is at the bottom of what in the literature is known as transmitted tuberculin-action. Its undesirability is evident.

TABLE 1.—Influence of T.R. serum on the temperature of healthy guinea pigs.

Date.	Number of guinea pig.	Weight in grams	Amount of serum injected.	Temper. before injection.	Three hours later	Six hours later.	Nine hours later.	Twelve hours later.
July 16 . .	52	750	0 25 c c	101 6	100 8	101 0	101 2	101 5
July 16 . .	53	640	0 50 c c.	102 1	101 0	101 5	101 8	102 2
July 16 . .	54	680	1 00 c c	101 8	101 2	101 2	101 1	101 6
July 16 .	56	706	2 00 c.c.	101 7	100 6	100 8	101 0	101 6

TABLE 2.—Effect of normal horse serum on the temperature of healthy guinea pigs.

Date.	Number of guinea pig.	Weight in grams.	Amount of serum injected	Temper. before injection.	Three hours later	Six hours later	Nine hours later.	Twelve hours later.
July 17 . .	55	714	0 50 c.c	102 2	101 6	101 6	102 0	102 4
July 17	57	685	1 00 c.c.	102 1	101 3	101 6	102 4	102 2

TABLE 3.—Guinea pigs, after previous immunization with T R serum, inoculated with a fatal dose of tubercle bacilli.

No	Weight July 6		Weight Aug 3	Inoculated with fatal dose of T B Aug 3	Weight Sept 20	Remarks
17	850	Received 1 c.c. of serum in 0 25 c c. dose f'm J'ly 17 to Aug 3	867	Subcutan	880	Sept 20, perfectly healthy.
20	740		718	Subcutan	764	Sept 20, perfectly healthy.
21	871		883	Intraperi'l	888	Killed Sept 20 No lesions
24	560		571	Not inocul	588	Healthy
25	671		692	Not inocul	712	Healthy
22			721	Subcutan		Died Aug 27.
23		. . .	806	Subcutan		Died Aug 21.

TABLE 4.—Immunization experiment 1 25 c c serum T R.

No	Weight July 5		Weight Aug 3	Fatal dose of T B Aug 3	Weight Sept 20	Remarks.
18	716	Received 1 25 c c in 5 injections f'm July [illegible] to Aug 3	724	Inoculated	723	Extensive infiltration
19	[illegible]		[illegible]	Inoculated	[illegible]	Extensive infiltration
27	[illegible]		[illegible]	Inoculated		Died Aug 25.
[illegible]	612		621	Not inocul	629	
[illegible]	451		468	Not inocul	476	. . .

TABLE 5.—Immunization experiment 2 5 c c of serum

No	Weight July 5		Weight Aug 3	Fatal dose T.B.	Weight Sept 20	Remarks
60	[illegible]	From July 5 to Aug. 3, 5 injections of 0 5 c c each	[illegible]	Inoc Aug 3	677	Perfectly healthy.
61	[illegible]		471	Inoc Aug 3.	[illegible]	Perfectly healthy.
62	[illegible]		[illegible]	Inoc Aug. 3	501	Perfectly healthy
63	[illegible]		[illegible]	Not inoculat'd	[illegible]	Perfectly healthy
64	[illegible]		[illegible]	Not inoculat'd	629	Perfectly healthy.

TABLE 6.—Serum and virus injected (mixed)

No	Weight July 14	Mode of inoculation	Weight Sept 15	Remarks
1	[illegible]	T B. and ½ c c. ser subcut.	[illegible]	Healthy
2	[illegible]		[illegible]	Healthy
[illegible]	[illegible]		517	Healthy
[illegible]	712	T B and ½ c c ser. intraper.	[illegible]	Healthy
[illegible]	[illegible]		612	Healthy
[illegible]	[illegible]		627	Healthy
[illegible]	[illegible]	T.B. and 1 c c. ser. subcut	[illegible]	Healthy
[illegible]	[illegible]		[illegible]	Healthy
[illegible]	[illegible]		610	Healthy
[illegible]	[illegible]	T B. and [illegible] c c. ser. subcut.	[illegible]	Healthy
[illegible]	[illegible]		[illegible]	Healthy
[illegible]	[illegible]		[illegible]	Healthy
[illegible]	[illegible]	T B and [illegible] c c. ser. subcut		Died August 20
[illegible]	[illegible]		[illegible]	Large infiltration
[illegible]	[illegible]			Died Sept 6
[illegible]	[illegible]	Fatal dose T.B. alone		Died August 27
[illegible]	[illegible]			Died August [illegible]
[illegible]	[illegible]			Died August 12
[illegible]	[illegible]	T.B. and [illegible] c c Paquin's ser. subcut.	. .	Died August 5
[illegible]	[illegible]			Died August 1
[illegible]	[illegible]			Died July [illegible]

TABLE 7.—Serum and virus injected separately.

No	Weight July 19	Mode of inoculation.	Weight Sept.12.	Remarks.
11	425	T.B. and 0 25 c c. serum.	439	Healthy.
12	553		576	Transitory gland. enlargement
13	496		519	Healthy

TABLE 8.—Treatment begun four days after inoculation.

No.	Inoculated with fatal dose of TB.	Weight July 20	Begin. of serum injection 0 25 c.c. every other day.	Weight Sept 24.	Remarks.
4	July 20. . . .	560	July 24	572	Perfectly healthy.
5	July 20 . .	541	July 24	548	Perfectly healthy.
6	July 20. . . .	489	July 24 . . .	500	Perfectly healthy.
30	July 20. . .	621	July 24	629	Perfectly healthy.
40	July 20. . .	576	July 24	587	Perfectly healthy.
41	July 20 . .	611	July 24	619	Perfectly healthy.

TABLE 9.—Treatment begun seven days after inoculation.

No	Inoculated with fatal dose of TB	Weight July 20.	Begin. of serum injection 0.25 c.c. every other day.	Weight Sept. 24.	Remarks
7	July 20. . . .	476	July 27 . . .	482	Healthy.
8	July 20. .	496	July 27 .	503	Healthy.
9	July 20. . .	521	July 27	536	Healthy.
10	July 20. .	546	July 27 . .	550	Healthy.
11	July 20.	488	July 27 . .	499	Healthy.
12	July 20. .	517	July 27	523	Healthy.

TABLE 10.—Treatment begun ten days after inoculation.

No	Inoculated with fatal dose of TB	Weight July 21.	Begin of serum injection 0 25 c c every other day.	Weight Sept 21	Remarks.
13	July 21 .	610	July 31	612	Healthy.
14	July 21	528	July 31	529	Healthy.
15	July 21	477	July 31	470	Swelling of inguinal glands.
16	July 21 .	531	July 31	531	Healthy.
17	July 21	601	July 31		Killed Sept 3.
18	July 21 .	576	July 31		Killed Sept 3.

TABLE 10a.—Treatment begun fourteen days after inoculation.

26	July 21	525	Aug. 3 .	456	Glandular swell'g, ulceration.
28	July 21 . . .	611	Aug. 3		Died Sept 4.
29	July 21 . .	539	Aug 3	474	All signs of tuberculosis.

TABLE 10b.—Controls, not treated.

42	July 21	507	Not treated . .		Died Aug. 15
43	July 21	563	Not treated .		Died Aug 15
44	July 21	492	Not treated. .		Died Aug. 11.

TABLE 10c.—Controls, treated with Paquin's serum.

45	July 21 . .	516	July 25		Died Aug. 13
46	July 21 . .	476	July 25		Died Aug 11.
47	July 21	507	July 25		Died Aug. 10

TABLE 11.—Showing effect of tuberculin injection after six weeks of treatment

No	Date of injection of 0 1 tuberculin.	Temper. at time of injection	Three hours later	Six hours later.	Nine hours later.	Twelve hours later.	Fifteen hours later.	Eighteen hours later
13	Sept 12, 10 A M	101 8	101 9	101 8	102 1	101 8	102 0	101 6
14	Sept. 11, 2 P M	102 3	102 2	102 0	102 4	101 8	101 9	102 2
16	Sept 11, 8 A M	102 0	102 0	102 0	102 2	102 0	102 2	102 4

TABLE 12.—Showing the effect of serum treatment on the temperature. First injection July 31, 12 A.M.

No.	July 29 8 A M	July 29, 8 P M	July 31, 8 A M	July 31, 8 P M	Aug 1, 8 A M.	Aug 1, 8 P M.	Aug 3 8 A M	Aug 3, 8 P.M.	Aug 5, 8 A M.
13	103 6	104 4	104 0	104 6	103 0	102 6	101 8	102 2	101 6
14	104 2	104 8	103 8	103 0	102 2	102 6	102 0	102 4	102 0
16	104 6	103 2	104 8	104 0	103 2	101 8	102 4	102 0	102 2

TABLE 13.—Test for bactericidal property of the serum

Contact between TB and serum lasted hours	1 c c of the T B serum mixture injected intraperitoneally into guinea pig	Date of injection	Weight Sept 20	Remarks
1	48 (weight 520)	August 5	. .	Died Aug. 21.
2	49 (weight 486)		. .	Died Aug 17
3	50 (weight [illegible])			Died Aug. 20
[illegible]	51 (weight 707)		516	No signs of disease.
[illegible]	74 (weight [illegible])		519	Healthy.
12	75 (weight 475)		[illegible]	Healthy
24	76 (weight 503)		517	Healthy

TABLE 14.—Inhibition of tuberculin reaction by means of 0.1 c.c. serum.

Number of guinea pig.	Injected with.	Temper. before injection.	3 hours later.	6 hours later.	9 hours later.	12 hours later.	15 hours later.	18 hours later.
74. Tuberculous for 2 weeks.	0.1 tuber. and 0.1 serum.	103.9	103.8	104 0	103.6	103.8	104.1	103 9
75. Tuberculous for 3 weeks.	0.1 tuber. and 0.1 serum.	102.4	102.6	102.4	102 8	102.2	102 6	102 4
76. Tuberculous for 10 days.	0.1 tuber. and 0.1 serum.	103.2	103.4	103.4	103.2	103.6	103.0	103 0
77. Tuberculous for 2 weeks.	0.1 tuberc.	103.0	103.0	103.6	104.2	104.8	104.6	103 8

TABLE 15.—Repeated *toxin* reaction in the same animal.

No. of guinea pig.	Injected with	Date of injection.	Temper. before injection.	3 hours later.	6 hours later.	9 hours later.	12 hours later.	15 hours later.	18 hours later.
78. Tubercul. for about 20 days	1. c.c. toxin	9- 1	102.8	103.8	104.2	104 3	104.6	104 2	103 8
79. Tubercul. for 16 days. . . .	"	9- 1	103.2	104.4	105 0	104.8	104.8	104 2	103 6
78.	"	9- 4	103.0	104.6	105 4	105.0	105.2	104 2	103 8
79.	"	9- 4	102.6	103.8	104 6	104·4	104.4	104 0	103 6
78.	"	9- 8	103.4	104 8	105.6	105.2	105 4	104 8	104 0
79.	"	9- 8	102 8	104.2	104.4	104 8	105.0	104 6	104 0
78.	"	9-11	102 6	104.0	104.6	104 4	104.0	104 2	103 6
79.	"	9-11	103 4	104 4	104 8	105.0	105 0	104 2	103 6
78.	1.5 c.c. toxin	9-14	102 4	104 8	104 8	105 0	104 6	104 4	103 6
79.	"	9-14	103.2	104.2	104.6	104.8	104 2	104 0	103 0
78.	"	9-17	103.0	103.8	104.2	104 8	104 6	104 6	10 40
79.	"	9-17	102.4	103.6	103.8	104 6	104 2	104 0	103 4

Again, it is little known that bacterial proteins in glycerinic extracts, when administered for any length of time, invariably tend to produce a chronic nephritis. Niemann[10] first called attention to this fact, and I found it confirmed in two horses which for some months had been treated with high doses of tuberculin. It is not impossible that the fatal effects, which these sera sometimes have on animals, are due to uremic products retained in the blood serum. Babes[11] saw guinea pigs die from the injection of 0.5 c.c. of such a serum; Rutkowski[12] relates similar accidents in his report on Vicquerat's antitubercular serum. I myself saw repeatedly guinea pigs die in a very short time from the injection of 0.5 to 1 c.c. of Paquin's serum. The autopsy (death in diastole) did not reveal any definite cause of death.

The foregoing somewhat lengthy remarks were necessary in order to show that the solution of the tuberculosis serum problem depended upon the discovery of some means of making the tubercle bacilli with all their constituents easily resorbable. I did not fail at once to see that with Koch's new tuberculin, T. R.,[13] this means was given, and immediately set to work to follow out this idea. But I would not like to be understood as if this work claimed to be something original; logically the thought was bound to offer itself, and in addition to this, Koch himself had insinuated it. While my experiments were going on, I had the satisfaction to hear that Behring[14] was following the same lines, though no details whatsoever about his investigations have as yet reached this country.

It need not concern us here that at the present time a hot war is raging as to the therapeutic value of this new tuberculin; in contradistinction to other observers,[15] I can confirm Koch's statement about its immunizing properties toward animals. But the salient point was that at last in it we had a substance which exhibited, in full and unchanged, all of the toxic ingredients of a tubercle bacillus. We have seen before that the culture media of tuberculosis cultures contain only a very small amount of toxic bodies, most likely the outcome of disintegration of the bacilli.[16]

If, therefore, a conclusion *per analogiam* was allowed, this new tuberculin (T. R., I shall henceforth call it), by immunizing animals was likely to produce the desired antitoxic effects, if such effects could be obtained altogether. Within the limits of our present knowledge no other means of doing this could be conceived.[17] I began experiments in this direction, and the following remarks will give their results:

According to Koch's directions, a greater part of the tuberculous toxins is excluded under the name T. O.; this T. O. contains those toxins that are contained in the adhering traces of culture media, as well as those that easily are extracted from the membranes of the bacilli. They do not seem to have a great immunizing power, but are exceedingly toxic and resemble in their effects, in many regards, the old tuberculin. But try as I might, I could not convince myself as to the logical necessity to exclude this part of the toxins from the immunizing process, so much the less since in my animals I did not need to be afraid of any, and even very severe, reactions. The same, I thought, applied to the fraction of toxic substances contained in the culture media. To express myself candidly, I did not want to take any chances in omitting some toxic body that afterward perhaps might prove of intrinsic value, although I knew that T. R. alone would immunize my animals against these substances. I used only strong and perfectly healthy horses.[18]

The way in which I proceeded may be described as follows: I began with the injection of 1 c.c. of T. R., which did not cause any reaction whatsoever; in the subsequent injections, which were made about every seven and ten days, the amount was about doubled each time until 30 c.c. of pure T. R. were reached. The reactions so far were very slight, the temperature never rising more than 1.5 degrees F. At this stage I commenced adding small amounts of T. O., as well as an aqueous extract of the nutrient agar; the reactions were very severe, sometimes reaching perfect prostration. Mostly a profuse diarrhea set in; after a temporary fall the temperature rose to 104 and 105 degrees F. Loss of appetite occurred, etc. In four or five days these symptoms disappeared. Sometimes abscesses formed, caused by some undestroyed tubercle bacilli. Gradually and cautiously I reached a combined dose of 75 c.c. of T. R. and 30 c.c. of T. O. The indications are, however, that much higher amounts will be tolerated, and I do not propose to stop before external reasons call for a halt. Both preparations, T. R. and T. O., were prepared in my laboratory, and the culture I used was of such a virulence that the *dosis minima*, when injected into the abdominal cavity of a guinea pig (about 500 grams), killed the animal within ten to fifteen days. As *dosis minima* I came to consider one loopful of an emulsion obtained by thoroughly triturating one loopful (1 mg.) of a four weeks agar culture with 1 c.c. of sterilized water. Smaller doses produced a protracted course of the disease; the latter then invariably attacked the lungs. The toxic power of this culture was so great that about 16 mg. of the dried and finely triturated bacilli killed, within twenty-four hours, guinea pigs of the above average weight. Therefore, if with Behring we call *m* the fatal dose of toxin for one gram of guinea pig, my culture possessed a toxicity of 30,000 t. m. I tested its toxicity during several generations, but did not find any material deviations. Cultures of a different origin showed only a potency of 400 and 2,000 respectively. A culture of aviary tuberculosis goes as low as 260. We must not lose sight of the fact that these figures only hold good for guinea pigs.

The first blood was drawn after a T. R. dose of 50 c.c. (+ 25 c.c. T. O.) was reached, and with the serum obtained from this blood the following experiments were made. I will remark, however, that the serum from later bleedings (after larger doses of the immunizing fluid had been administered) showed in all essentials the same characteristics, only in an intensified degree. For my experiments I used guinea pigs, monkeys, and to a certain extent rabbits. I preserved my serum by the addition of camphor, 0.5 per cent. phenol or 0.3 per cent. trikresol. The action of the serum on a healthy animal is only noticeable by a slight fall of temperature two or three hours after the injection (Table 1); this fall of temperature ranges from 0.5 to 1 degree. Comparative experiments (Table 2) with normal horse serum demonstrated, however, that here too the same phenomenon could be observed. The amount injected varied from 0.25 c.c. to 2 c.c. Otherwise, no local or general reaction occurred.

In order to determine the presence of any immunizing power of our serum, in one series of experiments (Table 3) five guinea pigs were treated during thirty days with repeated injections of .25 c.c. of the serum; they received altogether 4 c.c. of serum each. After thirty days three of them were inoculated with the fatal dose of tubercle bacilli, the two remaining ones being kept as controls. At the same time two fresh animals received the same fatal dose of bacilli. The result was that after twenty-four, respectively twenty-one days, the two non-treated animals died with the typical lesions of tuberculosis, while the three inoculated ones, as well as the two controls, remained healthy and continued to gain in weight, the same as they had done during the serum treatment. After six weeks one of the infected animals was killed; the autopsy did not reveal any lesions whatsoever, neither at the point of injection, nor elsewhere.

Two other sets of five animals each were subjected to similar conditions, only the amount of serum and number of injections varying. One series (Table 4) received during thirty days five injections of .25 c.c. of serum each. Of three animals of this series inoculated with the fatal dose of tubercle bacilli, one died after twenty days: the two others showed extensive infiltration around the point of injection, but no ulcerations. They did not lose in weight. Whilst this experiment shows that the quantity of serum was insufficient for complete immunization, its effect is nevertheless very apparent.

The third series was treated during the same length of time with five injections of .50 c.c. each. Then three of them were inoculated. All animals remained well and continued to gain in weight (Table 5).

Though these experiments comprised only seventeen animals, the evidence brought out by them may well be considered conclusive in view of the fact that even an intraperitoneal inoculation (Table 3, No. 21), which otherwise invariably results fatally in a short time, did not cause any lesions whatsoever.

Naturally, as the next step in my investigations, the question offered itself, how the serum would influence tuberculous infection, when applied at the very moment of infection. Various amounts of serum were therefore mixed with the fatal dose of bacillary emulsion, the mixture being injected subcutaneously or into the abdominal cavity. Of three guinea pigs which in this way received 1 c.c. each, not a single one showed any signs of infection; the same obtained for six others into which 0.5 c.c. each was injected and for the third set of three to which was given .25 c.c. each. When I lowered the dose to .10 c.c. the results became valueless (Table 6). As controls for this experiment two sets of three animals each served, one being inoculated simply and left without treatment, while the second set received with the bacilli .25 c.c. of Paquin's antitubercle serum. All six animals died within the usual time, two of the last (Paquin) set before the others.

We will see later on that our serum possesses very decided bactericidal properties. For this reason the experiments of the last series had to be varied so that bacilli and serum were injected at the same time, but each for itself, and in a different place. In this way three guinea pigs were treated, receiving the virus on the back, and the serum (.50 c.c.) on the abdominal aspect, as nearly as possible at the same time. They remained in perfect health, except No. 12, which showed, eight days after inoculation, a slight enlargement of the inguinal glands. The latter disappeared, however, in a short time, and the animal is as healthy today as are its mates (Table 7). After these tests the most difficult problem remained to be solved; how far advanced may a case of guinea pig tuberculosis be, in order to be amenable to a curative treatment by this serum? The number of my experiments bearing on this question is, I confess, but limited; I could convince myself that with almost absolute certainty one succeeds in saving the life of the animal when treatment is begun within the first ten days after inoculation with my culture. This time limit reached, the results became uncontrollable. I instituted treatment in several series four, seven and ten days after inoculation; injections (uniformly .25 c.c.) were given regularly every other day for four weeks; after that time one injection per week was deemed sufficient. Of eighteen animals I have lost, until the present date, not a single one, though in one an enormous glandular enlargement has developed. The characteristic ulcerations at the sites of inoculation are absent, and the temperature is normal.

Although I would not like to appear over-confident, the time elapsed since treatment was begun being only two and one-half months, I may safely assert that I consider those animals as recovered. In three of them I made the routine tuberculin test after six weeks of treatment without obtaining a reaction (Tables 8 to 11). Wherever ulcers had formed before the treatment they healed readily, no symptoms remaining to indicate a pathologic condition. The temperature was easily reduced to normal (Table 12); the weight kept steady or increased slightly.

Two animals of series 10 were sacrificed after seven weeks, to enable me to study the pathologic anatomy of the diseased organs. The liver showed those peculiar cicatricial ridges described by Koch as characteristic after T. R treatment. The spleen in one case was extraordinarily contracted, etc. In one word, everywhere successful attempts at restitution or at least at encapsulation were obvious, the latter especially in diseased lymph glands. A description *in extenso* of these very interesting changes I must reserve for some future time, after my animals have been observed for a longer period. As controls, I used again some animals simply inoculated with bacilli, and some others which in addition received the benefit of the Paquin treatment. All of these animals died in due time.

For brevity's sake I omit to mention a number of other experiments destined to investigate the protective and curative potency of the T. R. serum. Those that have been reported are more than sufficient to establish the fact that this serum not only protects guinea pigs against infection, but that it is too, of a very powerful curative potency.

Very gratifying was also the outcome of some experiments made on monkeys (belonging to the genus *Cebus*, of the order of the *Platyrrhini*). On July 22, two of them were inoculated with .25 c.c. of bacillary emulsion into the abdominal cavity. While one served as control, the other was treated to regular injections every other day, of .50 c.c. of T. R. serum; this treatment was begun the day after inoculation. Very soon, in the control animal, high temperature set in (rising to 105 and 106 degrees), emaciation became visible, and on September 10 death occurred from the most extensive visceral tuberculosis I ever saw. The lungs were not affected at all. His more fortunate mate is today alive and healthy, and did at no time exhibit any symptoms of infection. His temperature remained perfectly normal, his weight increased slightly and some days ago he did not react at all after .15 c.c. of the old tuberculin was injected subcutaneously.

Very satisfactorily, too, resulted an experiment on two other monkeys, into the trachea of which, after tracheotomy had been performed, .25 c.c. of bacillary emulsion was injected. Treatment of one of them was begun immediately after inoculation (August 16) in the way described in the former experiments. The control animal died September 5 with very extensive lesions of the larynx, lungs, liver and the whole lymphatic system; an enormous tuberculous ulcer had developed at the place where tracheotomy was performed. Emaciation was very marked, as well as the anemia. In contradistinction, the other animal kept a steady temperature and weight, and offered no sign of disease, except a small ulceration of tuberculous nature at the place of incision; I feel sure that prolonged treatment will cure him entirely.

For certain reasons I would like to omit here a report of experiments with intraocular inoculation of rabbits. The well-known uncertainty of such experiments arising from very marked differences in the susceptibility of these animals is an element that prevents conclusive deductions. May it, however, be said that when inoculation and serum injection were practiced at the same time, in no case an infection was effected. The results varied whenever four or more days intervened between the two.

However tempting and alluring the reported results may appear to one uninitiated into the deceptive phenomena and phases of experimental tuberculosis, I will make haste in accentuating the fact, that *per se* they do not form conclusive evidence as long as the animals have not been observed for a longer period (five to eight months). In order not to be misunderstood, I must repeat that the period of my observations extends only over two and one-half months. But combined with the following considerations they form an absolutely safe stronghold. If the T. R. serum acted specifically, this must be due to antitoxic or bactericidal properties; it became necessary, therefore, to demonstrate the latter.

The slowness of growth as well as their peculiar cultural arrangement compelled me to submit the tubercle bacilli to the following procedures, which entirely differ from the usual method of determining the bactericidal power of a fluid. A number of sterile test-tubes were filled each with 5 c.c. of fresh T. R. serum. A few drops of an emulsion of tubercle bacilli were added to each of these tubes, whereupon the whole series was put into the incubator. After the lapse of a certain time the single tubes were removed and 1 c.c. of their contents injected intraperitoneally into healthy guinea pigs. Table 13 gives the results *in nuce*. It was found that a contact of the tubercle bacilli with the serum during five hours, was sufficient to destroy their vitality, or at least to impair their power of resistance so much, that the animal organism could easily rid itself of them.

The only attempt at determining this bactericidal power of an antitubercle serum, that I could find in the literature, was made by Babes,[19] but the bacilli in his case were killed only after a contact of twelve days duration. I do not know but what the addition of a preservative will decrease this power in my case to a certain degree.

In the search for antitoxic properties, the customary methods of combining the serum with a certain amount of old tuberculin (either fatal or just sufficient to bring about the characteristic tuberlin reaction) offered itself first. Babes and Schweinitz in this way proved the "antitoxic" nature of their sera. So did Niemann. But according to what has been said above, the only thing proven by these tests is their antituberculinic nature, which will be present, too, in a really antitoxic serum, but at the best only forms a part of its potency. That, by the way, not even this antituberculinic quality is possessed by some of the "antitubercle" sera, has been shown by Behring (l. c.), who found that Maragliano's serum is perfectly void of it. As to Paquin's antitubercle serum, I repeatedly came to the very same negative result.

How my T. R. serum behaves in this regard will be seen from table 14. I found that .50 c.c. of it is sufficient to save a tuberculous guinea pig from the fatal dose (.20 c.c.) of tuberculin, and that .1 c.c. prevents the tuberculin reaction (.10 tuberculin). The tuberculin that I used was of a strength that 1.5 c.c. killed a 500 gram healthy guinea pig within twenty-four to forty-eight hours; I prepared it from cultures of my virulent bacilli. Niemann for his serum, found the relation 7 to 1, while in our case it would be 1 to 1.

But since it was evident that tuberculin did not mean tuberculosis toxin, I worked out another method, which with due regard to the incompleteness of our knowledge gave very satisfactory results.

I profited by Koch's investigations, combining T. O. with T. R. and so getting a fluid which contained, in an absolutely unchanged form, all of the substances (toxins, etc.), the effect of which on the animal organism was to be studied. After the whole of the bacilli had been thoroughly triturated, I gauged the suspensions of them so that every c.c. of the 20 per cent. glycerin solution contained 1 mg. of solid substance. Doses up to 8 and 10 c.c. of this fluid were borne by healthy guinea pigs without any trouble; higher doses produced irregular fever and infiltration; 15 to 16 c.c. invariably caused death.

Quite different was the action on tubercul[illegible] animals; 1 mg. always produ[illegible] in thirty-[illegible]rs. an extended inflammat[illegible] ion, and [illegible]y fever reaction differing [illegible] tubercul inasmuch as the rise of temperature appears rather sudden (two or three hours after injection) and keeps steady for ten to twelve hours, after which time a decline by lysis occurs. The infiltrations disappear within three days, usually. Very characteristic and interesting is the fact, that in one and the same animal such a reaction may be elicited indefinitely, by only a slight increase of the dosage (Table 15). The common tuberculin reaction, in the same animal, usually fails the third or fourth time. I do not know yet what influence our reaction has upon the tuberculous lesions; existing ulcers heal readily.

If instead of 1 mg. we use 2 mg., this dose invariably produces death within twenty-four hours.

Before we can utilize this toxin for determinations of the antitoxic value of our serum, one objectionable feature of the test will have to be removed, the inequality of the extent of the tuberculous lesions in the animals used. Although in guinea pigs the disease partakes of the character of a self-limited trouble, the extent of the lesions and the constitutional conditions vary enormously in different animals inoculated at the same time. The reactive capacity, naturally, varies with these conditions so that, although for qualitative tests any animal, provided it be tuberculous, will be satisfactory; this is not so for quantitative determinations. Here we must be, as far as possible, sure to always encounter the same power of, or rather lack of power of, resistance in our animals.

The beautiful investigations of Borrel[20] and Kaspareck[21] furnished the material to obviate this difficulty; while the former demonstrated the fact that as soon as thirty-six to forty-eight hours after inoculation, tissue changes became observable, the latter added the valuable information that for the appearance of the tuberculin reaction such tissue changes are necessary, and that this reaction may be typically observed about thirty-eight hours after infection. The eminent theoretic importance of these two facts is apparent (perhaps especially with regard to an alleged pre-tuberculous stage of the disease). I found in them a means to procure for my tests a nearly always equivalent material. If into healthy adult guinea pigs of about the same weight (500 to 700 grams), always the same amount of virus (one loopful of my culture) is injected, and if at a stated interval afterward (forty-eight hours) the same amount of T. O. and T. R. toxin, together with the serum to be tested, is administered, we have done as much as can be done in order to obtain comparable results.

Preliminary experiments showed me that 1 c.c. of my toxin injected into these forty-eight hour guinea pigs elicited the above described reaction, together with a very marked infiltration, while 2 c.c. were here, too, found to be the fatal doses.

By such experiments I knew also that less than 1 c.c. of my serum inhibited all these reactions. If, therefore, we agree to call an antitoxic unit 1 c.c. of that serum which counteracts 1 mg. (1 c.c.) of toxin (always supposed that the serum has been prepared by means of the same race of bacilli from which the toxin is derived), it was easy to determine the potency of the serum under discussion. Accordingly a number of guinea pigs, of about 500 grams weight, were prepared in the way described, whereupon various amounts of serum, each mixed with 1 c.c. of the toxin were injected after forty-eight hours. While .3 c.c. were not able to materially influence the reaction, with .4 c.c. no temperature reaction, nor local infiltration occurred; .6, .8, and 1 c.c. acted in the same way. This means that the serum is 2.5 times more active than a normal antitoxic serum. In other words, that it represented 2.5 antitoxic units to the c.c. This seems to be a very low value, when compared with the potency of other antitoxic sera. But the serum of the same horse one month later, after immunization had been continued all the time, showed a potency of 3.7. The serum of another horse was found of a strength of 2.8 the first time, of 4.1 six weeks later. These findings I believe to be the most valuable part of my work, since they justify the hope that in due time a serum of very high power may be obtained.

On the other side we must not forget that our serum is not only antitoxic, but in a very high degree also bactericidal, the latter quality being, under certain circumstances, probably more valuable than the former. Furthermore, I think it highly probable that later on a tubercle virus may be obtained of much greater toxicity. Some experiments are under way to find out whether after a method similar to that of Metchnikoff, Roux, and Salimbeni[22] (cultivation of tubercle bacilli enclosed in small pouches of collodion which are introduced intraperitoneally into guinea pigs or rabbits), still more virulent forms may be obtained. Be that as it may, my researches so far have demonstrated *the fact that a serum both antitoxic and bactericidal may be obtained by immunizing horses against tuberculosis by the new tuberculin T.R., and that it is possible to immunize (and cure) guinea pigs with perfect certainty by means of the serum for which I propose the name "Antiphthisic Serum, T.R."*

It would be unnatural not to consider the possibilities that my serum may hold out for the treatment of human tuberculosis, although it is with great reluctance that I venture to make a few remarks on this point. After what has been said in the beginning of this paper, I take the applicability of antitoxin treatment in human tuberculosis for granted. Moreover, the chronic form in which the process usually is met with in man, has certainly to be considered as a favorable point. It can be shown experimentally that the relative toxicity of the watery extracts of finely ground tissues of the organs of tuberculous guinea pigs is enormously higher than that of human tuberculous tissues, in other words, this very chronicity is indicative of a process less productive of toxins. As an admissible objection it might be said that one is not allowed to infer from phenomena observed in one animal, or those observed in another. The more penetrating our investigations become, the more we are forced to admit that the virulence and toxicity of a micro-organism, is by no means the same upon different animals. I think, however, that in the case of the tubercle bacillus, though for obvious reasons a direct proof can not be had, we are perfectly safe in surmising that these differences, if existing at all, are only differences of degree and very slight ones too. In the multifariously confirmed tranmissions from animal to man. and *vice versa*, I am inclined to see a confirmation of this surmise.

The antitoxic potency of my serum seems as yet, when compared with other antitoxic sera, to be small, but I do not know whether we have a right to doubt *a priori* its efficacy in man on that account; in the first place, we do not as yet know anything with certainty about the way in which this antitoxic property exerts itself, and whether we are allowed to estimate it quantitatively.[23]

But besides this it is a fact that the main toxic action is not exerted by the living bacilli, but by the dead and disintegrating ones, so that a smaller amount of antitoxic power supplied continually will be likely to meet all exigencies. These, however, are problems to be solved in the future. I will only repeat that there seem to be theoretically no limits to the degree of the antitoxic potency, and that practically it is a matter of time and, since T.R. is a rather expensive article, of financial considerations.

The value of T.R. serum for human patients can only be ascertained by a prolonged observation. In about twenty cases so far treated by me and several physicians in and outside of St. Louis, the results have been exceedingly gratifying. I need not tax your patience by telling you what kind of cases we may reasonably expect to be benefited by such treatment. I must lead your attention, however, to the statements of Spengler,[24] asserting that a great number of so-called mixed infections are not *a priori* to be considered as hopeless, but that secondary infection very often rapidly subsides and disappears, as soon as some curative influence comes to bear on the tuberculous process.

All of the cases treated, so far as the reports show, were early cases of pulmonary affection; a positive diagnosis was made in every one of them by microscopic examination. In all of these cases, within six to eight weeks a very decided improvement was brought about; temperature became perfectly normal; cough, expectoration, and night sweats stopped; uniformly a considerable increase in weight was observed. The pulse became normal, number of respirations decreased, etc. In all cases, physical examination showed an arrest of the active process, and a clearing up of the affected area; in those cases observed by me the moist râles disappeared within four weeks after treatment began. The latter consisted in daily hypodermic injections of 1 c c of the serum. No local or general reaction resulted except now and then a little soreness and swelling around the site of the injection. The most noticeable fact was the lowering of the afternoon temperature, which sometimes would be observed after the first few injections

I would, however, not like to lay myself open to the reproach of hasty conclusions in a subject the chief element of which is time. A more extensive report will be rendered after the necessary time has elapsed

The scientific gain of my investigation is the preparation of a really antitoxic and bactericidal antiphthisic serum. With a probability next to a certainty we may expect this serum to become an important factor in the preventive and curative treatment of human tuberculosis; the "importance" of the declining attitude of the Moscow Congress toward serum treatment in tuberculosis will, I am sure, dwindle down to the insignificance and worthlessness inherent to all judgments and criticisms of gregarious masses.

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METRITIS.

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For many years I have been observing in the practice of gynecology a peculiar disease of the uterus characterized by hypertrophy, atrophy or induration. In the chronic state the uterus is hard in consistence. Its walls are rigid and stiff. The disease may occur in a girl of 15 years, or in woman before or after the menopause. It is known as metritis, *i. e.*, an inflammation of the uterine muscularis I shall attempt to bring forward some views on the disease by the aid of carefully drawn microscopic illustrations. In the

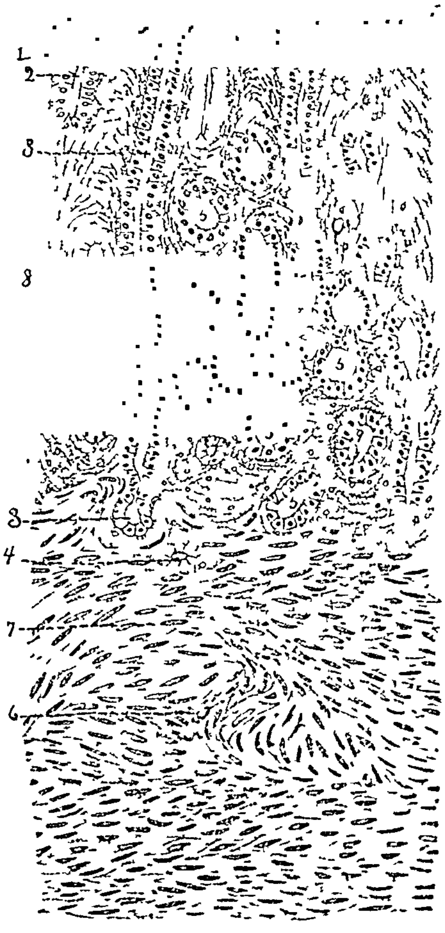
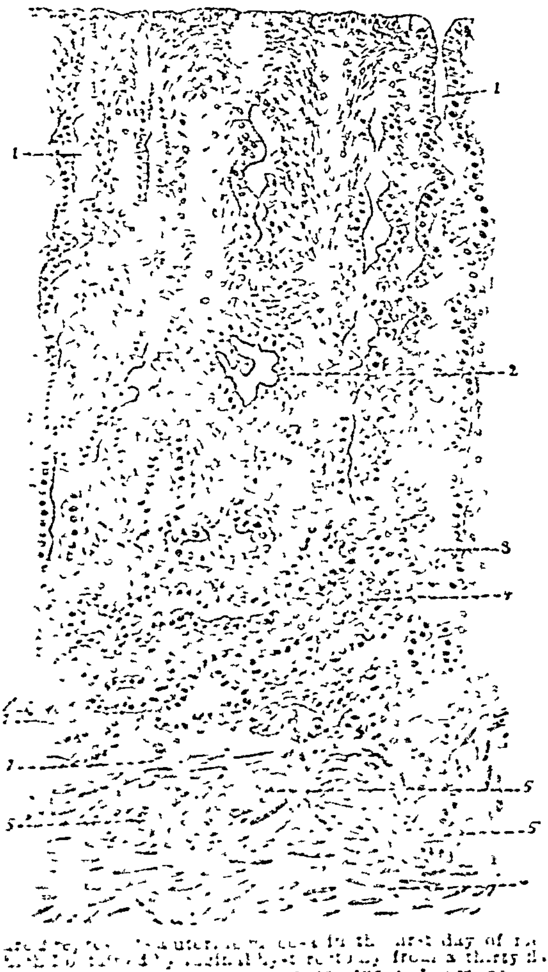


Figure 1 represents a uterus, mucosa and muscularis, in the quiescent stage, in the state of rest, i e, midway between two menstrual periods. 1, 1, the columnar nucleated, ci[illegible] sing[illegible] [illegible] uterine epithelium; 2 a part of a utricular [illegible] [illegible] surface of the mucosa; 3, a whole utricular [illegible], extend ing from below the level of the muscularis to the internal surface of the mucosa. It is lined by a single layer of distinctly nucleated cylindric columnar (and ciliated ?) epithelium. Observe how it ends in the muscularis and how the muscular trauma or contractions could induce the migration of contained pathogenic microbes into the field of the muscularis, producing inflammation and its results; 1, represents the tip end of a utricular gland far beneath the surface of the muscularis; 5, 5, 5, 5, 5, 5, show empty, resting utricular glands cut at varying angles to the longitudinal axis, 8, points to the lymphoid tissue composing the mucosa, i e., the connective tissue cells and fibers, the blood and lymph vessels; 9, 9, shows resting glands containing a little mucus; 6, shows a blood vessel in the muscularis, and 7 points to the nucleus of the unstriped muscular cells. The two characteristic structures observed are: *a*, the mucosa containing utricular glands, connective tissue cells and fibers, blood and lymph vessels; *b*, the muscularis containing unstriped muscular fibers and blood vessels; and *c*, the peculiar anatomic *fact that the glands of the mucosa dip down into the muscularis*. There is no submucosa in the uterus. The muscularis is not protected from the mucosa by a submucosa, and hence the easily infected utricular glands quickly carry infection into the unprotected muscularis. Other hollow viscera like most of the digestive tract are protected from infectious invasion by a layer of tissue, the submucosa, which separates the glandular, the mucosa, from the muscularis. Besides, the submucosa, e g., in the stomach, allows a wide, independent movement of the mucosa and muscularis. In the uterus the mucosa and muscularis are immovably fixed on each other. Observe the solid, compact glands and tissue in the uterine mucosa and the small nucleus of the muscularis in the resting uterus.

illustrations I have attempted to show typical specimens of a quiescent uterus or one at rest, one specimen of a uterus in the first day of menstruation, and a specimen of about ten weeks' pregnancy, and two more sections cut at right angles to the utricular glands. The specimens should be studied comparatively to observe the vast yet gradual difference occurring in the uterine mucosa.

Metritis is one of the most frequent diseases of women. About ten women out of fifteen who come to the clinics have a distinctly palpable metritis, over the diagnosis of which no dispute may arise. Metritis occurs in all grades, from the sensitive, acute to the stage where little sensation remains.



[illegible] uterus [illegible] in the first day of menstrua- [illegible] from a thirty [illegible] year [illegible] the mucosa and the [illegible] is almost doubled in [illegible] with folded [illegible] several utricular glands [illegible] muscularis than in the resting

uterus. Note the increased size of the nucleated, columnar epithelium in the menstrual uterus over the resting uterus. The interglandular substance, the lymphoid elements, connective tissue cells and fibers, the blood and lymph vessels, are all vastly increased over the resting uterus. In the menstruating uterus the muscularis, the nuclei of the muscular cells, are about doubled in length and breadth. With good specimens one can observe the large amount of fluid lying in the tissue and forcing the elements wide asunder. Also the ubiquitous leucocyte aids to increase the thickness of the muscularis, and especially the mucosa, in the menstruating uterus Especial attention is directed here to the fact that the columnar, nucleated endothelium lining the mucosa and utricular glands, is nowhere (first day of menstruation) shed, but intact everywhere, and *nearly double the size of that in the resting* uterus. 1, 1, represent almost complete utricular glands cut longitudinally, 3, points to the bloody debris found in this sinuously dilated menstruating gland which opens on the internal surface of the uterine mucosa *and dips deep down into the muscularis*, 2, points to a widely open utricular gland with enormously developed epithelia; 1, points to the vastly increased interglandular substance, lymphoid elements, connective elements, blood and lymph vessels, all forced asunder by edema, infiltrated fluid; 5, 5, 5, 5, point to utricular glands buried beneath the muscularis, and 5¹ can be traced from the internal surface of the uterine mucosa to a long distance below the surface of the muscularis. The bloody debris in the utricular gland found deep in the uterine muscularis demonstrates that it is actively engaged in the act of menstruation; 6, points to the vastly increased size of the nucleus of the muscle during menstruation. The mucosa and muscularis alike engage in the great change accompanying menstruation, i.e., violent glandular and vascular changes.

As an explanation of the tendency of the uterus to inflammation over other organs we must look to its peculiar structure. It may be stated without fear of successful contradiction that the uterus is not only prone to inflammation, but it is prone to harbor it for an indefinite period. The carefully prepared cuts accompanying this article, drawn from my own specimens, will explain the mechanism a thousand times better than words. The uterine wall consists of three tunics, viz.: tunica mucosa, tunica muscularis and tunica serosa.

First, the uterine mucosa, the endometrium, the tunica mucosa or propria, or the lining membrane of the uterus furnishes the clue. It is composed of tubular glands standing nearly at right angles to the uterine wall. These glands (glandulæ uterinæ, utricular glands) are lined by a distinctly nucleated columnar ciliated epithelium. The ground work sustaining the glands consists of a peculiar connective tissue cell and a connective tissue fiber. The mucosa is rich in this lymphoid embryonic-like tissue. It is also rich in blood vessels and abundant lymph elements. The uterine mucosa undergoes variable changes during the subject's seedtime and harvest. At the menstrual time it is often doubled in thickness, becoming about one-fifth of an inch thick. During gestation, the mucosa undergoes considerable changes, but apparently not so violent and rapid as at the monthly period. The three chief changes of the mucosa at menstruation and gestation are: 1, Elongation and sinuous dilatation of the glands; 2, Enormous distension of the blood and lymph vessels; 3, Increase of interglandular substance by multiplication of the embryonic type of connective tissue cells and fibers, the migration of red and white blood corpuscles and the infiltration of the mucosa with fluid.

The significant vascularity (blood and lymph vessels) and the predominent glandularity (lymph elements) characterize the uterine mucosa and mark it as a field rich in susceptibility to infectious invasions, and since the uterine mucosa is not only directly exposed to the external world, and especially to sexual imprudence and consequent infection, but also to the violent congestions of menstruation and the rapid changes of gestation, it is no wonder that its delicate structure and wonderful function becomes impaired.

Now, the significant peculiarity of the uterine mucosa is, that it rests directly on, and some of its glands penetrate, the uterine muscular wall. There is no submucosa in the uterus. There is no barrier to infectious invasion from the uterine mucosa to the uterine muscularis. *Infection can travel directly, by way of* the utricular glands, into the muscularis. No military trocha exists between the mucosa and muscularis in the uterus to prevent general infectious invasion. No finely woven connective tissue, submucosa, forming a distinct barrier, a partially impenetrable layer to infection, is found in the uterus.

The wonderful mobility of mucosa on the muscularis, which so typically exists in the gastro-intestinal tract, does not occur in the uterus. The uterine mucosa and muscularis do not move independently of each other. They are intimately bound and connected together. In this intimate and close connection of mucosa and muscularis, perhaps is also found an explanation of further infectious invasions from muscular trauma on the utricular glands. We may call a menstruation a diminutive labor. In menstruation and gestation, the uterus is in a constant rhythm or fine small waves of contraction. Now, we observed that some of the utricular glands dipped their proximal ends a considerable distance down into the uterine muscularis. In the menstrual period the muscular waves or contractions are vigorous and active; the muscular contractions are continually traumatizing, continually disturbing the ends of the utricular glands which lie among the contracting muscles, and hence will induce the migration of pathogenic microbes through the glandular wall into the connective tissue of the uterine muscularis, with consequent inflammatory process. Muscular trauma on contained glands holding pathogenic microbes aids to spread infection. The congestions of the uterus induce muscular contractions and this process, being often repeated, allows frequent opportunities for progressive infection.

Muscular trauma must be an admitted factor in the production of disease; it disseminates germs, especially from glands to adjacent tissue, it disturbs the blood vascular and lymph vascular system and the frequent muscular activity of the uterine muscularis on the uterine glands, which are not protected by a submucosa, traumatizes them and aids to disseminate their pathogenic contents.

The first consideration in metritis is to study how metritis arises. Why does a woman have metritis, with hypertrophy or atrophy, at any time from puberty to far beyond the menopause? When a girl has her first menstruation the os dilates, the mucosa swells and becomes intensely vascular and the utricular glands dilate irregularly with sinuous and folded walls; also the muscularis is in continual waves of contraction. Intense vascularity, edema, migration of leucocytes, dilated lymphatics and highly swollen glands characterize the uterus at menstruation. In this susceptible state, a rich culture medium for germs, the uterine mucosa may become infected by microbes entering the open os from the clothing, from masturbation, from cohabitation, from the dust of the road, from the rectum, and also, it may become exacerbated from repeated menstrual processes. The resistance of her mucosa may be lowered by attacks of scarlet fever, measles, smallpox; in fact, by any acute fever. However, one of the above processes is doubtless the method by which young girls' uteri acquire metritis. Erectile tissue with congestion and decongestion alone will not explain uterine disease, because the penis passes innumerably more times through congestion and decongestion than the uterus, but does not become diseased. The element of infection must be the factor that plays the rôle in the glandular structure found in the muscularis-mucosa.

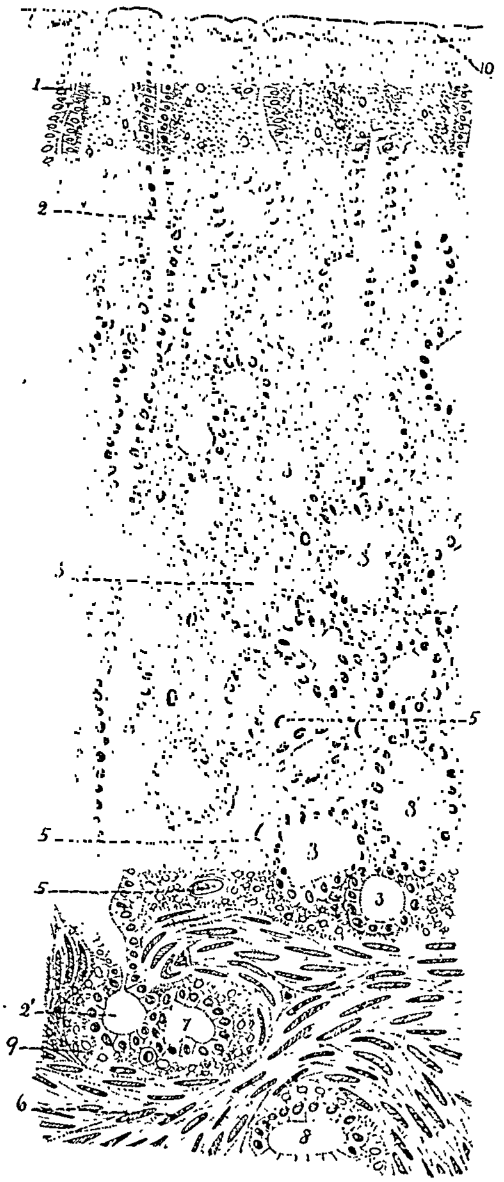


Figure 3 represents the uterine mucosa and muscularis pregnant about ten weeks *This specimen differs from the resting uterus* by hypertrophy, and from the menstruating uterus by uniform hypertrophy. In the pregnant uterus the utricular glands and blood vessels, as well as the interglandular tissue, are increased uniformly. In the menstruating uterus the utricular glands and blood vessels are not uniformly increased, but show sudden dilatation and consequent sinuous and folded walls. The glandular epithelium and the walls of the blood vessels in the menstruating uterus are much less in size than in the pregnant one. The interglandular tissue of the mucosa of the menstruating uterus is more edematous, more infiltrated with fluid than the pregnant uterus, and consequently the elements are forced wider asunder by the fluids than in the pregnant uterus. The utricular glands of the pregnant uterus do not contain blood and debris like that of the menstruating uterus. In pregnancy only mucus is found in some of the utricular glands of the uterus. The resting uterus (Figure 1) shows compact interglandular tissue and lymphoid elements. The menstruating uterus (Figure 2) shows interglandular structure, swollen, edematous lymphoid and connective elements widely separated by considerable fluids, many leucocytes, and especially sinuously dilated utricular glands with sinuous and folded walls, the glands containing bloody debris. The nucleus of the muscles are almost doubled in size. The pregnant uterus differs by a peculiar kind of hypertrophy. Its glands are uniform and smooth, and like the resting uterus, but enormously increased; they contain mucus like those of the resting uterus. The epithelia lining the internal surface of the mucosa and utricular glands are hypertrophied with enlarged nucleus. The nucleus of the muscle cells of the pregnant uterus is three to four times the size of the resting uterus and perhaps over twice as large as those of the menstruating uterus. The utricular glands of the menstruating uterus show well their penetration of the muscularis, but the utricular glands of the pregnant uterus demonstrate vastly more than deep penetration and residence of the hypertrophied muscularis. 10, represents the vastly hypertrophied epithelia of the internal surface of the mucosa; 1 and 2, point to the epithelia of the hypertrophied utricular glands; 3, 3, 3, show empty hypertrophied utricular glands, while 3' and 3' show the same with small amount of mucus; 1, indicates hypertrophied interglandular, lymphoid connective tissue and vascular elements; 5 and 5, blood vessels; 6, hypertrophied nuclei of the muscularis; 7, 8 and 2', show utricular *glands, hypertrophied, well buried, deep in the recesses of the muscularis.* Figures 1, 2 and 3 are carefully drawn from well-prepared specimens.

It may be stated that the chief forms of metritis are developed from abortion and labor. In metritis the first stage is intense congestion, venous, arterial and lymphatic. The uterus swells, considerable edema and small cell infiltration occurs in the mucosa-muscularis. The serosa does not appear to suffer so much when attacked ectoperitoneally. Chronic metritis is characterized by hypertrophic thickening of connective tissue. The muscularis may be partially or completely in a state of degeneration, fatty, pressure atrophy. Some of the muscular fibers may be entirely crushed out, while others may lie in irregular bundles. Much significance rests in the blood vessels in metritis. The vessel becomes irregular, by irregular contraction of the connective tissue bundles their lumen partially obstructed. Dilatation and constriction by connective tissue characterize the uterine vessels in metritis. The vessels may become varicose. The painful menstruation in metritis rests on the fact that the uterine vessels are surrounded by dense white connective tissue, and when the congestion and consequent expansion of these vessels occur at the menstrual period, intense pain arises from pressure on the peripheral nerves in the vessel walls and closely adjacent tissues. A well prepared section of chronic metritis looks pale and shiny, with hard, white connective tissue bundles lying irregularly in the field, interspersed with reddish masses of the muscular bundles. The enlargement of the metritic uterus may be due to the cicatrization of the muscular bundles or hyperplastic growths in the lymph spaces; perhaps both processes occur together.

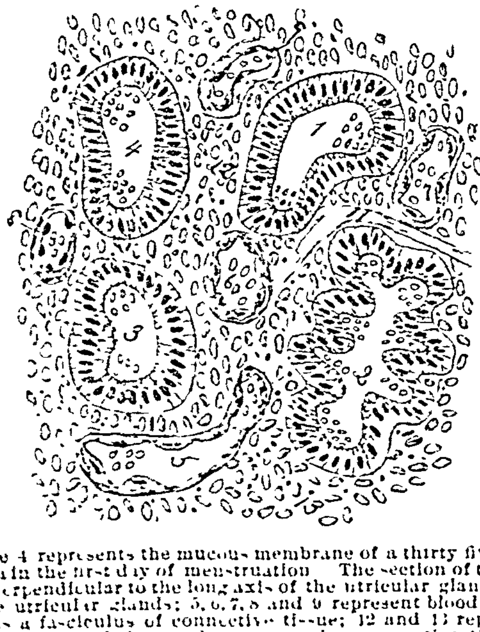


Figure 4 represents the mucous membrane of a thirty five year old multipara in the first day of menstruation. The section of the mucosa is made perpendicular to the long axis of the utricular glands. 1, 2, 3 and 4 are utricular glands; 5, 6, 7, 8 and 9 represent blood vessels; 11 represents a fasciculus of connective tissue; 12 and 13 represent the ground substance of the uterine mucosa, i. e., connective tissue fibers and connective tissue cells. In this subject the mucosa was about one-fifth of an inch thick, i. e., about twice as thick as it is in the normal resting state. First the glands are irregular, elongated and widely dilated with fluid, and the walls are especially folded and sinuous as in Figure 2. Considerable blood is plainly seen in the glandular lumen. The sudden filling of the utricular gland at menstruation does not give them time to distend uniformly; but they expand in the direction of least resistance, as is observed in every gland, but especially in No. 2. The whole mucosa and immediately adjacent muscularis is very edematous. The elements are widely distended by fluids. The lymphatic spaces are very apparent around the glands in the muscularis; [illegible] are [illegible]. The blood vessels (6, 7 and 8) are widened and filled to distension with blood. The epithelium of the glands is not [illegible]. It is perfectly intact. The muscularis is especially thickened by the distention from fluids. No. 3 doubtless represents a venous sinus cut [illegible]. This section was made near the internal surface of [illegible], hence no unstriped muscular bundles could be observed [illegible] the glands. The sinuous or folded condition of the walls of the utricular glands is [illegible] characteristic during the active stage of menstruation. In pregnancy of two to three months the glands are not larger than in menstruation, also the utricular glands [illegible] I do not show a sinuous or folded character of their walls, as is shown in the congested stage of menstruation.

The large metritic, hypertrophic uterus consists, to a great extent, of excessive growth of connective tissue in perivascular lymph spaces. Intense congestion and vascular stasis leads to overnourishment, resulting in hypertrophy. Atrophy is but a decadence of hypertrophy. The muscles are crushed out and the vascular supply gradually diminished. The contraction of the shiny, hard, glistening, irregular connective tissue bundles of the uterine muscularis leads to obstructing arterial flow and impeding venous and lymphatic (return) flow, some of the vessels assuming at first a varicose condition, and finally there exists an indurated uterus with but small and weak blood supply. The scene of the metritic uterus is almost constantly connected with endometritis. In the chronic glandular endometritis the glands may enlarge, increase in number, become occluded and dilated and project deeply into the uterine muscularis and absolutely simulate malignancy by alveolar appearances of the glands. In this manner the glandular endometrium perpetuates metritis indefinitely.

The course and prognosis of metritis is absolutely indefinite. I have treated scores of cases for at least five years. I carefully treated one case ten years for a large metritic uterus, and finally assisted Dr. Lucy Waite in performing an abdominal hysterectomy, whence the patient, from over ten years of invalidism, became well and fat in a few months. The prognosis of the metritic uterus following gonorrheal endometritis is often hopeless, because the gonorrheal infection is so persistent and continuous, inviting mixed infection, that both the mucosa and muscularis are structurally crippled beyond repair. However, many metritic uteri can be repaired so that the patient is partially well, and some perfectly well (symptomatically).

The diagnosis of metritis is easy to make (omitting the acute). With the index finger in the vagina and the other hand on the abdomen, the uterus feels hard, rigid, stiff and solid. A normal uterus should feel like a living muscle in partial tension, in slight activity. It should bend, yield and glide unimpeded in all directions. In short, it should be perfectly mobile, like a normal testicle. The metricic uterus exists in many degrees. It may feel like a muscle in vigorous high tension or as hard as cartilage or a turnip. It will not bend nor glide about normally; it is dislocated because it is permanently fixed. It is fixed by its own rigid, hard walls. The metritic uterus is always in fixed version or flexion, because (pathologic) version or flexion means fixation, it means dislocation. In this relation, four propositions may be well remembered, viz.: 1. Anteversion is where the uterus lies extended forward and is abnormally fixed. 2. Anteflexion is where the uterus is curved on its anterior surface and is abnormally fixed. 3. Retroversion is where the uterus lies extended backward and is abnormally fixed. 4. Retroflexion is where the uterus is curved on its posterior surface and is abnormally fixed.

The symptoms of metritis occupy wide fields according to its intensity and the individual susceptibility. In women the ganglionic system is developed to a greater extent than it is in men. The ganglia are not only large and more numerous, but they are richer in nerve distribution. This makes women more enduring and tenacious of life, but also it makes her more subject to reflex neurosis. The irritation arising in the uterus, an organ dominated by a rich supply from the sympathetic, like electricity streams to all other viscera. The genitals are like an electric bell button, which being pressed rings up the whole system.

Now, the learned neurologist will gravely announce that reflexes do not create deep-seated disease, and the reverse, that deep-seated disease will not be cured by removing the reflexes or its cause, to which we lend an attentive ear. However, we will claim that irritation in the (genitals) uterus, creates by reflex action disturbance in function in distant viscera. The disturbance in function soon begins a train of suffering, an impairment of health. We must say first that metritis produces symptoms of reflex irritation in various viscera, especially the stomach (digestive apparatus), and second, symptoms of pain. The manifest pain of metritis is in the pelvis, back and head. The systematic train of evils following metritis are: 1, irritation; 2, indigestion; 3, non-assimilation; 4, Anemia, and 5, neurosis. In many cases this evil train is very slow in arising.

Again, it must not be forgotten that many women have metritis with insufficient symptoms to make them conscious of its presence. I have examined many such women.

The treatment of metritis is medical and surgical.

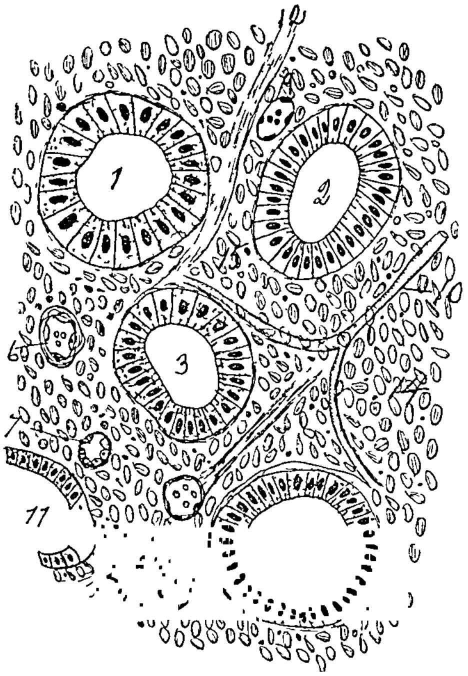


Figure 5 represents a section of the uterine mucosa of a ten weeks' pregnancy. The section is made at right angles to the long axis of the utricular glands. 1, 2, 3, 4 and 11 represent *glandulæ uterinæ*. *Observe* t uniformly hypertrophied and distended. The appear to be elongated. No. 11 represents a gland with part of its epithelia fallen out: 5, 6, 7, 9 and 10 represent blood vessels which are enlarged, but especially show thickened walls; 12 and 13 represent a fasciculus of connective tissue traversing the uterine mucosa between its glands. The ground substance, 14 and 15, show connective tissue cells and fibers, all enlarged, but it does not show the edema of menstruation. The special characteristics of pregnancy are in the uterus, uniform thickening of the vessel walls, uniform enlargement of the glands, elongation and apparently multiplication in the form of diverticular building. The muscular cells are thickened and elongated and increased in number, and the connective tissue of the mucosa is increased in its cells and fibers, in short, the glandular (lymphatic) vascular connective tissue and muscular elements seem to be not only hypertrophied, but increased in number.

First, so many women are afflicted with metritis that surgical application could not and should not be applied to but a comparatively few. The medical side of metritis is the chief one and in the majority of cases we can do much. The object is to restore the uterus to normal or to repair the damaged organ as much as possible, to relieve the patient from the accompanying reflex action and disturbing symptoms. Fortunately, for physicians, most diseases tend to get better. We can do but little for the atrophic, indurated uterus, except to relieve pain, and fortunately the atrophic indurated uterus is not afflicted with much pain. It is in the hypertrophied metritic uterus where we can do the most practical good. To treat it we attempt to limit its blood supply, in other words, to starve out the excess of tissue. This is accomplished by hot fluids, astringents and hygroscopic materials. I give the following directions for a vaginal douche:

1. Use a fountain syringe, holding four gallons of water, with a four-foot head.
2. Begin with three quarts of boiled water at 103 degrees (married women).
3. Increase the heat 1 degree at each sitting until it is as hot as it can be borne.
4. Increase the amount of the douche one pint each time until four gallons are taken.
5. Use the douche in the morning, and in the evening when retiring.
6. The duration of a vaginal douche should be eight minutes to the gallon.
7. The patient should lie on the back with the thigh flexed on the abdomen and the legs flexed on the thighs.
8. The douche should be taken on a level plane, the ironing-board serving a good purpose, and not in the bed, or on the water-closet, or in the bath-tub.
9. The douche should never be taken in the standing or sitting posture.
10. A handful of salt (NaCl) and a teaspoonful of alum may be added to every gallon; the salt to prevent reaction and the alum to astringe and check waste by secretion.
11. The vaginal tube used in giving the douche should be sterilized and every patient should have her own tube.
12. A vaginal douche given according to the above directions will prove to be of much therapeutic value in the treatment of pelvic diseases, an agent to prevent disease and a great comfort to the patient.

The effect of a vaginal douche is: 1, to contract tissue, *i.e.*, muscle, connective, elastic; 2, to contract vessels, *i.e.*, arteries, veins, lymph; 3, to absorb exudates; 4, to relieve pain; 5, to check secretion; 6, to stimulate (tonic); 7, to cleanse parts.

A second form of medical treatment for metritis consists in the use of cotton (or wool) tampons soaked well in boroglycerid (glycerin, 16 ounces; boracic acid, 2 ounces). The tampon is distinctly hygroscopic and an excellent mechanical support; otherwise it has a similar effect with the vaginal douche. The tampon may be used three times a week and allowed to remain in the vagina for ten hours. With six months or more of such treatment the hypertrophic uterus is nearly always benefited and frequently so much improved that the patient is comfortable. Sometimes she is cured symptomatically or perfectly. Pregnancy often cures it perfectly. Painting the cervix with various materials is, so far as my observation goes, of very limited benefit.

The surgical treatment of metritis consists in dilatation, curettement and the application of a caustic, Alexander Adams' operation or hysterectomy. A fixed uterus should always be curetted with caution. Dilatation of a metritic uterus is accompanied with dangerous trauma. Some metritic walls are so thick that they can not be dilated and often vastly more damage than good is done to a metritic uterus by dilatation. The solid, metritic walls will not dilate without thousands of localities of trauma, which prepare the way for wider and more intense infection. Some may be curetted with a small curette without dilatation and endometrium cauterized, pure carbolic acid being one of the best caustics. However, from experiment with the curette on recently removed uteri, I am convinced the curette is not what accomplishes the good effect, but it is the applied caustic, the pure carbolic acid which sloughs off the old chronically inflamed endometritis and allows a new endometrium to appear, giving nature a chance to rejuvenate itself. I use a rubber tube stitched in the uterus to drain for a week, washing it out with alcohol and sterilized water from the third day on. Some use gauze, but gauze is a poor drain. It may be borne in mind that it is dangerous to curette a fixed metritic uterus and it is even more dangerous, from trauma, to dilate a thick-walled metritic uterus. Hence, the douche and tampon are often more successful than the dilator and curette in a large metritic uterus. The Alexander Adams' operation is often of value in the hypertrophic metritic uterus. Its upright position will allow vascular depletion. The hard ring and intrauterine stem pessary are a traumatic evil and are mentioned only to be, in general, condemned.

To say that metritis calls for hysterectomy to cure a patient, would doubtless call anathemas on my head from many physicians whom I respect. But I have cured absolutely, from metritis, so many patients by hysterectomy who were invalids for years previous, that I dare to follow the operation and abide by the result to tell its own simple story. Of course, only selected cases of metritis call for hysterectomy, after which patients get well and fat. I now nearly always remove the uterus when both appendages require removal. Dr. Lucy Waite and myself have now practiced the removal of the uterus with bilateral disease of the appendages for over three years and our satisfaction grows with improving results. The hard, solid, hypertrophic, metritic uterus can be sometimes cured only by extirpation; the safest route is per vaginam.

There is a significant question as to how far the frequent metritis enters into the etiology of uterine myomata. Doubtless many myomata are due to local disturbances in uterine circulation.

THE ETIOLOGY OF METRITIS INFECTION.

Kinds of infection: Gonococcus; streptococcus; staphylococcus.

Modes of entrance: Glandular; circulatory lesions; tissue.

Predisposing causes: Labor; abortion; lack of submucosa: menstruation: sexual irritation; the mucosa and muscularis do not move independently; traumatic lesion: vascularity; excess of lymphatic elements: muscular trauma on infected utricular glands.

Pathologic results: Deposit of connective tissue; hypertrophy; atrophy.

Clinical results: Pain: menstrual disturbance; sterility; hemorrhage: prolapse; reflex irritation.

The predisposition of the uterus, over other hollow organs, to inflammation is because the uterus has no submucosa and hence the mucosa and muscularis do not move independently as in the stomach. The utricular glands penetrate the muscularis directly and thus can be traumatized directly by muscular contractions and induce consequent direct infection.

100 State Street.

THE TECHNIQUE OF PIROGOFF'S AMPUTATION OF THE FOOT.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY GWILYM G. DAVIS, M.D., M.R.C.S., ENG.
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Pirogoff was the celebrated Russian surgeon of the Crimean War. He was the surgeon in charge of the Russian forces at Sebastopol, and it was in 1852 that he devised his operation of osteoplastic amputation of the foot. His contemporary, Syme of Edinburgh, had not long previously given to the world his equally famous method of amputating the foot and, not unnaturally, in a clinical lecture on the subject (*Lancet*, Vol. I, 1855, p. 307), explained the superiority of his operation to that of Pirogoff. The only practical difference between the two operations was that Pirogoff retained a piece of calcaneum in the heel flap, while Syme dissected it out.

I have ventured to bring this operation to your notice because it appears to me to be one of great merit, particularly in cases of railroad injuries, and because the satisfaction to be derived from it will depend largely on the manner in which it is performed.

Judging from a long period of observation of the operation, as done on the cadaver in classes in operative surgery, and also as done on the living body, it is apt to be both a tedious and slovenly performance, and the subsequent results to the living are not so good as would be the case had more care been bestowed on its doing.

Pirogoff's original communication appeared in his work entitled "Klinische Chirurgie: Eine Sammlung von Monographien, über die wichtigsten Gegenstände der praktische Chirurgie," Leipzig, 1854. It is rarely alluded to; even he himself in his work on military surgery does not state where he published it. Fortunately, T. Spencer Wells (*Medical Times and Gazette*, March 20, 1858, p. 288) gives a translation of the original article. Pirogoff's own description is given by Wells as follows: "I commence my incision close in front of the outer malleolus, carry it vertically downward to the sole of the foot, then transversely across the sole, and lastly obliquely upward to the inner malleolus, where I terminate it a couple of lines anterior to the malleolus. Thus all the soft parts are divided at once quite down to the os calcis. I now connect the outer and inner extremity of this first incision by a second semilunar incision, the convexity of which looks forward, carried a few lines anterior to the tibio-tarsal articulation. I cut through all the soft parts at once down to the bones, and then proceed to open the joint from the front, cutting through the lateral ligaments, and thus exarticulate the head of the astragalus. I now place a small narrow amputating saw obliquely upon the os calcis behind the astragalus, exactly upon the sustentaculum tali, and saw through the os calcis so that the saw passes into the first incision through the soft parts. Saw carefully, or the anterior surface of the tendo Achillis, which is only covered by a layer of fat and a thin fibrous sheath, might be injured." "Lastly," says Pirogoff, "I separate the short anterior flap from the two malleoli, and saw through them at the same time close to their base. I turn this flap forward, and bring the cut surface of the os calcis in apposition with the anterior surface of the tibia. If the latter be diseased it is sometimes necessary to saw off from it a thin slice with the malleoli." This translation is almost exactly as given by Sedillot ("Contributions à la Chirurgie," Vol. II, p. 194), where Pirogoff's entire article can be found in French.

The principal change suggested in the operation was either by Dr. Eben Watson, Surgeon in the Royal Infirmary of Glasgow, and published in the *Lancet* of June 11, 1859, or by William Pirrie, Professor of Surgery in the University of Aberdeen, and published in the later editions of his "Surgery," or perhaps by both independently. It consisted in making the incision from the tip of one malleolus across the sole of the foot to the other, then sawing through the calcaneum upward and backward. The incision is prolonged up behind the ankle joint and carried across the front to the opposite side. The leg bones are then sawn through just above the ankle joint. Watson advised that the section of the leg bones be made downward and forward, but all other operators have recommended that more of the posterior edge should be removed.

The technique now suggested is as follows, the left foot being the one to be operated on: The foot resting on its outer side, sink the knife into the tissues of the sole and side of the heel, down to bone, on a line with the posterior edge of the internal malleolus, and prolong the incision directly upward to the upper edge of the swell of the ankle; this will be about three centimeters, or an inch and an eighth above the tip of the malleolus. Turn the foot on its inner side and, grasping the heel with the left hand, continue the incision across the sole of the foot and up the outer side along the posterior edge of the external malleolus and fibula until it reaches a point opposite to the ending of the first incision. The foot, resting on its heel is now firmly extended and the two ends of the side incisions joined by another curved one, forming an anterior flap one inch in length. This is turned back, and by a touch of the knife on each side the tissues are separated from the posterior surface of the bones sufficiently to allow the passage of a director or other instrument to prevent the tissues being injured by the saw. The leg bones are now sawn through just above the swell of the ankle, the posterior flap separated downward by a few strokes of the knife and the calcaneum sawn through in the line of the skin incision. The projecting outer corner of the fibula is removed, and the fragment of the calcaneum is to be brought upward, fastened securely to the tibia by means of chromicized catgut passed through holes in the bones, and the skin wound closed by interrupted sutures without drainage.

The incision across the sole of the foot is placed farther back than is that of Pirogoff, or of Watson's or Pirrie's modification. In them, in order to divide the calcaneum it is necessary to place the saw so far behind the line of incision that the flap will be torn unless it is retracted. It is to avoid this that Treves, Agnew and others have advised that the heel flap be dissected back a quarter of an inch or more. It is difficult and troublesome to saw the bone under these conditions, and is not required if the two ends of the plantar incision are carried along the posterior edges of the malleoli. Placing the incision so far back does not endanger the artery, for the two are still separated by the tendons of the tibialis posticus and flexor longus digitorum.

The plantar incision is prolonged upward to the upper edge of the swell of the ankle, in order to allow of a high section of the bones. The anterior flap is made an inch long, in order to allow for the retraction which takes place consequent on making the incision while the foot is in an extended position. The bones are sawn through at a higher level than usual, in order to make a thinner and shorter stump. This reduces the difference in width between the two ankles when an artificial foot is worn, and renders the deformity less conspicuous. It also raises the stump sufficiently to allow of a cylindric joint being used instead of two side joints, thus adding to the strength and durability of the appliance. By making the section of the bones in the manner described, an ordinary amputation saw can be used in the usual manner. It is not necessary to use a small saw with a movable back as advised by Heath, nor a small narrow saw as did Pirogoff, nor a Butcher's saw as recommended by others.

The high section of the leg bones always allows the heel flaps to be brought up into position without any tension on the tendo Achillis. To avoid and remove any tension on the tendo Achillis, Pirogoff advised removing, if necessary, an additional slice from the tibia. Sedillot, Busk and Günther advised an oblique section of the bones. Sir William Ferguson ("Practical Surgery,' p. 427) advised section of the tendon for the same reason. He said: "I am so satisfied of the advantage of dividing the tendo Achillis in this operation that I recommend it as a preliminary step, to be performed much as in a case of talipes." Agnew also (Vol. II, p. 360) advised its division in case the bone did not readily come into place. Addinell Hewson, Sr. (*American Journal of the Medical Sciences*, 1864, II, p. 121), to whom we largely owe the popularization of this operation in this city and country, was accustomed to apply a broad piece of adhesive plaster to the back of the leg to prevent the calf muscles from drawing the calcaneum up. These facts are sufficient evidence that inability to approximate the sawn bones is of frequent occurrence in this operation as usually performed.

Mr. Jacobson, in his "Operative Surgery," advises fastening the calcaneum to the tibia with chromic catgut or silver wire. This I have made a practice of doing, preferring the chromic catgut. It prevents displacement and insures better and quicker union of the bones.

Removal of the foot by sawing the bones instead of disarticulating, originally suggested by Watson or Pirrie, adds greatly to the ease and quickness of the operation. A high section of the leg bones obviates the necessity of clearing the malleoli of the soft tissues for the application of the saw.

In the performance of the operation as here described, it can be done easily and quickly; the foot can be removed without undue haste in less than three minutes; no difficulty is experienced in the application of the saw; the edges of the flaps are not lacerated by it; the bone comes readily into place; and the resulting stump is the best possible for a serviceable and artistic artificial appliance.

255 S. Sixteenth Street.

Menthol Collodion for Contusions is recommended by Namé to soothe pain and accelerate recovery. After rigorous antisepsis and cleansing of the contused parts with ether, they are painted once or twice a day with a mixture of 21 to 27 grams of collodion with 6 to 8 grams of menthol.—*Journal de M. de P.*, September 12.

MORBUS COXARIUS, EXSECTION.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY JAMES W. COKENOWER, A.M., M.D.

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DES MOINES, IOWA.

It is not the purpose of this paper to catalogue the views of authors on the subject, for the consensus of evidence is strongly in favor of the osseous origin in children, while in adults synovitis is more common; and the former usually originate in osteomyelitis of the end of the bone, while the latter commences in the synovial membrane A majority of authors believe the disease to be invariably the result of a contaminated constitution and essentially strumous in its origin, while a few others claim traumatism as the cause and cite cases that have gone through the different stages of the disease, with anchylosed joint, but lived to a vigorous, robust old age; when if every case had been tubercular, or of a strumatic diathesis, this could not be. I believe many latent cases of coxarius, which might never have been manifested, have been so by traumatism and have passed through the different stages; thereby with disastrous results. I do not believe, however, the disease ever begins in the cartilages of the joint, because they contain neither blood vessels nor nerves, and necrosis occurs secondarily in the cartilages, on account of the loss of nervous and vascular supply to the tissues which they depend upon for nutrition. It is not so necessary to know the exact origin and location of the disease as it is to know the best and quickest means to overcome it from what we do know and leave the patient in the best possible condition, and to that end I will give a brief outline of the treatment which has proven most satisfactory in my hands.

The first thing to be done after immobilization of the joint and limb is to remove the pressure from the former by extension and counter extension, not in a line of the normal axis of the limb, but in the line of the deformity, augmented by lateral traction, which will better serve to take the pressure from the intra-articular membranes; which is not wholly for the purpose of remedying the deformity that may exist at that time, but to retard and prohibit, if possible, the destruction of tissue, that whatever deformity then existing may not be increased. The idea that convalescence should be interfered with simply because we wish to have no deformity, is not feasible, much less plausible, when it is easy to correct most deformities after permanent convalescence, all things being equal, and a recovery can be accomplished without any deformity it is much more preferable; but I believe if we were to give less attention to the deformity while the ravages of the disease are active and simply supplement nature in her efforts to protect we would get better results. But as it is not convenient for us to select our cases and many present themselves to us with existing deformity and acute symptoms of the disease still present it is not best to correct the deformity in such cases, for if force were employed it might exaggerate *the disease and develop* an abscess in some deep inaccessible part. After all that is possible has been done by means of extension, counter extension and lateral traction, and in my opinion one pound of the latter is worth five of the former, then comes the local treatment, which if too conservative will cause the patient to risk his life in the hope that absorption and elimination will come to the rescue; so the best way would be to treat all abscesses or sinuses by cleaning out, curetting, asepticizing and drainage; but all these are secondary to the real trouble and are but symptoms, the lesion being in the bone no matter whether this be pure or mixed tuberculosis, or staphylococcus abscess. There was no object in any operative work that did not aim to remove the focus in the bone, nor was there any local treatment that did not strive to accomplish the same, and when this fails I have no hesitancy in performing osteotomy or excision.

Report of case.—A. B., aged 9 years, had hip disease for over a year, the supposed cause being a slight injury received while recovering from an attack of typhoid fever. The case was first brought to my notice Jan. 10, 1896, and presented the usual appearance of third-stage hip disease, the leg and thigh *being well drawn up and adducted across the other thigh.* Several sinuses existed, through which the crepitous dead bone could be reached; a free incision over the trochanter major united the sinuses, which were curetted and cleaned out, and from the condition of the continuity of the joint I concluded that exsection was the proper thing to do. After preparing the field of operation, the head of the femur was luxated and sawed off at trochanter minor and several pieces of bone were removed from the acetabulum and the whole of the denuded surfaces thoroughly curetted and aseptically dressed and, for the want of anything better, the patient was put on a wooden substitute for "wire breeches," with the limb in normal position, with extension and counter traction. The patient began at once to improve and continued to do so, the wound healed nicely and in four months the boy began to walk, with the assistance of crutches. Passive motion was gradually made. In six months he dispensed with crutches and could get around as nimbly as most boys, having good motion and but one inch shortening.

I believe, as Dr. Phelps of New York said, in 1895, at Washington: "We are all endeavoring to avoid excision, yet there are cases where the demand is imperative." The percentage of deaths in exsection of the hip joint is so low and the subsequent usefulness of the limb so satisfactory that I am of the opinion that we should not hesitate to operate upon all cases that need it and never permit a limb to anchylose in any position, except that which will render it the most useful.

THE SUCCESSFUL TREATMENT OF SNAKE BITE.

BY J. G. TUTEN, M.D.

JESUP, GA.

June 1, 1896. M. O., aged 26 years, was bitten by a rattlesnake inside of gastrocnemius muscle of right leg four hours before we saw him. We found the patient suffering a great deal of pain and leg very much swollen; pulse rate 130 and very weak; respiration 48 and very much labored. The leg was very well corded in two places, one below and one above knee. I immediately made an incision two inches long at the place where the fangs entered, then a cross incision two inches long and then a circular incision, taking in the whole of the skin and muscle an inch all around where the fangs entered; then I poured in about two drachms of crude carbolic acid and about two drachms of permanganate of potash in crystals. I then gave him, hypodermically, one grain of *permanganate of* potash every hour for thirty-six hours and an ounce of alcohol every two hours for thirty six hours.

As soon as I gave the first potash hypodermically I put on an Esmarch bandage, commencing at the toe and putting it up to the wound. I put it on tight because the leg was very much swollen and I wanted to press out as much blood as possible at the opening cut by me. I also put on a bandage around the leg above the wound, and below tourniquet with a man at each end and made them keep the bandage tight so as to squeeze out all the blood possible.

June 2. At 7 A.M. the record showed: *No stools, no sleep,* urine, almost no pulse, respirations about 60. At 6 *o'clock he* began to sink. No radial pulse and only faint heart sounds in cardiac region. In state of collapse. I then gave 15 gtt. tr. digitalis every two hours and 20 m. pure undiluted alcohol in twelve or fifteen different places as fast as I could give them hypodermically, and 1 grain of permanganate of potash every hour. By 8 o'clock A.M. it looked as if he would die at any moment. He was suffering a great deal of pain and the chances were so small that I released the two tourniquets and in a short time he was resting some better, but respirations were increased to very hurried panting. I kept up potash, digitalis and pure alcohol hypodermically all day and also put a tobacco poultice over the wound, as suggested by Dr. G. W. Drawdy, but do not think it did any good. The patient remained in this collapsed condition until about 7 o'clock on the morning of June 3.

June 3. At 7 A.M. the radial pulse began to reappear, although but very small and thready, but it grew steadily stronger until it could be counted by 6 P.M., when it beat 130 times to the minute. Respirations began to get slower at 7 A.M. and gradually grew slower, until by the night of June 3 they were about 30 to the minute. At 9 A.M. we gave a large enema, when the bowels moved freely; continued the potash every two hours and digitalis fifteen drops every four hours. Digitalis was given by the mouth, also one ounce of alcohol four or five times every twenty-four hours. The region around the bite on the leg began to bleb up and filled up with dark sanguinous fluid, while the skin began to look gangrenous.

June 4. The record showed: Milk diet, two stools, some sleep, free urine, pulse 120, temperature 100 degrees, respirations 25. The potash was discontinued but alcohol every four hours, alternating with the above dose of digitalis every four hours was continued. He continued to grow stronger. The leg around the bite continued to get darker, embracing the inside of the calf and whole calf of leg from two inches below knee on inside to one inch below and around ankle. Foot swollen but dark in spots, but on the outside of the calf there extended a healthy section of skin about two inches wide in the lower one-third of the leg, which grew wider from there, when at the ankle the whole foot except around the inside of the ankle looked somewhat healthy.

June 5. Milk diet, stools twice, some sleep, free urine, pulse 110, temperature 99.5 degrees, respirations 24, alcohol every 4 hours, digitalis every four hours. The leg in the above described place was still darker, in fact was black. The line of demarcation was formed, extending from two inches below the knee down just to inside of the shinbone down to and one inch below the ankle, coming back up one-half inch behind the ankle, and when one and one-half inches above ankle behind, it began to spread wider, taking in the whole calf, and only lacking about two inches from meeting around on the outside of the leg. The extreme length was thirteen and one half inches and breadth eight and one-half inches. *This* whole surface afterward sloughed off.

June 6. Milk diet, several stools, some sleep, urine very free, pulse 108, temperature 99, respirations 23, alcohol and digitalis as above. The gangrenous parts began to slough off.

June 7. Milk diet, several stools, some sleep, free urine, pulse 108, temperature 99 degrees, respirations 23; alcohol and digitalis continued as above; the gangrenous parts still sloughing.

June 8. Milk diet, stools very free, some sleep, free urine, pulse 108, temperature 99 degrees, respirations 32; alcohol and digitalis as above; sloughing very free all around where the fangs entered, the bite being in the center of the slough. Carbolized sweet oil is being used on the slough, strength 1 to 32.

June 10. Milk diet, stools very free, some sleep, free urine, pulse 108, temperature 99 degrees, respirations 22; digitalis every four hours as a stimulant, alcohol being discarded from this date; 20 grains sub. nit. bis. for the watery diarrhea every three hours; slough almost complete and dressed with carbolized sweet oil, 1 to 32.

June 12. Milk diet stools very free, some sleep, free urine, pulse 108, temperature 98.5 degrees, respiration 21; the bismuth was continued and lead and opium pills added, opium 1 gr. and lead ½ gr. to pill, one every four hours alternating with bismuth. This controlled the bowels from this on, *i. e.*, while taking pills and bismuth, but as soon as left off the bowels would run again, so had to keep it up for about three weeks longer. Slough complete and dressed twice daily with 1 to 32 carbolized sweet oil.

June 14. Milk, grist and butter, three or four stools, seven hours sleep, free urine, pulse 104, temperature 98.5 degrees, respirations 20; digitalis, bismuth, lead and pills (opium); leg dressed twice daily with carbolized solution.

June 16. Regular diet, two to three stools, eight hours sleep, free urine, pulse 100, temperature 98.5 degrees, respirations 20; treatment continued as above.

June 18. Regular diet, two to three stools, eight hours sleep, free urine, pulse 100, temperature 98.5, respirations 20; treatment as above.

June 21. Regular diet, one to two stools, eight hours sleep, free urine, pulse 100, temperature 98.5, respirations 20; treatment as above. All around edges of slough beginning to granulate and healing from all sides. Slough only took off skin and fasciæ and part of muscle in only one place, and that was directly underneath where the fangs entered.

June 24. Regular diet, one to two stools, eight hours sleep, free urine, pulse 100, temperature 98.5 degress, respirations 20; treatment continued as above and slough healing rapidly. We wanted to skin graft, but the patient would not agree to it. Where we used pure alcohol hypodermically each place on the arms and leg has sloughed a place as large as a silver dollar. These sloughs are dressed same as leg.

June 28. Regular diet, one to two stools, eight hours sleep, free urine, pulse 100, temperature 98.5 degrees, respirations 20; treatment same as above; all sloughs healing rapidly.

July 2. Regular diet, one to two stools, eight hours sleep, free urine, pulse 100, temperature 98.5 degrees, respirations 19; treatment as above; sloughs healing rapidly.

July 9. Regular diet, one to two stools, eight hours sleep, free urine, pulse 100, temperature 98.5 degrees, respirations 19; treatment same as above; sloughs healing rapidly.

July 17. Regular diet, one to two stools, eight hours sleep, free urine, pulse 100, temperature 98.5 degrees, respirations 18; treatment same as above; slough healing rapidly. I never saw him again until August 26, when slough was more than half healed, it then being eight inches long and three and one-half inches wide. He was having intermittent fever. I gave quinin and arsenic, which broke it up at once.

March 5, 1897. The first time I have seen the patient since last August. There is still a sore one-half inch wide and three inches long, with foot swollen and leg flexed toward thigh. I advised silk elastic stocking to relieve the swelling caused from varicose veins, but the patient would not consent.

April 25. Sore same size, foot swollen, leg flexed. He consented to use silk stocking, which was put on immediately.

May 15. Raw surface almost well, swelling in foot gone and leg not near so much flexed on thigh.

I believe the permanganate of potash to be the sheet anchor, combined with alcohol and digitalis. I also know that free incisions and free bleeding from bitten parts are very necessary, and the tourniquet must never be forgotten. I would say tourniquet first, free incisions second, permanganate of potash third, Esmarch's bandage fourth, alcohol and digitalis last.

THE PHYSIOLOGY AND THERAPEUTICS OF THE THYROID GLAND AND ITS CONGENERS.

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(Awarded the L. C. P. Freer medal, Rush Medical College, 1897.)

From the chemic and pathologic laboratories of Rush Medical College.

The use of the thyroid gland as a remedial agent, while one of the latest advances in therapeutics, is at the same time one of the most striking examples of the success of rational and experimental methods in therapeutics that can be cited. Its general use began but six years ago, yet within that time it has made its way to the highest rank assigned to therapeutic materials—the specific drugs. That the thyroid extract is as surely a specific in its own field as are quinin, iron and the iodids in theirs, can not be doubted when we consider the manner in which the cretin, after receiving a few tablets, shakes off its lethargy of mind and loses its repulsiveness of figure to become an actually different being; or the way the characteristic symptoms of myxedema vanish under this form of treatment

In the ascendancy of the thyroid extract to its deserved position as a therapeutic resource it has been obliged to drag with it many other preparations which, although older in their conception, are based on entirely different grounds (the doctrine of *similia similibus*, in fact), and which association has been one of the greatest obstacles to its general use. This refers to the host of preparations commonly classed as "the animal extracts," including such articles as cerebrin, testin, ovarin. nephrin, etc., the list of one London firm containing twenty-one such preparations, including practically every organ and tissue in the body. All of them owe their presence on the market chiefly to the phenomenal success of the thyroid extract, and yet none of them, excepting possibly the extract of bone marrow and of the thymus gland, can show well authenticated clinical results that entitle them to existence. They originated with the exploded theory of Brown-Séquard that impotence could be cured by the ingestion of testicles, and would now be merely historic but for the great success of a drug belonging to the same class by the fact of its being an animal product.

The use of the thyroid gland in medicine was gradually acquired and grew step by step with our knowledge of its physiology and pathology. Up to the year 1883 nothing was known of the importance of the thyroid gland in the animal economy. Previous to that time its function was set down in the textbooks as rounding out the neck, having some influence on the voice or being concerned in the production of sleep. To be sure, in 1859 Schiff[1] had reported that extirpation of the thyroid gland in dogs resulted fatally, but this fact seemed to be entirely overlooked until, in 1883, J. and A. Reverdin described the changes occurring after the removal of the thyroid gland for goiter, and identified them with the symptoms of myxedema. Previous to that time (1878), Ord had discovered that this disease bore a relation to the thyroid gland. Kocher soon followed the Reverdins with reports of many cases of operative myxedema, observing that the symptoms were most marked in young subjects. These reports caused Schiff to repeat his previous experiments, and in 1884 he reported that extirpation of the thyroid gland was not only followed by death preceded by spasms, convulsions, etc., but that this result was entirely prevented if the extirpated thyroid were implanted into the skin or peritoneal cavity of the animal. Horsley followed with experiments on monkeys, which, living longer than did the carnivora, developed a typical myxedematous condition. Later, von Eiselberg showed experimentally the relation of the thyroid to cretinism by removing the gland from newborn animals, which then developed a cretinoid condition.

The results of the implantation experiments of Schiff naturally led to the adoption of analogous procedures in human beings, and Bircher, in 1890, successfully implanted a human thyroid twice in a woman with cachexia strumipriva. At about the same time Horsley suggested the propriety of implanting the sheep's thyroid gland in cases of myxedema and cretinism. Bettencourt and Serrano, following this plan, implanted one-half of a sheep's thyroid in the inframammary region on each side of a woman suffering with myxedema, and noticed an improvement within twenty-four hours. As this improvement took place before vascularization could have begun, they suggested that it might be due to absorption of the juices escaping from the gland.

Working on this basis Murray, in the same year, made the announcement that glycerin extracts of the gland, which were rendered aseptic by the addition of carbolic acid, when injected subcutaneously, produced marvelous results in a case of myxedema. From this report practically dates the therapeutic use of the thyroid gland, for this method was immediately adopted universally, and soon great numbers of cases corroborating Murray's results were reported. However, the objections to the use of the extract hypodermatically were many, and in 1892 Mackenzie and Fox independently reported that they had obtained fully as good results by administration either of the glycerin extract or the thyroid gland itself by mouth.

From its history, therefore, it is evident that the use of the thyroid gland has in every instance been based upon reliable results of scientific research, and must be considered as entirely separate from the bulk of the "animal extracts" which have no such ground for their use. The marvelous changes produced in myxedema have caused the thyroid extract to be used in nearly every skin lesion imaginable, but these applications have been mainly in the line of experiment and have in most instances been discontinued; and the same can be said of its administration in nervous diseases. But the over-wide use of every drug with a positive but limited utility is invariable, and can in no wise detract from its reputation in its own proper fields.

Before describing the physiology and therapeutic uses of the thyroid it is necessary first to consider its structure and chemic composition, since on these depends much of our knowledge of the organ, and it is along the lines of chemistry that the most important discoveries have been made.

Anatomy.—The thyroid gland consists of two lateral lobes, generally connected by an isthmus which lies across the trachea from the second to the fourth ring, the lateral lobes extending above and slightly below this level on each side. It is attached behind to the larynx and trachea by tough fibrous tissue, and in front to the depressores hyoides muscles. The isthmus is sometimes wanting—Marshall found it present in 90 per cent. of a series of sixty cases, and the writer in a series of the same size has found it present fifty-two times, or 87 per cent. In one of these cases the isthmus existed as an isolated, cherry-sized mass between the two lobes, but entirely distinct from them, and with a separate pyramid connecting it with the thyroid cartilage. This mass was in structure identical with the rest of the gland and, as will be seen later, very nicely shows the manner of development of the thyroid. The isthmus varied greatly in size, sometimes as thick and large as the lateral lobes, at others but a thin cord of glandular tissue.

Frequently a conical process, called the "pyramid of Lalouette," extends upward to be attached to the hyoid bone, thyroid cartilage, or thyro-hyoid membrane. This may arise from the isthmus or from either or both lateral lobes, its shape and size also presenting wide variations. Its frequency varies greatly according to different observers. Marshall found it in twenty-six out of sixty cases or 43 per cent.; Streckeisen in 101 out of 153 cases; Zoja in 109 out of 147 or 74 per cent.; while the writer, by careful dissection of sixty thyroids, found the pyramid thirty-six times or 60 per cent. In ten cases it arose from the right lobe, in twelve from the left, in eight from the isthmus, in five from both lobes, and in one from the left lobe and from the isthmus. In twenty-one cases it was attached to the thyroid cartilage or thyro-hyoid membrane, and to the hyoid bone in fifteen. In one case the pyramid was split up into a chain of isolated masses of gland tissue, which would have to be classified as accessory thyroids. In structure the pyramid generally consists of regular gland tissue near its base, but the colloid material disappears as it ascends, and the vesicles become mere groups of epithelial cells which are gradually replaced by fibrous and muscular tissue, until, near the upper part of the pyramid, they disappear entirely. If the muscle fibers are numerous the upper part of the pyramid is considered as a separate muscle, and called the levator glandulæ thyroidæ. The pyramids are considered by Bland Sutton as representing part of the orignal thyro-glossal duct.

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[1] The authors and papers referred to will be found grouped alphabetically at the end of this article.

Accessory thyroids are frequently formed by detachment of small portions of the gland during its embryonic history, often by division of the pyramidal processes as in the case described. The accessory thyroids may be found anywhere between the arch of the aorta, where they are especially numerous, and the thyroid bone. Cases have been reported where they were found in the substance of the os hyoides itself.

The para-thyroids are two small bodies, first described by Sandstrom, which lie close to the lateral lobes. Kohn has described them as consisting of two pairs, an "outer epithelial body" which lies on the lateral surface, and the "inner epithelial body" on the mesial surface of each lateral lobe.

The weight of the thyroid would seem to vary greatly in different countries; since most German authors (Virchow, Rauber) place it at from 30 to 60 grams; Schäfer in England gives it as 30 to 40 grams, while the average weight of sixty glands removed from residents of this city was but 22 grams. The gland atrophies greatly in old age. In this series the gland in persons over 45 years of age was but 16 gms., while in people between 20 and 45 years it averaged 25 gms.

The thyroid is developed from two sources. 1. A median diverticulum of the pharyngeal hypoblast pushes its way downward, and forms a tube which is connected to the base of the tongue. Subsequently it becomes solid, its upper end forming the foramen cecum, from its lower end developing the isthmus, part of the lateral lobes, the pyramids of Lalouette (when they are present), and occasionally accessory thyroids. It sometimes happens that this structure remains in the adult as the "ductus lingualis." 2. From the fourth visceral cleft on each side spring pouches which pass in front of the larynx and unite with the lower end of the median diverticulum, ultimately forming the outer part of the lateral lobes.

The manner of formation of the thyroid gland explains completely its great variations in shape, and especially is this variation permitted by the fact that unlike most of the parenchymatous organs the location of its secreting structures bears no relation to any fixed outlet or duct, which arrangement must necessitate a certain limit to irregularity.

At first the gland merely consists of rod-like columns of epithelial cells, resulting from the division and branching of its original rudiments. As colloid material is formed, the walls are pushed aside, and at some time in the period of development the original continuous tubes become divided up into vesicles. The colloid formation begins in intra-uterine life, but the vesicles are not generally filled until some time after birth, section of the gland of a new-born child showing but few of the acini containing colloid.

In the adult the vesicles are found to be of many sizes, some distended with colloid so that their epithelium is flattened out until it resembles endothelium, others containing not a trace of colloid and consisting merely of tubes lined with columnar epithelium, which may in case of necessity become filled with colloid and converted into true follicles. They are separated by a stroma derived from the capsule of the gland, which sends in trabeculæ that break up into finer and finer divisions until they ultimately separate the individual follicles, and also form their basement membrane.

The epithelium of the thyroid is divided in three classes, which are described by Bozzi as follows:

1. Chief cells (*Hauptzellen*).—These are the most numerous. They contain bodies strongly refractive and apparently identical with the colloid material, which can be best seen when the cell is in unusual activity, as when a large portion of the gland has been removed. Many still finer bodies can be seen, which Bozzi thinks are incompletely formed colloid, although Babers and others have considered them as pigment from destroyed red blood corpuscles. Fat globules and protoplasm granules are also present. There seems to be no distinct membrane surrounding the cells, which blend with one another, their outer ends resting on the basement membrane, the inner ends lying in the colloid substance.

2. Colloid cells.—Small, low cells found in varying numbers in the different follicles. They lie scattered in groups between the chief cells, from which they are derived. They possess a more homogeneous protoplasm which is colored more intensely, somewhat resembling the colloid substance. Some preserve the form of the chief cells, others are round or oval, and the protoplasm almost destroyed or collected in a ring about the central mass which resembles colloid substance and contains characteristic vacuoles, the nucleus being pushed to one side. They often group together so as to resemble follicles, and sometimes free colloid substance is found between the cells. It is probable that the colloid cells of the first class may again become *hauptzellen*; but those of the second class whose nucleus and protoplasm are completely destroyed, probably can not. It is probable they are formed by an accumulation of colloid in the cell which can not escape because of some alteration in the cell membrane.

3. Cells undergoing retrograde metamorphosis.—These do not show accumulations of colloid. The alterations begin in the nucleus, which loses its power to retain stains, while its outline becomes less and less distinct. In the protoplasm the granules become smaller, the drops of colloid do not run together but remain long separate. The cell outline remains distinct until after all traces of the cell are lost. These forms are found where a fusion between adjacent follicles occurs and seem to be due to shutting off of nourishment.

Embryonal rests are found, especially under the capsule, but often in the gland substance itself. The cells lie without order in a connective tissue stroma, and have large, chromatin-rich nuclei and little protoplasm. Bozzi has found no alterations in embryonal rests left in small stumps of gland tissue remaining after removing the greater part of the gland, nor did their presence prevent the death of the animal.

The accessory thyroids are identical in structure with the thyroid gland itself, and are capable of hypertrophying and performing the functions of that organ when it is removed, if they be sufficient in their total volume.

The para-thyroids are composed of columns of epithelial cells, with large, deeply staining nuclei, and a rather small amount of protoplasm. They are packed closely together, separated by a stroma composed chiefly of small blood vessels, the connective tissue being very scanty. They closely resemble the carotid glands in structure, but the thyroid not at all, and it is considered by Prenant that they are derived from the fourth inner branchial cleft from which the thymus and the lateral rudiments of the thyroid are also derived. Gley believed that they represented embryonic rudiments of the thyroid and were capable of hypertrophying under necessity to take up the function of gland, and even to develop into the same structure, but these ideas have not received confirmation from more recent observers.

The thyroid receives a rich blood supply from the superior and inferior thyroid arteries, which, following the trabeculæ, break up into a meshwork of capillaries surrounding the vesicles. These capillaries in some places even penetrate the basement membrane and come in direct contact with the secreting cells. The vascularity is so great that when an active dilatation of its vessels occurs the gland increases noticeably in size, and in this condition a distinct pulsation can be felt throughout the gland. Some authors have described collections of a colloid-like substance in the veins of the gland, and suggested that this was the method by which the gland disposed of its secretion, *i.e.*, directly into the circulation. However, these appearances are probably due to accidental extravasations occurring in the handling of the gland.

There seems to be no room for doubt that the excretion of the colloid material occurs through the lymph channels, which are very numerous in the thyroid and lie in direct contact with the basement membrane of the vesicles, sometimes even with cells themselves. In their lumen, the colloid is constantly to be found, presenting all the microscopic characteristics of this material. The routes by which it reached the lumen have been for a long time in question, but Bozzi, after a study of glands thrown into a hyperactive condition, has come to the conclusion that there are three ways in which this is accomplished. He removed a large part of the thyroid gland from dogs, and then studied the stumps left in the animal for several days, which were in a state of compensatory activity, and observed the colloid material to escape as follows:

1. Sometimes the epithelium directly over a lymph vessel, where the tension is greatest because of the lack of support from behind, becomes lower and its nucleus grows smaller. The connective tissue forming the basement membrane atrophies and disappears, so that the epithelial cells become poorly nourished until they can no longer stand the intra-vesicular tension, when the colloid breaks out into the lymph channel.

2. The epithelium may become very low but without change in the nucleus, and the cells over a lymph vessel separate until only the thin basement membrane is left between it and the contents of the follicle. This membrane soon ruptures and the colloid reaches the lymph stream, in this case without loss of epithelial elements.

3. The epithelial cells may play a passive role, the colloid material being driven by pressure between the cells until it reaches the basement membrane, through which it makes its way to be taken up by the lymph capillaries.

Probably the follicle discharges only the excess of its contents when the neighboring follicles by their elasticity crowd upon its walls so that the opening becomes closed, this process being repeated whenever the intra-vesicular tension exceeds the resistance of the walls.

The contents of the follicles, even in the same gland, vary greatly. In the colloid substance itself are generally found vacuoles, of which most are probably the result of shrinkage in the hardening fluids, although in some cases they may be due to the dropping out of the contents of the follicles, at all events they are probably not present in the follicles during life. Often the refraction of the central portion of the colloid material, as well as its stain-retaining capacity, may differ from that of the periphery, so that concentric zones are formed, not unlike the corpora amylacea of the prostate in appearance. Imbedded in the colloid, one may also find epithelial cells in different stages of degeneration, especially in follicles that have united with their neighbors by destruction of the septum between them; crystals of varying size and forms; fat globules; vacuoles containing a mass of fragments staining with hematoxylin, more closely resembling minute threads of mucin than anything else and which may be derived from the breaking down of epithelial cells, or even of the colloid itself; and in very many cases numbers of red blood corpuscles in all stages of degeneration, this appearance having given rise to the theory that the thyroid was an organ concerned in the destruction of red blood corpuscles. The colloid substance itself stains red with von Gieson's acid fuchsin stain, which is said to be characteristic of this material. It also stains yellow with picric acid, and a faint pink with eosin.

The glandular structure of the thyroid is capable of great hypertrophy, which is generally compensatory, although similar changes may occur in certain forms of goiter. Halsted has performed very many experiments to ascertain the nature of this hypertrophy. He finds that it does not generally occur, in dogs at least, until after more than one-half of the gland has been removed. The vesicles then lose their circular outline, become elongated and branched, or else the outline of the walls become very irregular, with papillary processes separating sacculated recesses. The colloid material at first becomes vacuolated and shrinks, so that the walls of the vesicle are not in their usual distended condition. It gradually becomes less solid and the quantity diminishes until many alveoli contain none at all. Apparently, from lack of tension, the epithelial cells become taller and more columnar, until, combined with the changes in the outline of the walls, they may nearly fill in the entire lumen. While pursuing these studies he often observed parathyroid bodies, imbedded in hypertrophic portions of the gland, which seemed in no way affected.

Chemistry.—Since the thyroid is an organ of internal secretion it was naturally believed that by analysis of the gland itself could be found the substances produced by its secreting cells, and which were the agents by which it produced its effects. It has long been known that it contains considerable quantities of extractives, chief among them being xanthin, hypoxanthin, kreatin, kreatinin and paralactic acid, which indicate a high degree of metabolic activity, but which could not well be the cause of its specific action. Many attempts to isolate this "active principle" were made with the idea that it was a ferment, and White and Davies obtained in this way a body that seemed to have some physiologic activity. Gourlay, working along the same lines, failed to find a ferment that would dissolve mucin, such as had been thought must be produced by the thyroid, but succeeded in isolating a nucleo-albumin which produced an intravascular clotting and which he believed was contained in the colloid. Bubnow extracted three different forms of proteid, one of them apparently a globulin, which was later isolated by Notkin, who believed that it was the toxic product of general metabolism which underwent decomposition in the thyroid gland, through the action of an enzyme therein produced.

Sigmund Fraenkel reported in the latter part of 1895, that he had isolated the active constituent in the form of a crystalline, alkaloid-like body, apparently belonging to the guanidin series and having the empirical formula $C_6H_{11}N_3O_5$. Drechsel subsequently described a body identical with that of Fraenkel which has been called "thyreo-antitoxin," and another similar to it. This thyreo-antitoxin, Fraenkel describes as a hygroscopic, crystalline substance, soluble in water and alcohol, the solution being neutral or slightly alkaline, and giving the reactions for alkaloids. Injected into animals it failed to produce an increased blood pressure but increased the pulse rate, and produced an improvement in thyroidectomized animals, which was however but temporary. While the activity of this substance can not as yet be absolutely denied, still many other observers have failed to verify Fraenkel's results.

This report of Fraenkel, which at another time would have probably attracted more attention, was eclipsed early in 1896 by the announcement of Baumann (the Freiburg chemist who has just passed away while in the renown of his greatest achievement), that he had found in the thyroid gland, not only of man but also of various animals, an amorphous body containing a large amount of iodin, and which possesses all the physiologic characteristics of the gland. Moreover, on removal of this substance the residue of the gland retained no activity whatever. This substance he named "thyroiodin."

Thyroiodin, according to Baumann, is a brownish colored, amorphous compound, which upon heating is decomposed with considerable swelling and with an odor of pyridin bases. It is almost insoluble in water; in alcohol it dissolves with difficulty. In dilute alkalies it is readily soluble and from such solutions is again precipitated by acids. Concentrated sodium hydroxid, upon heating, brings about gradual decomposition. It manifests no proteid reactions, although it is constantly found to contain phosphoric acid in organic combination, which is probably not part of the thyroiodin molecule, since it is present in as large proportion in impure as in pure thyroiodin. By analysis he ascertained that in the purest obtainable thyroiodin there was 9.3 per cent of iodin, which is probably below the true proportion, and he was able to obtain the iodin itself in crystalline form from this substance.

The methods used for its extraction depend upon the fact that it is an extremely stable body, resisting the action of boiling 10 per cent. sulphuric acid for three days, and being entirely unaffected by digestive ferments. To isolate the thyroiodin the finely chopped gland is placed in about four times its weight of 10 per cent. sulphuric acid in a flask connected with an inverted condenser, and boiled for about eight hours. On cooling the mixture it will be found that, except for the fat floating on the surface, all of the material but a brownish precipitate has gone into solution. This precipitate is the thyroiodin, although yet in an impure form. After skimming off the fat and filtering, the residue on the filter paper may be purified by a succession of extractions with boiling 85 per cent. alcohol. The filtrate also contains a little of the thyroiodin which can be obtained by nearly neutralizing with barium carbonate, filtering, and concentrating the filtrate, when most of the contained thyroiodin will be precipitated on cooling. Thyroiodin may also be obtained by acting upon the gland with an artificial gastric juice, keeping the mixture at 40 degrees C. for two days, when the thyroiodin will be left alone as a precipitate. It can then be purified as above.

The iodin was believed by Baumann to exist in combination with two proteids, the larger proportion being in combination with an albumin, the smaller with a globulin which is apparently identical with the thyreo-globulin of Bubnow and Notkin.

At the time Baumann made his announcement, Hutchinson, in England, was studying the colloid substance from a chemical standpoint, and had separated by gastric digestion a non-proteid substance which represented about 3 per cent., of the pure colloid. On the appearance of Baumann's report he investigated this substance further and found it to be thyroiodin, and moreover he was able to show that it was all contained in the colloid substance as it exists in the acini of the gland, thereby establishing that the colloid is the true secretion of the thyroid gland and contained its active constituents. He found that it contained all of the phosphorus of the colloid and most of the iodin, a small amount of the latter existing, as Baumann had believed, in some other form. As a result of his work Hutchinson concluded that the thyroid gland contained two proteids, one a nucleo-albumin which is present in small amounts, probably in the cells lining the acini; the other the colloid which contains 15.5 per cent. of nitrogen and 0.045 per cent. of phosphorus. The colloid is not allied to mucin, nor can nuclein bases or para-nuclein be obtained from it. It can be split up into two parts; a non-proteid and a proteid part, of which the former is the thyroiodin, while the latter contains a smaller amount of iodin and possesses less physiologic activity. The colloid is the only active constituent of the gland, and the extractives, which are quite abundant, have no specific action. Hutchinson believes the thyroiodin to consist of a globulin loosely united to a non-proteid body containing sulphur, phosphorus and iodin.

While Baumann was studying the chemic nature of the thyroiodin, Roos in the same laboratory subjected it to physiologic and therapeutic tests which showed it to be beyond doubt the active principle of the gland. Three or four one-milligram doses of thyroiodin showed a very decided action on goiter, which unquestionably could not have been the result of the one-tenth milligram of iodin contained therein acting simply as iodin, but must have been due to the specific organic iodin compound acting as a compound body. It also produced all the effects ascribed to the ordinary extracts or to the gland itself, such as the toxic effects of large doses, the specific action on myxedema, and the influence on metabolism in both man and the lower animals. Moreover, Roos believed that it exercised its power more quickly than do extracts of the gland or the fresh gland when given as such, ascribing this to the gradual splitting off of the thyroiodin during digestion and the transformation of part of it into inactive substances, in contrast to the immediate absorption of the free thyroiodin. In his experiments Roos not only proved the activity of the thyroiodin, but proved that any preparations from the gland, so made that it contained none of this substance, produced no effect on goiters that were readily influenced by pure thyroiodin. He also found that its activity was destroyed by boiling with strong alkalies, and was not affected by solution in weak alkalies in the cold, nor by the action of digestive fluids.

After having demonstrated the presence of thyroiodin as a constant occurrence in the thyroid gland of both man and the lower animals, Baumann began to determine the quantity normally present in the human gland. These investigations led to very interesting and suggestive results.

His first determinations were of glands obtained in Freiburg. from natives of that vicinity. In a series of twenty-six glands he found the average dry weight to be 8.20 grams, containing in each gram 0.33 mg. of iodin or in all 2.5 mg. of iodin to each gland. Since the iodin represents 10 per cent. of the weight of the thoroiodin, the average amount of thyroiodin was 25 mg. The amount in different glands varied, in some being little more than a trace, while in four the amount was over 10 mg. and they were not included in the list. These cases were:

1. Woman dying of tuberculosis whose gland weighed 9.3 grams and contained 35.3 mg. of iodin. 2. Woman dying from carcinoma of uterus, weight of gland 6.5 grams and contained 22.9 mg. of iodin. 3. Woman, heart failure, gland weighed 10.7 grams and contained 14.9 mg. of iodin. 4. Man, heart failure, weight of gland 12 grams, iodin content 10.8 mg.

Since Baumann has proved that administration of iodin and iodin-containing foods (fish, etc.) to dogs greatly increased the amount of iodin in their thyroid glands, the possibility of these high results being due to administration of iodin previous to the death of the individuals was suggested, and in the second of these cases this was true, the woman having had iodoform dressings applied for some weeks, but in the other cases there was no evidence of iodin administration.

As is well known. Freiburg is in a district where goiter is endemic, and Baumann considered that possibly the amount of iodin might be different in regions where this disease is not prevalent, especially since he had found that goitrous glands contain but little iodin in proportion to their weight. That this theory is well founded is shown by the results of the analysis of thirty glands obtained from Hamburg, where goiter is of comparative rarity. These glands averaged 4.6 grams in weight, each gram containing 0.83 mg. of iodin, the total amount being 3.83 mg. in each gland. This is about one-half more per gland than was obtained in the Freiburg glands, whereas the weight of each gland was about one-half that of the latter. Here also were excluded four cases in which were found over 10 mg. of iodin, in only one of which was there a history of administration of iodin preparation.

Eleven glands from Berlin, where goiter is not endemic, were analyzed. They were mostly obtained from people meeting sudden death from accident or suicide. The average weight was 7.4 grams, each gram containing 0.9 mg. of iodin, giving a total of 6.6 mg. of iodin to each gland. Here the weight of the gland was nearly as high as in those obtained from Freiburg, but the amount of iodin is triple that of the latter, and double that obtained in the Hamburg glands. But it is to be considered that these glands are from people in full strength and middle age who met sudden death, while the results seem to show that the amount diminishes in old age and wasting diseases; however they contain three times as much iodin as do the glands from Freiburg suicides. In this series two cases were excluded; one a goitrous gland weighing 28.2 grams and containing 14.2 mg. of iodin; the other contained 22.7 mg. of iodin to only 5.4 grams of gland substance, an average to each gram of 4.2 mg.

The thyroid glands of children show, even more clearly, the variations in the iodin content in these three localities. In twelve Freiburg children under one and one-half years of age in only three glands was a trace of iodin found, amounting from 0.07 mg. to 0.18 mg., while the average weight of the glands was 1.5 grams.

The average weight of the glands from six Hamburg children was but 0.36 gram, yet five of them contained iodin, the average amount being 0.26 mg. per gland, while in the sixth a trace of iodin could be detected.

The glands of the six Berlin children averaged in weight 0.4 grams each, and five of them contained iodin, averaging 0.4 mg. to each gland.

So it follows that in Freiburg where goiter is endemic the weight of the gland is highest and the amount of iodin the lowest, in comparison with Berlin and Hamburg where it is not endemic. Therefore it is probable that there is some relation between the prevalence of goiter and the amount of iodin which is ingested by the inhabitants of the various localities, apparently an inverse ratio. This iodin may be contained in the drinking water, and in support of this idea is the popular belief that goiter depends somehow on the water supply, which has led to the theory maintained by Klebs and others that it is due to flagellata, bacteria, or other parasites residing in the water. Moreover, chemic analysis seems to indicate that the drinking water in goitrous districts really does contain less iodin than does that in other localities. The food may also be the source of the iodin, for many plants contain this element in their ashes, notably the beet root, and the same can probably be said of fish. It is a well known fact that thyroidectomized animals live much longer when fed upon vegetables than when given a pure flesh diet and the iodin content of the gland diminishes under the last regimen, either because a flesh diet prevents an accumulation of the thyroiodin, or else by its influence on metabolism it requires an increased expenditure. Again much of the iodin may be obtained from the the air, since the sea air as well as sea water contains this substance, and goiter occurs much more in the inland districts, especially when shut off from the sea winds by mountain ranges, than on the coast, as is well shown by the maps illustrating the relative distribution of goiter.

Since Baumann's work throws so much light on the relation of thyroiodin and goiter to locality, it seemed to the writer that it would be extremely interesting to determine the amount of iodin contained in the glands of residents of Chicago and of other parts of this country. As is well known, goiter can not be said to be truly endemic in any part of the United States, although Osler believes that it is endemic in the limestone region of eastern Ontario, where 288 cases were observed in a hospital population of 600, and the condition was noticeable even in the lower animals of the vicinity. Many writers, early in this century, state that goiter is endemic in the valleys of Vermont and other regions, but while this may have been true at that time it is not so now. The other thyroid diseases, *i.e.*, myxedema and cretinism, are also very uncommon, but exophthalmic goiter would seem to be slightly more prevalent. That this relative immunity from goiter in all parts of a country which contains almost every possible condition of climate, soil, water and food supply, elevation and distance from the seacoast, is due to a universally favorable condition as regards iodin supply, seems scarcely possible. It is much more likely that it is due to the migratory nature of our people and the intermarriage of people from different districts, which prevents the changes produced by long continued lack of iodin in sufficient quantities from adding up from year to year and from generation to generation, resulting in a goitrous diathesis. Possibly when the country is more thickly inhabited and its people have settled down this disease will begin to appear in certain regions, as is now observed in the older countries of Europe.

In order to find out what information could be obtained on these points by chemic analyses, it was decided to determine the iodin content of the thyroid glands of people who had spent at least a considerable part of their lives in Chicago or its immediate vicinity, and to compare them with the results obtained by analysis of the glands of residents of the different parts of the country, as Baumann had done.

For this purpose there were available the glands removed in the autopsies in the Cook County Hospital, which were especially desirable since history sheets giving information as to previous administration of iodin as well as the history of the subjects were usually obtainable. Through the courtesy of Professor Hektoen, Dr. Edwards and Dr. LeCount a large number were secured. Through the kindness of the following gentlemen glands from their respective cities have either been secured or promised: Prof. W. H. Welch of Baltimore, Prof. T. Mitchell Prudden of New York, Prof. W. T. Councilman of Boston, Professor Adami of Montreal, Dr. H. W. Cattell of Philadelphia, Dr. J. T. Eskridge of Denver, and Professor Smith of Galveston.

The glands to be examined were kept in alcohol until used, which, on account of the comparative insolubility of thyroiodin in cold alcohol, together with the immediate coagulation of the tissues, can be safely done. Analysis of the alcohol in which twenty glands had been kept for two months, showed that the loss by this means was at the most not over one-thirtieth of the total amount of the iodin contained in the glands. After this dehydration by the alcohol they can be quickly dried in the drying oven, if they first be cut up into small pieces. They are then weighed, and for purposes of analysis are ground into a fine powder in an ordinary drug-mill, an apparatus that can be easily and completely cleaned being necessary so that one gland does not become mixed with portions of the gland that was previously ground.

After considering the methods available for the estimation of iodin it was found best to adopt the colorimetric method as used by Baumann, with certain slight modifications which the writer found necessary to obtain the most accurate results. The analysis is conducted as follows:

One gram of the dried and powdered gland is placed in a covered silver crucible of 50 c.c. capacity. To this is added about 2 or 3 grams of powdered sodium hydroxid and enough water to make a thick paste. The mixture is heated cautiously, with the cover of the crucible pushed to one side to leave a crack for the escape of steam. Great care is necessary at this stage of the process, to prevent the mixture boiling too high, a catastrophe sometimes very difficult to avoid. When all the water is driven off, the cover is placed completely on, and with the least possible amount of heat the residue is carbonized. When combustible gases have ceased to escape the flame is removed and the crucible and its contents are allowed to cool slightly. Then the least possible amount of finely powdered potassium nitrate necessary to produce complete oxidation of the carbon, generally about 1 gram, is added, and after replacing the cover this is accomplished with as little heat as possible. By heating with the sodium hydroxid, the thyroiodin is decomposed and sodium iodid formed, the excess of the alkali preventing the formation of insoluble silver iodid, and also of volatile compounds of iodin.

After the residue has been cooled it is dissolved and the solution is filtered into an Ehrlenmeyer flask. This step of the process may be hastened by the use of the filter pump. To the solution is added 20 per cent. sulphuric acid until it is acidified, much carbon dioxid being given off, owing to the formation of sodium carbonate, during the fusion. On account of the presence of nitrites in the solution, as soon as the fluid becomes acid the iodin is liberated, generally in sufficient quantity to give 50 c.c of fluid about the color of normal urine. To the fluid is now added 10 c.c. of chloroform and the mixture thoroughly shaken, the chloroform settling out with the characteristic pinkish color always produced by small quantities of free iodin. The contents of the flask are now poured into one of a pair of matched cylinders, which should not be over one inch in diameter nor less than six inches in height. Into the other cylinder is poured 10 c.c. of chloroform, 15 c.c. of a saturated solution of sodium sulphate, 15 c.c. of water, and a few drops each of a 5 per cent., solution of sodium nitrite and of 20 per cent., sulphuric acid. The sodium sulphate prevents cloudiness of the chloroform after shaking, while the sodium nitrite liberates iodin from the standard solution which is to be added. The standard solutions used are two. The first contains 1 mg. of pure potassium iodid in each cubic centimeter, the second is but one-tenth as strong.

To the second cylinder is now added the standard solution from a burette, until, after shaking, the chloroform is colored to the same degree of intensity as that in the first cylinder. The amount of iodin in the specimen analyzed is then readily determined by a simple calculation based on the fact that each cubic centimeter of the stronger standard solution contains in combination 0.76 [illegible] By practice diff.

ences representing one-tenth of a milligram of potassium iodid can be readily detected, best when 10 c.c. of chloroform is colored by between 1 and 2 mg. of iodin. If the unknown solution contains more iodin than this the chloroform in each cylinder can be increased to 15 or 20 c.c.

This method commends itself both for rapidity and ease of application, which are essential features in making a large number of determinations as in this case. It is also very delicate, amounts between two and three one-hundredths mg. of iodin being detected by reducing the amount of chloroform to a few drops. On the other hand it is not extremely accurate, a certain amount of loss being inevitable; but since the loss is small and the results are comparative, this is not of extreme importance.

(To be continued.)

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

XV. DISEASES OF THE BONES, JOINTS AND MUSCLES.

(Continued from page 854.)

In regard to *position*, J. L. Petit taught that patients with fractures of the lower extremities must be put on mattresses (sometimes divided) and not on feather beds, and in the use of apparatus, boards should be pushed under the mattresses to prevent them from sliding; and the sound foot should be able to support itself on a block. In femur fractures he had holes made in the mattress to avoid a decubitus and that the bedpan might be pushed underneath. How often even yet are these teachings transgressed in private practice, although they have been continually preached for 170 years by the best surgeons! The bandaged fracture was almost always laid in extension. Indeed, independently of Fabr. von Aquapendente, Bromfield, Kirkland and Sharp, even in the forties and fifties, had flexed the upper thigh and laid the patient on his side; but Pott deserves the credit of having scientifically estatablished the method of the bent position also for after-treatment, and of having introduced it into general practice. When Wilmer, on the contrary, insists that Galen had already recommended the flexed position, Richter justly remarks that it is as worthy to bring to light-again an old forgotten truth as to discover an entirely new one. In femur fractures Pott had the whole body turned to the injured side, laid the upper thigh with the outer surface upon a broad, hollow and cushioned splint, besides, a short splint on the inner side of the thigh and fastened with the eighteen-headed bandage: the knee was somewhat bent and the foot placed a little higher than the thigh. He followed this principle of bending in all fractures, except that of the patella and of the olecranon. Pott's lateral position made a great sensation; they contended for and against it. It established itself in England quite generally, but was soon modified. Aitken had the broken thigh flexed, to be sure, but placed the patient on his back because he could not endure the lateral position for weeks at a time. On the other hand, Wilmer observed that in the dorsal position the fragments of the femur so united that the point of the foot is turned outward. In Germany, Richter adopted Pott's position, but with other surgeons preferred that of Aitken for all cases in which the injury was on the dorsal side of the thigh. He designated as a further exception to Pott's rule, the case in which the femur was broken in two places, in the middle and above the knee; then the limb must be extended, because a displacement always occurs in a bent position. The French, especially Desault, Bichat and Boyer would hear nothing of the lateral position; Dupuytren first turned his attention to it. On the first day of the injury Richter, who laid the limb on a sack filled with fine chaff, confidently gave opium; on the following six or eight days mild purgatives, and if severe inflammation was feared he bled the patient.

In *complicated fractures* a middle ground appeared between conservative treatment and amputation. Pott taught always to amputate when the bone was shattered in little pieces, the joint crushed, or the laceration of the soft parts so extreme that mortification must necessarily follow. His arguments are in part very similar to those put forward today in the question as to the treatment of gunshot wounds of the knee. He admits that conservative treatment does not always miscarry in these complications, but experience teaches that as a rule such a limb can not be preserved and the patient perishes, and the danger of amputation is never so great as that which follows such an injury. He amputated either at once, which was best, or later, when the bones did not knit, with strength exhausted by excessive suppuration, and finally when mortification threatened. If this were already present one should not amputate, because death is thus hastened, but he should assist nature to resist mortification. Allen Kirkland, who entirely approved of the other doctrines of his master as to position, splints, etc. opposed Pott's principles as to amputation. (Compare gunshot fractures in Chapter 20.) He valued them most highly in the hospitals, but not for private practice, because the country surgeons reported excellent results in complicated fractures; out of twenty cases they scarcely amputated one, and by conservative treatment they lost at most one in ten. The hospital conditions were of course of a different sort and justified amputation; the air was bad and in the hospital diet little regard could be paid to the manner of life of the individual patients. On the other hand the patient in the country enjoyed all the advantages of fresh air and could be invigorated by beer, wine brandy, etc., so that a cure without amputation was almost always reported. Not that alone, J. Hunter knew that it is often possible to treat a complicated fracture as a simple one. Likewise did Kirkland, who found more honor in preserving a limb than in cutting it off. Gooch, after forty years experience, asserted that mortification should never force a surgeon to a too hasty amputation, and Wilmer discarded the primary operation decisively. Richter declared himself in favor of it on account of the better prognosis, although he advised that conservative treatment be employed whenever possible. B. Bell, who regarded the principal danger as allowing the admission of outer air to the fracture, recommended secondary amputation, especially in case of after-hemorrhages where on account of inflamed swelling and coagulation of the blood a direct ligature was impossible, and also in case exhaustion ensued; for as soon as the seat of suppuration had been removed by amputation the patient improved in a striking manner (A. Monro and Bromfield). With the secondary amputation he had often obtained a fortunate result and it had never resulted fatally, while he had seen many die from primary amputation. In general it appeared to him as necessary in private practice, but much less often than in the great hospitals and in the field.

In the interests of conservative treatment, Pott as well as Richter condemned the too hasty sawing off of the bones which protruded through the skin, since the flexed position and the enlargement of the wound often sufficed for the setting of the bones, and they sought to bring into favor splints, and the eighteen-headed bandage, which had been hitherto considered injurious. When inflammation set in, Pott applied a poultice, with which, however, in England great abuse was practiced, by applying it to simple, fresh fractures; and instead of pressing out the pus with compresses he encouraged the knife-fearing surgeons to make larger and counter openings. He laid soft dry lint in the wounds, but so loosely that it neither irritated nor checked the excretion of pus; in case of violent inflammation he resorted to bleeding, and in copious suppuration he gave strong nourishment and quinin. These methods were approved by Kirkland, only he warned against repeateded bleeding, bandaged with digestive balsam, and in order to protect the bandages from pus covered the compresses with oiled silk. Wilmer also condemned much bleeding and poulticing, and in place of the latter he early applied cooling and resolvent agents in order to avoid amputation, and also gave opium in large doses. When the Lyceum Med. in London called for a prize essay on the best treatment of complicated fractures, Weldon (1794) added to the familiar indications for amputation, those pertaining to a fracture in the joint. He bound up the injured arteries but performed an amputation, even though the injury were slight, if the bleeding vessel could not be exposed, if the hemorrhage could not be stopped, or if a ligature was impossible by reason of excessive swelling. In conservative treatment he advised the attempt to make a prima intentio when possible.

In case *no union* of the fracture resulted, White employed various remedies; one was rubbing the ends of the bones against each other, by which he healed a femur fracture in six months, after which he had the patient get up and go about on crutches. Likewise he first recommended the resection of a broken bone (1760), which he performed with success; the fracture was laid bare and both fragments sawed off, after which they were treated with caustic. Hunter had the broken bones scraped. In case of fractures healed crooked, so long as the callus was not very firm, resort was had to continuous extension: yet the rebreaking of the malformed bones, already recommended by Celsus, was practiced. In case of an angularly healed femur fracture of a child sixteen weeks old, the Dutchman Tenhaaff, sought to soften the hard callus first by poultices and quicksilver salve and then broke the bone in two, whereupon the fracture knit anew (1775.) Richter feared that in such a case the bone could easily be broken in another place.

Of particular fractures let us notice only a few which aroused special interest at that time. In no fracture were so many appliances resorted to, but with so little success, as in that of the *clavicle.* The patient was fastened to a great cross of wood or iron (Heister), indeed a new "comet" was devised for that purpose (Baas). The first step in advance was the bandage submitted by Brasdor to the Académie de chirurgie in the year 1774. In order to draw the shoulders back and hold them continuously in this position he applied a half bodice which covered the back, and, with two leather halves, drew back the shoulders. Evers improved this bandage and introduced it into Germany. Flajani, on the other hand (1785), left the patient without any bandage, and only had him lie continually on his back with the sound shoulder supported, the injured one over a hollow. Then Desault came forward with his new bandage (1787), which first gained for him a reputation in surgery. In the knowledge that the outer fragment is drawn downward by the weight of the shoulder, and forward and inward by muscles, hence it is only necessary to support the shoulder and draw the fragment outward and backward, he devised the well known wedge-shaped cushion which, placed in the armpit, brings the arm as if over a fulcrum, near the trunk below but separated from it above. In order to prevent the sinking of the fragment, B. Bell (1788), who ignored both the French inventions, was satisfied with raising the arm by means of a napkin. Finally Brünninghausen appeared with his brace (1790), which, as he said, was so easily adjusted that almost any peasant could properly cure a fracture without the help of a surgeon. He appreciated Brasdor's bandage, but disapproved Desault's method which Richter favored, and he inveighed against B. Bell. Certain fractures of the *ribs* and sternum were treated with surgical frivolity. If the broken rib pressed inward, the breast cavity was opened, and the fragment pushed outward with the finger, pincers or a spatula (B. Bell)! On the other hand, they trepanned every fracture of the *sternum* (la Martinière), because, on account of laceration and inflammation of the underlying parts, it offered conditions entirely analogous to cranial fracture. Later, trepanation was limited to cases in which it was impossible to raise the depressed fragment (B. Bell, Böttcher), or to extravasation and suppuration in the mediastinum (J. L. Petit, Richter); it was finally discarded entirely (Ch. Bell).

Desault treated fractures of the *upper arm* by adjusting a circular bandage around the arm, a forward, outer and inner splint, and a wedge-shaped cushion in the armpit, and having the forearm carried in a sling. Desault also often observed fractures of the *lower end of the forearm, with condyles,* which are not mentioned by the ancients, nor by Petit, Duverney and Bell. He introduced into general practice (1791) the treatment with the extended arm in fractures of the *olecranon,* although Duverney first suggested full extension, and the Englishman Haighton had even earlier (1785) reported a cure in this position. Desault pressed upon the fragment by envelopment and adjusted to the anterior side of the arm a splint slightly bent at the joint, to prevent flexion, but avoided too great extension. In fractures of the *forearm* they sought for means to put the four fragments against each other correctly, while the teaching of Hieronymus Brunswik, to lay the arm in perfect supination so that the patient always looks straight above him, was for a long time forgotten. They laid rolled bandages between the bones (Pouteau), cylinders an inch and a half long above and below the fracture (Richter), and even long narrow compresses from the wrist to the elbow (Aitken); the hand was kept in the position in which the patient fo[illegible] the least pain, *i.e.*, half-way between pronation and supination (Richter, Bell, Desault). Desault applied small compresses to both sides, and adjusted three splints and a circular bandage from below upward.

As mentioned before, the fracture of the *upper thigh* principally brought to a close the contention over Pott's lateral position. Desault became its strongest opponent after he had twice tried it and, in spite of the most careful treatment, a considerable shortening had followed. After that he discarded it because of extension and contra-extension, of the impossibility of accurately comparing the injured thigh with the sound one, the hardship of the position after a long time, the painful pressure on the trochanter, the difficulty of defecation and the lack of a sufficient fixation of the bone. Instead of the lateral position, Desault, with the best results, made use of the continuous extension method decried by most surgeons, and then, principally with him, the perfection of the extension bandage begins. Through this method, by means of a bandage laid over the joints and a strap around the chest and shoulders, etc., the great danger of a femur fracture at the knee joint was lessened. For the rest, there was no lack of newly invented apparatus (Gooch, Theden, Aitken and others). They recognized the great difficulties of diagnosis between fracture and luxation of the upper part of the thigh, which confusion A. Paré has been honest enough to confess. Our countryman, Schneider, had devised (1768) an extension apparatus for this fracture; he passed above the knee two cords which could be drawn tightly to the bedstead by screws, while for contra-extension, two cords which fastened to a leather girdle secured around the hips and passed through the upper part of the bedstead; an outer splint prevented flexion. Desault effected extension by means of a long wooden splint attached to the outer side. It was actual abuse when Sabatier applied only a straw splint and at first did not hesitate to repeat the setting several times a day until after two or three weeks the convulsive muscle contraction ceased. Brünninghausen wrote a peculiar monograph on this fracture; he bound the injured thigh fast to the sound one and adjusted an outer splint to the upper thigh. His teachers, Richter and Siebold, and also Theden, recommended this method, which, however, had been accurately described several years before by the Dutchman, Van Gesscher ("Richter's Chir. Bibl.," XIII, 322).

The fracture of the *patella* aroused great interest by the question as to whether it could be cured at all. Hitherto denied by the Académie de Chirurgie, Camper, Sheldon, David and Böttcher pointed out the true callus, while Callisen in forty sections did not once observe the slightest trace of such a thing, but only a viscous or cartilaginous intersubstance. Aitken admitted cures in three ways, by true callus, tendinous or membranous matter. And then it was argued, pro and contra, whether a setting should be made immediately (Mohrenheim) or only after reduction of the swelling, since if one has no control over the vessels, he can not often bring about an accurate adjustment (Pott, Bromfield, Acrel). Many attached no value whatever to bandaging, and recommended only rest and antiphlogistics (Warner). Many appliances and bandages were suggested for the accurate adjustment of the fragments in an extended position (Mohrenheim, Theden, Evers and others). Richter reported cures by a simple envelopment from the point of the foot to the abdomen, with the adjustment of a long narrow compress over the upper fragment; and Desault considered a bandage applied in extension as sufficient. At the end of the second or third week, passive movements were begun (B. Bell, Bromfield), to guard against a persistent stiffness. Posch (1774) facilitated the treatment of fractures of the *lower part of the leg* by his so-called Fussbett (foot-bed) in which the broken limb hung in suspension by straps, and could be extended by means of cords at the knee and foot. This apparatus received much applause in Germany. An appliance of Pieropanos of Vicenza came into use in Italy (1780); it effected extension by means of long screws on a brass plate which bore a shoe. This appliance was introduced into all the hospitals of Venice and of the kingdom of Naples; indeed, the High Council of Venice had gold and silver medals struck in honor of the inventor.

In *caries* Alexander Monro, senior, first called attention to the analogous process of the formation of abscesses in the soft parts. Richter distinguished between dry (Petit's designation) and moist caries, divided the latter, according to the nature of the soft parts, into hidden and open, and admitted moreover a malignant caries, which either as spina ventosa has its seat in the spongy bones, or as exostosis maligna is a completely ulcerated abscess of the bone. For the cure of caries only a separation of dead from living bone was necessary, which they endeavored to accomplish by means of instruments, or which was left to nature by exfoliation. To accelerate the latter process, they moistened the part with brandy or liq. bellostii, used the hot iron, bored into the bone and injected those liquids, or they removed the diseased part by means of a scraper, chisel or trepan. The recently much discussed *évidement des os*, according to Sédillot, is nothing new, since Heister recommended the scraping out of the foul matter with scraper and chisel until one should come to healthy bone substance. Amputation, recommended by J. L. Petit in persistent caries, was only allowed when the caries had completely laid hold of a large bone shaft or a joint, and the soft parts were at the same time corroded. In caries following gunshot fractures, Bilguer had been able to avoid amputation and, as we have seen in the last chapter, restricted his treatment to the so-called *évidement*, scraping out and a complete extirpation of the separate wrist and ankle bones, a treatment which is customary even today. If the soft parts had suffered only a little, resection was recommended. Richter also favored this, since nature replaces the lost piece, and the limb not only retains its former length, but also the movement of the joint.

Pott discovered caries of the vertebral column *malum Pottii*, and described it in a masterly manner Hitherto the paralysis of the lower extremities, arising from this disease, had been regarded as the result of an unnatural curvature of the spine, so that no one considered any treatment but to straighten the spinal column by means of instruments. His attention was aroused when he observed the paralysis leave a child and a cure take place after opening an abscess on the spine supposed to be fortuitous. Although he designated the disease as paralysis (palsy of the lower limbs), yet he did not suppose that it was the result of a lump on the neck, back or hip, but that both depended on an as yet unknown cause. Then by dissection he found, in the extreme stage of the disease, the vertebral matter entirely carious; in a disease of short duration it was only swollen, and the ligaments thick and flaccid. Chance defined his treatment, which has become classic. In Worcester, Dr. Cameron related to Pott that an observation of Hippocrates, in which a paralysis of the legs is regarded as caused by an abscess of the spine, had induced him to make an artificial ulcer near the hump in a similar case whereupon a complete cure followed. A surgeon of that place, Jeffreys, confirmed this and asserted that he had had similar results. This induced Pott to apply to both sides of the hump a seton or an issue made with a corrosive, and often kept it flowing several months until the patient was able to walk about. He saw many cases of paralysis cured under this treatment. Sometimes the humps disappeared entirely and the constitution improved, and he recommended applying the issue as early as possible, because in fully developed caries the disease was incurable. In the same year as we have mentioned before, David in Rouen made his observations public and remarked that caries of the vertebral column is not incurable and that the process of cure is the work of nature, time and rest. When Bouvier first snatched this work from oblivion (1858) he established for his modest countryman the honor of priority and reviled Pott as a blatant braggart in every way. Michaelis was an eye-witness of almost twenty successful cases in Bartholomew's Hospital, and he immediately reported them in Germany. It is astonishing that Richter found no word of recognition for the great discovery of his highly esteemed teacher, and even said that this disease was not frequent with us. This was known scarcely four years when the treatment began to deteriorate. It had already come to pass that Pouteau replaced the issues with moxa, which Desault also preferred; but Sheldrake taught anew the dangerous doctrine that an apparatus should be applied to the patient to correct the curvature of the spine. Although B. Bell was quickly at hand to banish all apparatus as in the highest degree injurious, yet throughout many decades that doctrine wrought disaster. Bell had the patients sleep on horsehair mattresses with boards underneath, never on feather beds, in order that the body might lie as nearly horizontal as possible, and he had them discontinue all tonics and cold baths. In this way one could check the disease in the beginning, for as soon as the bones were attacked a perfect cure could not be accomplished, and whenever the issues were successful the disease had had its seat only in the ligaments, not in the bones themselves. Ford also discarded the apparatus because they separated the vertebral substance and prevented ankylosis. He found that the results of the artificial ulcers were better the higher up the curvature was. According to Loder, who attached great importance to the early recognition of the disease, if one suspected the beginning of caries, the only help lay in an incision reaching to the bone, which should be transformed into an issue; superficial ulcer, even moxa, availed nothing.

Necrosis was described by Ruysch and Jacob von Meekren; but the older surgeons regarded it as only a special form of caries, and until recently the two diseases were not always sharply defined. Troja produced necrosis artificially in animals, and found that one could accelerate the formation of a new bone in no way more surely and rapidly than by completely destroying the marrow in the old. Upon this he established trepanation of bone cavities. Multifarious experiments on animals were made in order to clear up the dark question of the regeneration of bones: this was especially so in Germany on the part of Blumenbach and Roeler. The latter, a pupil of Richter, sawed off the caput femoris with the trochanter major of dogs (1786), and found the result important for the reconstruction question in that the animal could run about again after four weeks. In postmortem no new head was found, to be sure, but on the sawed ends there were many rounded protuberances of bone, from which new tendinous ligaments proceeded to the edge of the hip socket where they had grown fast. David produced the first scientific pathologic work on the disease to which Louis gave the name necrosis ("Obs. sur une maladie d'os connue sous le nom de necrose," Rouen, 1782). In it he disputed with a colleague who considered the experiments of Troja and others as to the formation of new bone as erroneous, and the operation of taking the old bone out of the new cylinder as useless. David regarded necrosis as a disease of the periosteum. If the periosteum becomes bruised inflammation arises, from which pus exudes between it and the bone and the two are separated. Then the exposed bone mortifies, the periosteum swells from the newly supplied fluids, becomes thicker, at last ossifies and forms a new shaft around the dead bone. The many fistulous openings in the new cylinder arise from the pus which at first corrodes the periosteum and forces its way outward; through them the sequestrum can be seen and drawn out. Formerly they had bored great holes into the case of the tibia with the trepan and cauterized the bone (J. v. Meekren, J. L. Petit). David first performed necrotomy by means of a hammer and chisel and drew the sequestrum out. For example he extracted ends from the humerus and tibia, a piece seven inches long from the femur, and advised afterward that the hot iron be applied to the entire inner cavity of the bone. With this operation, which he recommended early, he avoided the hitherto frequently employed amputation. In England Walker, who likewise considered amputation unnecessary, had performed this operation successfully for many years; once he trepanned the humerus in almost its entire length so that it lay open before him, and removed the sequestrum. Bousselin called attention (1785) to the fact that sometimes after months and years nature is able to loosen and discard the sequestrum, and the fistulas heal of themselves; but before the operation one must convince himself of the movableness of the sequestrum. Desault once opened the entire tibia with a chisel, and extracted a sequestrum which extended nearly the whole length of the bone; the fissure was filled with rolls of lint, and after fifteen months the patient was able to walk. Weidmann produced the first detailed work in Germany ("de necrosi ossium," 1793). He distinguished sharply between caries and necrosis, as between abscesses and inflammation, and included under necrosis mortification and disjunction of the bone, without considering, with David, a replacement by new bone substance was necessary. But that nature could replace the disjoined pieces of bone, Weidmann and Percy observed in the lower jaw, Moreau in the clavicle, Chopart in the shoulder-blade, and Warner after the extraction of an entire tibia which was completely regenerated. For the formation of bone it is first of all necessary that the periosteum, as the chief source of nourishment, be preserved. Hence Weidmann, who introduced the name cloaca, advised "in all operations in which one endeavors to separate and extract the pieces of dead bone, to spare the periosteum as much as possible." (C. C. v. Siebold separated the periosteum with a spatula before he applied the trepan to the bones.) He has the credit of having introduced sequestrotomy into general practice, although it struggled long for admittance; even Dieffenbach regarded the operation as dangerous and refused to use the chisel.

J. L. Petit offered the first observations as to the purulent *osteomyelitis* appearing after injuries. The one concerned a simple contusion, the other a gunshot wound in the tibia; in both cases death ensued under serious circumstances, and along with liver abscesses a suppuration of the marrow cylinder was found. The history of *abscesses in the bone* also goes back to J. L. Petit; he saw such an abscess on the tibia in syphilis, and first cured it when he cut out a great piece of the bone by application of four trepanations (1723). *Exostoses*, if they were not based on dyscrasia, were in special maladies removed with the chisel or trepan; on the other hand if they surrounded the bone the entire piece was sawed out, an operation which Richter in general rejected as too dangerous. J. L. Petit had already operated for cranial exostosis.

In the teaching as to *luxations*, until the eighteenth century brute force alone prevailed; the invention of new apparatus was for the most part the main object. Many of them were better adapted to tear out a limb than to set it, and most of them so constructed that one was not able to control them. Here, too, we owe the greatest progress to foreigners. J. L. Petit recalled the method of the ancients to bring a joint back into place in the same way in which it had been wrenched from the socket by the capsular opening, or as White expressed it, to set the limb again in the same position and direction in which it was dislocated. Petit had extension and contra-extension applied equally, but brought them to bear gradually on the dislocated limb itself, and the binding cord approached the condyles, which were protected by bandages. It was a great merit of Pott that he condemned the forcible tractions by apparatus, and esteemed the skill of surgeons above them. Especially through him the question as to the retention of the ligaments of the joint in luxations, was raised. He regarded them as very extensible so that they could bear a great strain, and therefore were seldom lacerated. However, the setting of a fresh luxation does not prevent laceration, for within twenty years in his great hospital he had never seen a luxation of the humerus which could not in time be adjusted, in which, to be sure, a laceration of the ligaments of the joint had sometimes taken place. On the other hand, B. Bell and Kirkland brought forward the fact that the capsule might remain uninjured in incomplete luxations, but not so in complete luxations, even sometimes being torn away from the bone. The difficulty in setting dislocations of long standing, Bell recognized principally in the fact that fat, muscles and cellular tissue crowded into the socket and prevented the bone from resuming its former position. In setting Pott had the force applied to the dislocated bone itself, and gradually increased, and he emphasized as a most important general principle, that all the muscles should be relaxed as far as possible by a proper position. With this object bleedings were made (Flajani, Loder), and purgatives (Yonge) and tartar emetic enough to cause nausea (Chessner 1757) recommended. After setting it they allowed the limb to lie unmoved for a few weeks that the capsule might reunite with the neck of the bone; if the limb was moved too soon the union was imperfect and the joint weak, and a slight cause might dislocate it again. In case of severe contusion inflammation and swelling of the soft parts, setting was postponed until these conditions were moderated by rest, a somewhat bent position, and leeches (Pott). When in a slight injury the relaxation of the ligaments of the joint had the greatest share in bringing about the luxation, cold baths and electricity were recommended (B. Bell). A large part of the hitherto surviving apparatus was discarded. For that purpose in Germany there came into use the crane of the Saxon regimental surgeon Mennel, who added to the pulley used by Schneider, a screw arrangement and crank (*Loder's Journ. f. Chir., iii*); this is almost the only appliance of which later times still make use. The danger and uselessness of setting old luxations were well known. When David set a luxation of the humerus several months old, inflammation and death followed the great violence employed. His specimens of shoulder joints, as well as Loder's of hip-joints, show examples of new and completely formed joint sockets in case of luxations of long standing. In case of complications with fractures, setting of the luxation was recommended to be first undertaken. On the other hand if the fracture was close to the dislocated joint Bötcher had the bone set first and the dislocation was not corrected until after the healing of the fracture, but on the extension of the fracture he sometimes observed that the ball of the joint immediately re-entered the socket. When the head had protruded through the skin Gooch advised that it be sawed off, in support of which Kirkland supplied some favorable observations showing that it preserved the use of the limb completely and intact.

Today physicians warn against lifting a child by the head "in order to show him the geese of Bremen," because death might result suddenly from *dislocation of the vertebræ* of the neck; 170 years ago that nonsensical custom, called "showing children their grandfathers," was very popular among the common people and was severely criticized by J. L. Petit on the above ground. He also showed that dislocation of the first cervical vertebra was the cause of death in hanging. This dislocation was known to have been successfully set in a few cases; the Englishman Harrup accomplished it by extension accompanied by audible crackling; Ehrlich also undertook it in life and death cases, and Desault made the reduction in the case of a child, with the remark that life depended on it. As an avidence that this dislocation does not always result fatally, Callisen, in making a postmortem found, by chance, an ankylosis of the third and fourth cervical vertebræ which had been wedged together. Sömmering (1793) wrote on luxations and fractures of the *dorsal vertebræ* and showed that the joint ligaments often resisted external violence more strongly than the bones, that one of the vertebræ could be dislocated in relation to its entire environment without causing sudden death, and that generally such an injury could be repaired. For a long time the possibility of this dislocation had been generally doubted (Duverney), or at least it had been thought hardly possible without a simultaneous fracture and immediate death, because it was always accompanied with laceration of the spinal marrow (B. Bell). Enaux (1784) observed the very rarely occurring dislocation of the *pelvic bones* in which the left os pubis stood two fingers' breadth higher than the right one; after a brief antiphlogistic treatment the patient walked about on crutches, whereupon the weight of the bone gradually effected the reduction and recovery ensued. J. L. Petit set luxation of the *coccyx* by inserting the finger into the anus.

In case of luxation of the *lower jaw* Petit recommended the old practice of placing the two thumbs upon the teeth farthest back and pressing downward and then backward; it was also advised that before pressing the jaw down it be first drawn somewhat forward in order to make it mobile, and that the thumbs be protected by thimbles (B. Bell). In spite of Petit's opposition, Heister advised a severe blow upon the sound side of the face, as an approved method. Ravaton had observed that in case of an imperfect setting of a one-sided luxation, chewing and talking might later be made difficult and even impossible. Zach. Vogel made the rare observation of a luxation in a backward direction ("Merkwurd. Krankengesch. 1. Samml," 1756, S. 150), concerning the possibility of which Petit and Monro had doubts. Loder would not deny this possibility, especially in imperfect formations, because in one of his specimens the joint-process was considerably lower and smaller on one side than on the other, thereby making possible such a displacement. Our time considered the backward luxation, without a simultaneous fracture of the anterior wall of the external passage of the ear, as impossible, until Croker King saw the condyle dislocated in a backward and upward direction, in consequence of a fall, without any fracture of the ear passage (1855; S. Weber in "Pitha-Billroth's Handbuch"). Aurran of Rouen (1771) first described luxation of the *sternum.*

J. L. Petit recognized forward, backward and under luxations of the *upper arm,* and described nine methods of reduction, among them especially that in a horizontal direction, which soon found favor (Heister among others). Charles White suggested extension upward, after the setting with the heel, a method which is usually ascribed to Astley Cooper, had often disappointed him, and he reported very many successes by the former method, especially in old cases. To be sure, he opposed Pott's rule of bending the forearm, but his idea was to use the arm as a lever which can exercise the greater force the longer it is. This method of vertical extension was first established scientifically by Mothe in Lyons. Desault recommended direct reposition, already known to Avicenna, by which the reduction was accomplished only by immediate pressure of the fingers upon the ball of the joint. Richter attached great importance to frequently changing the direction of the extension, applying a moderate force and in case the ball was dislocated forward or backward, he advised always drawing it a little downward before forcing it into the socket, in order to bring it back again in the same direction in which it was thrown out. In very energetic experiments in extension, Desault maintained that he had seen the development of an emphysema as large as a man's head, within a few minutes, and had at first thought it an aneurysm arising from the laceration of the art. axillaris. The setting of a luxation of the *elbow* in the backward direction required chiefly the bending the forearm during the extension (B. Bell). J. L. Petit admitted the possibility of a luxation in a backward direction; he also cured a case in which the lower end of the humerus had broken through the skin. He regarded the dislocation of the *wrist* as one of the most dangerous, because the reduction was quite difficult and the after-treatment long continued, while pains and an inequality in the joint remain, which cause many to believe that the setting was badly done or that a fracture had occurred. Soon doubts as to the frequency of this luxation were expressed (Pouteau and Desault), until Dupuytren denied it entirely and declared it to be a radial fracture. Desault first described a luxation de l'extrémité inférieure du radius, which Loder also afterward observed. The difficulty of setting a dislocated thumb was recognized by J. L. Petit and by Richter, who once worried himself an hour and a half over such a case. For this purpose the tendons and ligaments were severed (Desault) and in unsuccessful reduction amputation even was performed.

Petit described very accurately the luxations of the *upper thigh* in the four directions, upward and inward, upward and outward, downward and inward, downward and outward. B. Bell regarded as the most frequent kind that at the foramen ovale, which was the only one he had often seen, while the upward luxation seemed to him of very rare occurrence, indeed, almost impossible on account of the projecting rim of the socket. They abandoned reduction in the exact direction of the thigh, which had by that time brought into use every kind of instrument of torture, and they recognized the necessity of a flexion of the femur at a right angle, to which Hippocrates had already referred (Kirkland and Pouteau). Indeed, Anderson increased the flexion to an acute angle, and in that way set inward, outward and backward luxations (1775). It is well known that seventy years later Fischer of Cologne insisted anew upon this acute angular flexion. When the muscles were badly strained, especially in long-standing luxations, Vermandois anticipated much from a gradual extension exercised by appliances, but Richter was doubtful of success. In luxation of the *patella,* while Benjamin Bell considered an inward direction as the more frequent, because the inner condyle of the femur is lower than the outer, Richter found that when the luxation occurred in riding the patella was always dislocated outwardly. The occasionally great difficulty in setting such a luxation is shown by one case in which Sabatier abandoned his efforts at reposition and called upon Boyer for help. The German surgeon, Schneider, saw the rarely occurring luxation of the *lower leg* (*Chir. Gesch.*, 9. Theil, 1781); the femur condyles were behind and below, the tibia in front and above, and the leg was shortened three inches, so that the soft part behind was so strained that a laceration was feared; the reduction followed easily. Bromfield corrected the dislocation of one of the two crescent-shaped cartilages in the knee joint by alternately flexing and extending the foot gently. In a complicated luxation of the *talus,* in which it was torn loose and forced into the wound, Laumonier and Desault extracted the bone successfully. *Congenital luxations* of the hip and shoulder joints, mentioned by Hippocrates, are described by J. L. Petit and Heister, and by Verduc, who regarded the attempts at reduction as an evidence of unskilfulness of the surgeon. Löffler of St. Petersburg published a work on diastasis of the bones ("Richter's chir. Bibl.," xiv S. 301 1795).

The field of *inflammation of* [illegible] ntirely fallow until within the secc [illegible] tury. Here, also progress first arc [illegible] except one of the most precious discoveries of the century, the resection of the joints, introduced by White in the year 1768 (see chapter xx), we find as the most conspicuous publications, the works on coxitis, by Edward Ford, and on tumor albus by B. Bell. *Coxitis* was at that time very often mistaken and treated unsuitably. Ford ("Obs. on the Disease of the Hip Joint," 1794) traced it to caries, since for a long time this inflammation of the joint was regarded as a form of disease pertaining exclusively to the hip joint. From twenty histories of cases at hand he described with great accuracy especially the first symptoms, which had hitherto always been overlooked. The child grown tired and pale, feels a slight lameness and soon begins to limp. The affected leg is longer than the healthy one, his buttock flattened and an often very severe pain appears in the knee, an extremely important symptom which, unfortunately, often gives rise to errors in diagnosis. In standing, the patient bends the knee joint somewhat and supports himself only on the point of the foot, and in the dorsal position the leg is bent and every effort to straighten it is painful. The region behind the large trochanter and that in the vicinity of the groin become sensitive. With the appearance of suppuration begins a second period, in which the pain and swelling increase and the limb becomes shorter. This condition lasts for a varying time, until the abscess breaks and hectic fever and death ensue. Then in postmortem one finds the head and neck of the femur, the socket of the joint and its vicinity carious. If the abscess does not break, which, however, is very rarely the case, the patient recovers from it with an ankylosed limb. The caries of the joint can be very considerable before the external symptoms indicate it; it is the actual cause of the disease, not the consequence of suppuration. Pain in the knee, elongation and atrophy of the thigh and pain on moving the joint distinguish it from a psoas abscess; not the bending of the thigh and the flattening of the buttocks, which are common to both diseases. A multitude of unsuitable internal and xternal remedies were previously recommended for coxitis. Ford favored baths of warm sea water in the first stages, but never after the appearance of suppuration; the most efficacious was the douche. Bleeding and dry cupping were employed only at first, never when caries was actually present, and it was doubtful if caries could be prevented by blisters. For the most part Ford recommended large issues with twelve to fourteen peas outside of and somewhat behind the large trochanter, and he discarded hot irons and the moxa as too painful, and likewise the seton. He saw many patients recover the complete use of their limbs under an issue. The opening of the abscess or the acceleration of its breaking was entirely opposed, as usually the most dangerous conditions follow that event closely, especially in cases of wide incisions or the insertion of tents. The pus might possibly be absorbed and the patient saved with an ankylosis; moreover, in case of spontaneous opening, the mouths of the fistulæ are so small that the patient is not suddenly exhausted. Ford regarded a certain resoluteness necessary to withstand the pressing demands of the patient and relatives to open the large, manifestly ripe abscess. Not a word could be said of an amputation, as the caries was usually more severe in the socket of the bone than on the ball of the femur. In threatened caries of the joint he considered ankylosis as the most favorable outcome; surgery could not reach it, but only medical treatment, which required for the strengthening of the constitution, first of all, nourishing diet, fresh air, cinchona and opium. It appeared to him worthy of note that caries of the joints of the upper extremities was, as a rule, more easily cured and less frequently fatal than that of the lower extremities, because the lower limbs could only with difficulty be kept in continuous and absolute repose, and the patient must do without movement and fresh air. *Gonorrheal* inflammation of the joints was described in detail by Musgrave in 1723.

Chronic inflammations of the joints were placed in one group and given the name fungus articuli, white swelling or the designation applied by Wiseman, tumor albus (white swelling 1734). The work of B. Bell ("A Treatise on the Theory and Management of Ulcers with a Dissertation on White Swellings of the Joints," 1778) was most accurate, but Brambilla's treatise (1787) was without scientific value. Bell distinguished rheumatic from scrofulous white swelling, and in brief, in the following manner: In rheumatic white swelling the ligaments of the joints first suffer and swell, and later the bones, which sometimes become carious; the pain extends immediately over the entire joint; the swelling, also at first considerable, is located in the soft parts; usually in young people arising after injuries, which form is curable. In scrofulous white swelling the bones suffer first. Their joints swell, and become spongy and the cartilage disorganized; later the soft parts are affected. (Dörner of Tübingen endeavored to prove, by experiments in 1798, that cartilages of the joints could not become inflamed.) The pain is at first limited to a single small place; the swelling, at first slight, evidently proceeds from the bones. This form, arising spontaneously in dyscrasic people, is almost always incurable. In rheumatic white swelling Bell recommended cupping, blisters and mercury salve (Pott and Ford the fonticulus, and Kirkland cold water), and for the stiffness remaining, the rubbing with olive oil; in threatening caries nothing but amputation will suffice. He knew of no remedy for scrofulous white swelling and even regarded amputation as useless. If the dispersion of the suppuration of the joint failed, Kirkland evacuated the fluids through a very small opening, endeavoring to avoid the admission of air and to accomplish a prima intentio. Instead of amputating he applied resection according to Park's suggestion. Douches of warm water, for stiffness, were first recommended in France (le Dran, Bell and Aiken), and of water of lead (Goulard), also of chalybeate water and decoctions of finely divided herbs which were allowed to fall from a height of four stories (Thedens). Besides douches of fluids, hot fine or coarse sand or small stones were similarly used (Pouteau in sciatica). The all-curing electricity was not allowed to be lacking in the overcoming of stiffness of the joints. (In the eightieth year of the century Maudayt of Paris and Birch of London were specialists in this branch, and their widely extended activity resulted in the use of electricity in all possible ailments, rheumatism, paralysis, persistent swelling after fractures, luxations, sprains, amaurosis, ophthalmology, old ulcers, chilblains, deafness, toothache, dropsy, epilepsy, inspissation of milk, suppression of menstruation, pollution, etc.)

Heister distinguished *dropsy* of the joint from white swelling, only by the fact that in the former "the fluids collect in the joint itself, in the latter they stagnate outside of the joint." Hydrarthrus of the knee gave the surgeons slight concern; if they did not succeed in dispersing it, then, according to the example of Würtz and Purmann, an incision was made and the water let out; the operation was opposed only in case of old and large swellings and delicate patients. In order to prevent a new gathering Purmann had a vulnerary water injected into the cavity of the joint, which Heister recommended, or according to Würtz a tight bandage was adjusted around the knee. Even the intelligent O. Acrel, after an unsuccessful attempt to scatter the fluids, made two crescent-shaped incisions on the knee, and had the good fortune to cure his patient without any ill consequences. As one of the first to raise a warning voice, Richter, well knowing that inflammation and fatal suppuration might follow a large incision, permitted only a puncture by means of a trocar under the displaced skin. B. Bell went one step farther. He discarded the operation entirely, even if the other means, as rubbing, douches, plasters and envelopment did not allay the swelling; the consequences of the operation seemed to him much more serious than the pain of the patient if the swelling were left to itself. Mohrenheim gave "strengthening injections" when the effusion of water continued after the incision, and Gay, a surgeon at the Cape, first made alcoholic injections through an extended trocar puncture (1789). In case of the gathering of blood or pus, Bell also ordered an evacuation as soon as possible, by means of the trocar; Theden once lost a patient with hemarthrus in the knee, when, after opening, repeated hemorrhages, as much as seven pounds in one day, ensued. Our acquaintance with *loose bodies in the joints* we owe to A. Paré who, in 1558, cut "une pierre de la grosseur d'une amande" out of a knee, with success; seven years afterward the German physician Wagner found such a one in the joint of an ox. Views differed greatly as to the manner of their origin; they were regarded as a precipitate from the synovia, analogous to bladder-stone (Paré), as pieces separated from the cartilages of the joint or from the bone (Monro, Mohrenheim and Löffler), loosened formations of cartilage (Ford, and similarly Desault), scirrhous synovial glands (Theden), transformations of a part of the synovial membrane into cartilage (Bichat). J. Hunter considered them as originally extravasated blood which had become organized, assumed the nature of the part with which it was connected and, by rubbing, had gradually become separated from it. This view, later renounced, was supported anew by Velpeau. The pieces of the loose bodies varied much in length (Theden, three inches), and also in number; for example, E. Home had seen, in a pseudoarthrosis, thirty or forty loose bodies of a cartilaginous or harder character in the newly formed capsular cavity. Surgeons were not united as to the indications for excision, of which method we have spoken in the previous chapter. B. Bell would only cut out the movable cartilage when it was entirely loose, movable and the pain very severe; when immovable he either did not operate at all, or if the pain was unbearable he preferred amputation, because in such a case the inflammation following excision is of unusual severity. On the contrary, Desault did not at all avoid this operation so long feared by practitioners. When previously the surgical axiom was accepted, which considered wounds in the joints as, if not fatal, then extraordinarily dang[illegible] ac[illegible]nt of the admission of air, he showed that treatment they were rarely accompanied by serious complications and therefore the operation for bodies in the joints, methodically performed, could have no injurious consequences. In order to avoid the operation Gooch endeavored to hold the movable cartilage firm by a bandage in a position that was not painful. A case described by C. C. von Siebold under the diagnosis "lameness" ("Chir. Tageb. Beob.," xiv, s. 35) gave weight to the *joint neuralgia*, first described by Brodie (1836); an unmarried person, of 30 years, who had suffered from suppression of her menses, had uninterruptedly, day and night, for six months, the severest pain in her right hip and could no longer stand. Salves and plasters were without avail until a copious bleeding, with purgatives, restored her so far that she could walk without crutches, but limped badly. Siebold assigned as the immediate cause of the difficulty a congestion of blood at the hip joint, upon which an obstruction of the smallest blood vessels in the synovial glands and ligaments, and a deficiency of synovia followed.

(To be continued.)

SOCIETY PROCEEDINGS.

Mississippi Valley Medical Association.

The twenty-third annual meeting of the Mississippi Valley Medical Association held in Louisville, Ky., October 5 to 8, was a signal success in every respect and will pass into history as the banner meeting. The Committee of Arrangements, with H. H. GRANT, M.D., as chairman, had the affairs of the reception well in hand before the meeting. There were so many papers offered on the program that it became necessary to hold the meetings in two sections, a medical and surgical. The general sessions and the medical section were held in Liederkranz Hall and the surgical section in the Scottish Rite Hall immediately next door. The Committee felt much chagrined that the acoustic properties of the Liederkranz Hall proved so poor when only partly filled, as was the case when the general meeting divided for section work. This proved quite annoying, at times necessitating poor ventilation when the windows were closed to shut out the outside noise.

A feature of the meeting was the exhibit hall, in the basement of Liederkranz Hall. Here, attractively arranged, were some twenty-six exhibits representing all branches of mechanical, instrumental and therapeutic appliances, the hall being crowded all the time.

The general sessions and the medical section meetings were presided over by THOMAS HUNT STUCKY, M.D., of Louisville, president, and the meetings of the surgical section by the first vice-president, C. A. WHEATON, M.D., of St. Paul, Minn.

On the morning of the first day, after the preliminary exercises, Dr. Stucky read his presidential address, which dealt with a brief history and mention of the physicians that the Mississippi Valley had given to the world and who had become famous. He paid a feeling tribute to the late Edward R. Palmer, who met such a sad and untimely death.

At the first meeting a revised constitution of the Association was read, it coming as a recommendation from the Executive Committee, which had met the evening before. The changes were radical in some respects, providing for the perpetuation of the Judicial Council, making it *obligatory to pay all dues and providing for the dropping of members for the non-payment* of dues for two years; providing for the payment of a small salary to the secretary and for the publication of a volume of "Transactions." These recommendations were adopted on the last day.

Governor BRADLEY [illegible]de the address of welcome on behalf of the State and [illegible] BAILEY, M.D [illegible]lf of the physicians of Lo[illegible]t this ti[illegible] rumor became current [illegible]iana h[illegible]ran-tine against Ken[illegible]act [illegible]ad or[illegible]ates [illegible]r d[illegible] from Governor Bradley to the Governor of Indiana and also from a committee from the Association composed of Drs. I. N. Love and C. A. Wheaton. This message was in the form of a resolution offered the Association, and was seconded by W. N. Wishard, M.D., of Indianapolis and A. P. Buchman, M.D., of Fort Wayne, Ind. The next morning C. W. Brayton, M.D., of Indianapolis offered a resolution recalling what passed the day before, as it had since been ascertained that there was needless apprehension and that no quarantine had been declared. This was referred to the Executive Committee, which made some changes therein and, as reported, it was passed and sent to the Governor of Indiana.

Dr. John V. Shoemaker's address was entitled, "Progress and Problems of Medicine."

He first took up the subject of organo- and sero-therapy, and pointed out the extent of progress of science in furnishing effective serums and antitoxins for the cure of infectious disorders. Passing briefly over the yellow fever organism and the use of the Roentgen rays, Dr. Shoemaker took up the subject of cancers, the cause and treatment of which he stated were the most difficult problems of medicine. The only recourses to effect a cure, he stated, are the knife, caustics and electricity. None of these in the minds of the learned physician had satisfactorily solved the problem. The urgent desideratum was a method of arresting a malignant growth and causing its retrogression or expulsion. Among the methods employed the speaker mentioned the application of sero-therapy, the use of erysipelas toxins, methyl violet and methylene blue. Celandin, the remedy brought forward by Denissenko, had proved inefficient. In speaking of malaria, Dr. Shoemaker said that the life history of the parasite is not known outside of the human organism. He believed that the mosquito had much to do with its trans mission. He called attention to the fact that chronic malaria was becoming a potent agency in the genesis of various affections, producing anemia, cardiac excitability, neuralgia, neuroses and organic affections of different kinds. Concluding his paper, Dr. Shoemaker said: "Eleven years ago, in an English city and at a meeting of English physicians, I listened with shame and indignation to an American belittling his country. Various alleged shortcomings were exposed, and the evil influence of malaria upon intellectual development was depicted. A map, shaded to represent the prevalence and fatality of malaria, was exhibited, and the astounding statement was made that malarial intoxication was incompatible with scientific acquirements. I looked upon the map, and behold! the greater part of the United States was under a portentious shadow. In the north and east and in the northwest the gloom was lightened in a comparatively small area, but the great Mississippi Valley was shaded in the darkest hue. Almost the whole south, in fact, was included in the same condemnation, for the dark shadow ran down along the Atlantic seaboard. It is true that within the malarial districts McDowell, Sims, Gross and Campbell lived and labored, but these men, only four in number, were exceptions and exceptions proved the rule." Controverting this statement Dr. Shoemaker mentioned among the men who were reared in the malarial belt and who became conspicuous in the higher departments of human activity, Henry Clay, Andrew Jackson, Thomas H. Benton, Prof. Samuel D. Gross, "The Nestor of American Surgery," John C. Calhoun, Abraham Lincoln, Jefferson Davis, James K. Polk, Garfield, Hayes and McKinley, Gen. William Harrison, Daniel Drake, John T. Hodgen, Robert Battey, Crawford K. Long, and Samuel M. Memiss.

The address of John B. Murphy, M.D., on surgery, entitled "Ileus," was a masterly effort and was listened to with the closest attention by a large audience.

A noticeable feature of the meeting was the small number of papers that were read by title and the fact that during the meeting every paper was called for in both sections, which shows how well the scientific part of the meeting was cared for.

There were no night sessions of the Association, the evenings being taken up by informal private entertainments on the evening of the first day and a reception on the second evening, with a "smoker" on the evening of the third day. At the reception and the smoker the services of Col. Wm. Visscher of Chicago were enlisted for the entertainment of the guests, a collation being served at both.

When the report of the nominating committee was read some discussion took place as to the place of meeting recommended by the committee, viz., Nashville, which was opposed by N. C. Scott, M.D., on the grounds of exorbitant charges on the part of the hotels in the city during the meeting of the American Medical Association there some years ago. After some discussion the report of the committee was adopted by a vote of the Association, and the time of meeting placed the second Tuesday in October, 1898. The officers elected were as follows: President, John Young Brown, M.D., St. Louis; first vice-president, A. P. Buchman, M.D., Fort Wayne, Ind.; second vice-president, A. J. Ochsner, M.D., Chicago; secretary, Henry E. Tuley, M.D., Louisville; treasurer, C. A. Wheaton, M.D., St. Paul, Minn.

The official button given each member who registered was a sterling silver one containing the words, "Mississippi Valley Medical Association, Louisville, Ky., 1897," and in the center a splendid reproduction of the steel engraving of Ephraim McDowell, with the name beneath. The effect of the oxidized background and the bright lettering was very effective, and the button was cherished by all as a valuable souvenir of a most enjoyable meeting.

New York State Medical Association.

The New York State Medical Association held its fourteenth annual meeting at the Mott Memorial Hall, New York City, October 12, 13 and 14. There were also two night sessions and one of the afternoons was given entirely to the discussion of hospital and dispensary abuses. To this last the following contributed either by person or debate: Drs. F. E. Stewart, F. H. Wiggin, Wickes Washburn, J. E. Janvrin, Thomas H. Manley, J. R. McGregor, Nelson L. North, Thomas J. Hillis and John Shrady. A notable incident was the appearance of Mr. J. Harsen Rhoades, long identified with public charities in most of their forms. The burthen of his defense was that physicians themselves were the chief offenders, and that too with a disposition to shift the responsibilities upon others. Certainly there was every desire on his part to redress these grievances, but how without a delegated power. A breezy paper on "Medical Expert Testimony," by Homer O. Jewett, M.D., of Cortland County, attracted much notice in the light of certain recent procedures, and it is hoped will prove a factor in reform. The program was long, varied and in the main, as is usual with this Association, carried out to the letter. The presidential address by Charles Phelps, M.D., was suggestive and worthy of appearing in print long before the issue of the elegant although somewhat tardy "Transactions." Drs. E. D. Ferguson and Joseph D. Bryant contributed to the growing literature of appendicitis and also F. S. Dennis, M.D., a well considered paper on "Tetanus." The third day, the morning, with the exception of a paper on "Pyothorax in Children," by Douglas Ayres, M.D., of Montgomery County, was given up to gynecology and obstetrics, in the discussion of which the names of the following appeared: Drs. Charles H. Glidden, William H. Robb, Martin Cauana, George T. Harrison, C. C. Frederick and Ely Van de Warker. Among the topics of interest we can not omit to mention, "Acute catarrh of the middle ear as a sequel of la grippe" by Samuel Wesley Smith, M.D.; "Studies on typhoid," by Henry C. Boswell, M.D.; "Further notes upon the operative treatment for infantile paralysis," by S. E. Milliken, M.D.; "Stricture of the rectum," by W. S. McLaren, M.D., of Litchfield, Conn.; "A case of otitic brain abscess from chronic otorrhea; opening of mastoid and skull; recovery," by Frank S. Milbury, M.D.; "The surgery of tuberculosis of the peritoneum," by Parker Syms, M.D.; and "Traumatic paralysis of the upper extremities," by John F. Erdmann, M.D.; "A new intra-ocular iris scissors," by H. W. Wandless, M.D., of Dallas, Texas; "General considerations concerning auto-intoxication," by H. A. Haubold, M.D.: "Symptoms noted during the interparoxysmal stage of hysteria," by William D. Granger, M.D.; "A study of alcohol, tobacco, tea and coffee and their effects in nervous disorders," by Charles E. Lockwood, M.D.; "Massage as an occupation for the blind," by Arthur Y. Bennett, M.D.; "The effects of poisoning," by Morris W. Townsend, M.D.; "Tuberculosis of the tonsil," by Seymour Oppenheimer, M.D.; "A case of elephantiasis of the vulva, with specimen," by William P. Finder, Jr., M.D.; "The new epoch in the study of neural pathology," by W. A. Van Gieson, M.D.; "The conservative surgical treatment of fibromyoma," by E. E. Montgomery, M.D., of Philadelphia; "Some remarks on ovarian surgery," by A. Palmer Dudley, M.D. Such a program, even without the usual annual summary of materia medica, pharmacy and therapeutics by E. H. Squibbs, M.D., could not but satisfy the most fastidious.

The matter regarding the pledge of the Association to subscribe $2,000 toward the erection of a statue in Washington to

Benjamin Rush, the "surgeon of the Revolution," was taken up. The treasurer, Dr. E. D. Ferguson of Troy, stated that there was a surplus of $3,500 in the treasury, for which there was no immediate use, and favored an appropriation of the $2,000 instead of subscription by the members. After some discussion it was unanimously voted to follow this course, and the treasurer was instructed to send that amount to the committee promoting the monument. The following were elected officers for the ensuing year by acclamation: President, Douglas Ayres of Fort Plain; vice-presidents, second district, C. E. Fritts of Hudson; third district, H. W. Carpenter of Oneida; fourth district, C. C. Frederick of Buffalo; fifth district, N. W. Leighton of Brooklyn; members of council—first district, W. H. Robb of Amsterdam; second district, E. M. Lyon of Plattsburg; third district, W. L. Ayer of Owego; fourth district, Z. J. Lusk of Warsaw; fifth district, J. G. Truax of New York. A committee composed of F. H. Wiggins, S. B. W. McLeod, Parker Syms, A. H. Hubbell and E. D. Ferguson, was appointed to act in co-operation with other societies in an effort to bring about the passage of a law looking toward the correction of hospital and dispensary abuse.

SELECTIONS.

An "Oxygen Home" for the Treatment of Wounds.—The *Sanitary Record* says: Some weeks since we announced that some remarkable cures had been effected under what is termed "oxygen treatment," and that to extend the scope of the experiments a home was to be opened in London to test the system more fully. . . . An "Oxygen Home" was opened at No. 2 Fitzroy Square by the Princess Louise, Marchioness of Lorne. We may remind our readers that the system owes its origin to Dr. George Stoker, who, when serving in the Zulu War, observed that the natives always carried their wounded as far up a mountain side as possible, and that the altitude of this *al fresco* hospital appeared to have a wonderful effect in bringing about rapid recoveries. This led him, on his return to England, to undertake experiments in treating wounds with oxygen gas, and these have been singularly successful. Princess Louise witnessed the treatment in operation, as on most of the beds there was a specially constructed box, with glass sides, in which the wounded limb was kept in an atmosphere highly charged with oxygen. Thus the progress of a wound can be closely watched without the irritation of winding and unwinding bandages. Briefly, the treatment is as follows: "The oxygen acts in one or more of the following ways: By diminution of irritation, as any dressing applied to an open sore causes more irritation than a mixture of oxygen and pure air, while at the same time the oxygen stimulates, and not improbably oxidizes the toxins produced by micro-organisms in the surface of the ulcer. These and other points are under investigation, but enough is already known practically in favor of the oxygen treatment to fully establish its value."

The Sound Therapeutics of the Good Samaritan.—In a recent debate in the British Parliament, on the Græco-Turkish imbroglio the action of Greece in coming to the rescue of her Cretan compatriots was likened by the leader of the opposition to that of the good Samaritan who relieved the wounded victim of highway robbery after the priest and Levite, typifying the concert of Europe, had passed by unmindful of his sufferings. With the political application of the parable we have nothing to do any more than with the retort of the leader of the house that the good Samaritan would not have been admired for eighteen centuries if as a result of his intervention he had added largely to his personal estate. Our interest in the parable lies in its medico-legal aspect, in the treatment to which the wounded man was subjected and in the light it throws on first century practice. The parable, we need hardly remind our readers, comes to us on the authority of what M. Renan calls "le plus beau qu'il y ait," the most beautiful book in all literature, the work, we may add, of a physician whose familiarity with Hippocrates has been proved by Hobart and Plumptre, and whose practice seems to have lain, at least for one memorable period, in the mercantile marine of the Mediterranean. Till recently the only version of the parable accessible to English readers represented this capable practitioner as reporting the good Samaritan to have bandaged the victim's wounds, incised, punctured, or lacerated, and then to have poured into them oil and wine. That mistranslation continued to puzzle generations of the devout till the "revised version" put matters right by substituting "pouring on" for "pouring in," the authorized rendering having been adopted from a misinterpretation of the vulgate, which gives "infundens" as the equivalent of St. Luke's ἐπιχέων, though "infundo" means to "pour upon" as well as to "pour into." The good Samaritan's therapeutics are thus vindicated as conforming to the recognized practice of the time, whether Greek or Jewish. The bandage having been adjusted, it was saturated with a mixture of oil and wine, an emollient and a stimulant, presumably to keep the cloth from stiffening while rousing the reparative or healing process. It was the practice employed in circumcision, as we read in the rule: "If there is no mixed oil and wine ready, each may be added separately." Galen, writing about 130 years subsequently to St. Luke, describes a paste in which oil and wine are the principle ingredients, to be applied to wounds. The elder Pliny, whose "Historia Naturalis" was nearly contemporary with St. Luke's Gospel, refers to the same practice. The good Samaritan's therapeutics, as reported by St. Luke, were indeed *secundum artem*; and if they have caused any difficulty to the non classic reader, that has been removed by the revisionist substitution of "pouring on" for the meaningless "pouring in."—*Lancet.*

Practical Points in the Use of Milk Modification.—The *Cleveland Journal of Medicine* for August gives an account of a discussion on the above subject, in the course of which Dr. T. M. Rotch of Boston explained certain points that are not ordinarily brought forward in formal papers. In substance the speaker's remarks were as follows:

It is true that harm may be done by an inexact combination of different constituents of modified milk, but then we must take into consideration that in everything in medicine and surgery there is danger in the hands of those who do not do it properly. Physicians must learn to use the laboratory. I have seen bad results from a physician not prescribing correctly. It is not as dangerous, however, as using artificial foods and not knowing what you are using. I believe in feeding with human milk, but you have to learn how to use it, and when you can not get it you must learn how to use cow's milk.

I think in Boston they sell eight tubes, with four or eight ounces, for 50 cents. It is not a cheap food. A great deal of harm has been done by the physicians of New York, who say we *must have cheap food for the people. I think we ought* to give the best food to infants. As in everything else, you can not get a good thing cheap; you have to pay for it. As it is developed it will be made more cheaply. I have encouraged them to raise their price rather than lower it. Philanthropists in Boston, especially Mr. N. S. Kaetlett, have been getting up funds to buy modified milk for poor babies. Now the poor babies are fed just as well as the rich ones. I think physicians and surgeons ought to find and prescribe that which is best for the human race. The argument that the laity will adhere to their prepossessions in favor of the artificial food has been brought up over and over again by physicians. It is not the people's fault but the physicians'. I think we should work in the best way, no matter how we are criticised. There will for a long time to come be cities and towns where a laboratory can not be sustained.

The first step is to recognize the principle. Then carry out the principle as well as you can. The home modification of milk is fully recognized in my book. I have given precise rules how to modify milk. Supposing you are in the country with a baby with weak digestion. See that the cow is clean and milked by some one careful to see that the baby gets the last part of the milking freest from organisms. With a Babcock milk tester you can tell what is the percentage of fat in a given sample. My great-grandfather was professor of materia medica in the University of Pennsylvania and I have the pestle and mortar with which he pounded his drugs. He, for lack of an apothecary shop, modified his drugs at home. Up to the present time, owing to the lack of a milk laboratory, we have modified the infant's food at home. Now there is no longer a necessity for home modification either in drugs or milk.

There is probably some difference between the proteids of cows' milk and human milk. "Caseinogen" is a better word than "casein," which is being gradually dropped. I think that there have been a great many erroneous views held in regard to this difference. Nowhere in the world are they working on wrong principles so much as in Germany. We know that the coagulable parts of the proteids in cow's milk is greater than in human milk, therefore, other things being equal, we should prescribe a rather lower percentage in human than in cow's milk. I do not think the Germans have sufficiently proved to us any other difference. I think they are very theoretic in their treatment of this question. They have not adopted our methods. They are usually in the foremost ranks of investigators, but I do not think they are in this. I have been much interested in observing the curds in human milk and have seen them as large and heavy as in cow's milk, and on examination have found that in these cases the proteids were as high as in cow's milk. The reason you note a heavier curd oftener in cow's milk is because you do not usually get so high a proteid in human milk. In regard to the substitution of sugar for the proteids, I think it is very theoretic and do not think it is going to be supported by scientists throughout the world. I do not believe the sugar is going to be used in place of the proteids. The partial digestion I think is unnecessary, and the less tampering with the proteids before they enter the stomach the better. The infant's stomach should be taught to digest proteids and not to have them digested for it. Much work of this kind has been done in Germany, but I look upon it with profound skepticism. I do not think they are right. They are always trying to make out differences, but they never have done it. I do not think the Germans fully appreciate what we are doing in this country. They have gone so far ahead of us in some branches that it is difficult for them to think that we do anything of value here, while in fact they are far behind the times in the matter of feeding.

Tests for Defective Vision in School Children.—Instances of students who, through myopia or other ocular diseases, are unable to see reasonable distances, and who, by glasses or other treatment, find such obstacles removed; or of others, who, through hypermetropia or astigmatism, find themselves disinclined to study, owing to an overtaxed muscle of accommodation with consequent asthenopia or eye-tire, headache, etc., and who by suitably adjusted glasses are enabled to study with pleasure and comfort, are of sufficient frequency to have deeply impressed every individual engaged in educational work.

Between two and three years ago I submitted to the Minnesota Academy of Medicine a paper entitled "Refraction in Schools," proposing a procedure for the easy detection of most ocular diseases by principals, through which students might be placed upon a path leading toward relief, that impressed the Academy so favorably as to induce it to forward to the Minneapolis Board of Education a petition for its formal adoption. The board at that time, for reasons probably satisfactory to itself, practically tabled the resolution. Last January, after the election of a new board, the method was adopted and the writer appointed as superintendent. Immediately active operations were begun, and in a short time 25,696 children had been examined by our school principals. One hundred dollars was allowed for expenses, which has more than covered the expenditures, as only some test-types and printed matter are necessary. A plain lecture was delivered to the principals descriptive of ocular anatomy, physiology and refraction, with its errors, including myopia, hypermetropia and astigmatism. This was supplemented by a clinic or practical demonstration of the method on some fifty pupils furnished by Superintendent Jordan, during which the writer first made his test, distributed cards and filled in the statistical papers himself, and then requested many of the principals to do the same under his instruction. Test cards and printed matter were then distributed to the principals and they were requested to make the tests as rapidly as was consistent with their other work. The examination should not be conducted in the presence of other scholars, as familiarity with the letters leads to correct responses. It should be ascertained if the child habitually suffers from red and inflamed eyes or lids, after which the visual tests should be conducted. The Snellen test card should be hung upon the wall in a good light, uncovered by glistening glass and on a level with the pupil's head. The letters are of such accurate proportions as to be seen by a natural eye at certain fixed distances. The pupil should be given credit for the smallest line of which he reads a majority of the letters and result inscribed as 20, 30, 70, 200, etc., in the appropriate line of the statistical blank. . . . After noting the smallest line read by each eye, it should be ascertained if the pupil really habitually suffers from tired eyes or headache after study, care being taken that such troubles are not imaginary. . . . If inflamed eyes are not habitual, the pupil reads a majority of the letters in the 20 foot line with each eye and does not frequently experience eye tire and headache after study, the examination may be considered satisfactory; but if the reverse of this develops, a card of warning should be sent to the parent, urging that an "eye doctor" be consulted at his office or dispensary. The word "eye doctor" should be used, as many people do not discriminate between the words oculist and optician. The warning cards may be heeded or not, as the parent elects; it is not obligatory and imposes no hardship. The influence of the principal may, of course, be exerted in the proper direction, but such influence must obviously not be directed in favor of any particular oculist or dispensary, but should be used against the consulting of opticians at department stores or elsewhere. Children already wearing distance glasses should be tested with such glasses on the face, while those wearing glasses for close work should be questioned as to the existence of asthenopia when glasses are worn; by so doing much opposition from parents and attending oculists will be avoided. . . . Only such children as are deemed defective require statistical tabulation, the others are not further molested until the next annual examination, which should occur at the beginning of each school year. Experience has taught that it is unprofitable to examine first grade children. The report of our first annual examination shows that 25,696 children have been tested, of whom 8,166, or 32 per cent., were deemed defective. Among these, 6,451 eyes were found possessing a vision of 20-30, or a little worse than normal; 2,256 eyes had a vision of 20-40, 1,214 a vision of 20-50, 1,130 a vision of 20-70, 715 a vision of 20-100, 447 a vision of 20-200 and 43 eyes were practically blind; 4,472 children could not use their eyes to a reasonable extent without eye tire, headache, etc. The individual percentages of defectives in the different schools have ranged all the way from 11 to 67 per cent., the latter occurring in a conspicuously poorly lighted and insanitary building. What have been the practical results? These have been difficult, and in short, impossible to completely estimate, owing to many causes, of which a few will be enumerated. In the first place, such results can not be accurately compiled, for obvious reasons, unless all examinations are made and subsequently watched by a single oculist, either with or without assistants. Statistics compiled from numerous and unreliable sources are manifestly not entirely trustworthy. In the second place, many reports received by the writer from principals were very meagerly filled out. . . . The writer knows of many instances where good results followed treatment, but where such results were not duly chronicled. Then a very large proportion of defectives are delaying the consulting of an oculist from various causes—among which may be enumerated heedlessness, carelessness, incredulity, pride coupled with financial distress, fear of being advised to wear glasses, the near approach of a long vacation, during which time such matters may be adjusted, etc. Many children who are debarred from seeking proper advice from these and other causes, will naturally soon be enumerated among those who are deemed defective, sought counsel and received benefit. But notwithstanding these obstructions to progress, the annual reports recently studied, together with subsequent conferences with principals, show unmistakably that in the neighborhood of two thousand children have been signally benefited by the results of the preliminary tests. Many near sighted children unable to see blackboards, charts, etc, and debarred from comprehensively observing the world and learning its lessons, have by the aid of properly adjusted glasses been placed upon an equality with their comrades. Many children unable to study without pain and fatigue, consequent upon hypermetropia or astigmatism, have by a similar remedy been relieved of their infirmity and enabled to assume high rank as scholars. Other children have been emancipated from the mortification incident to the possession of crossed eyes by an operation, while others have been placed on the road to good vision by operative interference upon congenital cataracts. One of the chief obstacles to satisfactory results has been the frequent consulting of opticians instead of oculists. The eye is not a merely mechanical machine, which, when "out of order," simply requires for its correction a pair of glasses. It is one of the most delicate and complex organs of the body, liable to the diseases of other living structures, and extremely sensitive to improper treatment, including the adjusting of glasses, which, if improperly performed, often leads to the direst consequences. Pathologic ocular conditions, including refractive errors, can not be properly diagnosed and treated without a good medical education, supplemented by special ocular instruction, fair judgment and experience. It is, therefore, almost an insult to intelligence to urge that even the best opticians are incapable of passing judgment upon diseased ocular conditions or of properly correcting refractive errors, although they may frequently happen to give good satisfaction in recommending a pair of glasses. The truth is that in undertaking such work they are practicing medicine and should be legally restricted in their trade to selling, dispensing and manufacturing glasses, a principle which has been recently emphasized by the Ohio legislature in an act restraining opticians from prescribing glasses, under improper circumstances.—Abstract of paper by Frank Allport, *Educational Review*, Sept. 1, 1897.

PRACTICAL NOTES.

Warning Against the Use of Dry Boric Acid in Otitis Media Purulenta.—*Memorabilien* mentions that when the secretion is scanty, the powder has a tendency to form a crust with it, and close the opening.

Urine Tests in Laryngology.—Mulford mentions several cases of ear or throat trouble in which the treatment was indicated by testing the urine. The local disturbance vanished with the general treatment instituted.

Bactericidal Power of Iodoform Increased.—Thomalla of Berlin has added 5 per cent. polymerized formic aldehyde to iodoform and reports that suppurations dry up and wounds heal much more rapidly and thoroughly than with the iodoform alone.—*Semaine Méd.*, July 28.

Delirium Tremens Paraldehydicum.—Reinhold adds another to the five cases on record of acute delirium tremens produced by excessive use of paraldehyd (in his case 60 grams had been taken daily for some time to cure insomnia). The symptoms abated and absolute recovery followed in sixteen days. All the other cases also recovered completely.—*Wien. klin. Woch.*, August 5.

Cure of Vomiting in Pregnancy by Prolonged Palpation.—J. Geoffroy states in the *Gaz. Méd. de Liége*, of Sept. 2, that the vomiting is caused by reflex contraction of parts of the alimentary canal, pylorus, duodenum, secondary to contraction and hyperesthesia of the ilio-pelvic angle of the colon. Prolonged palpation reveals the existence of the contraction at this spot and is also the cure for it, rapid and certain, in one to three brief seances. He adds several convincing observations.

Nicoladoni's Suture in Resectio Recti.—The proximal stump remaining after the resection is drawn out through the anus without force and sutured to a ring made of wire wound with gauze 3 to 4 cm. in diameter. The greater part of the mucosa is removed from the distal end, and a few internal sutures then suffice to fasten the invaginated ends together. The ring allows irrigation to keep the rectum clean from fecal matters. He gives saline laxatives, never opium. Two cases thus sutured have demonstrated the advantages of the ring.—Prof. C. Nicoladoni in *Cbl. f. Chir.*, September 4.

Treatment of Chronic Constipation with Creosote.—It is announced that creosote not only breaks up the most inveterate case of constipation, but improves the general health. It acts probably, by neutralizing some toxin that has been paralyzing the nerves of the intestinal tube. Its beneficial action was discovered by V. de Holstein, who has contributed an article to the *Semaine Méd.*, on the subject (September 1). He administers seven to eight drops twice a day, after the two principal meals, in a glass of milk, beer, or water, with or without wine. He uses pure beech creosote, and commences with one drop, increasing one drop a day, until the requisite dose is determined.

A New Phenomenon observed in Facial Peripheral Paralysis, is reported by Bordier and Frenkel in the *Semaine Médicale* of September 8. The subject affected with severe peripheral facial paralysis is unable to close his eyes when requested, without turning the eyeball of the side involved upward and slightly outward. This sign indicates the gravity of the prognosis, and the progress toward recovery as it gradually disappears.

Sanoform.—P. Sternberg of Berlin, describes in the *Ther. Mon.*, July, his favorable experience with sanoform. He has used it in ninety cases, thirty-seven of them fresh wounds. The powder was applied copiously after cleaning the wound with an occlusive bandage. In two to four days the bandage was changed, when the wound was found healed in most of the cases. If necessary a second dressing was made, under which the wound healed smooth. In twenty-eight cases there was suppuration, abscesses, panaritium, etc., which were first lanced and curetted. When the bandage was changed they were found almost completely dry, and at the second change of the bandage most of them were quite healed. Fourteen cases of fissures and rhagades were treated with a 10 per cent. sanoform-lanolin salve and healed in the shortest time. Six cases were tamponed with sanoform gauze, which is sterilizable.—*Ther. Woch.*, August 1.

Acute Purulent Arthritis due to Pneumococci.— Fournier and Courmont (*Revue de Médecine*, September 10, p. 681), maintain that in addition to subacute and chronic forms of arthritis due to pneumococci, there occurs also an acute phlegmonous form, of which they describe an illustrative case. From the anatomo-pathologic point of view, three degrees of arthritis due to pneumococci may be described: 1, the mild form without macroscopic lesion; 2, the form attended with simple hydrarthrosis; 3, the ordinary purulent form; 4, the form presenting osteoarthritis with cartilaginous and osseous lesions, which occurs rather more frequently than is generally believed. In the course of arthritis due to pneumococci, death, which occurs rather frequently, is due most often to secondary generalization of the micro-organism to other serous membranes (pleura, pericardium, meninges), and rarely to the primary infection. This generalization may be attributed to impaired resistance of the soil, and to maintained virulence of the micro-organism, even after its passage through the articulation. This virulence, however, seems in certain cases to be attenuated in proportion to the multiplicity of the lesions.

Inflammatory Conditions of the Uterus, Adnexa and Pelvic Peritoneum with Intra-uterine Irrigations.—From Tomsk comes the announcement by Prof. J. N. Grammatikati, that all the above conditions are healed with the best results, even the most obstinate endometritis and gonorrheal affections, with daily irrigations for an average of forty days, with one gram of the solution: Alumnol, 2.50; tinctura iodi and alcohol absolut. aa 25.0, injected with a Braun syringe. The surrounding parts are first disinfected, the portio opened with a speculum and parts held with ball forceps; Hegar dilator used if necessary. Two grams of the solution are used in acute inflammatory conditions with exudation. The menses are arrested by fifteen to twenty irrigations and this temporary climacteric which lasts two or three months is an important factor in the cure. Neoplasms frequently subside completely with this treatment, and where a pyosalpinx still requires operating, the indications are much more accurately determined after the remarkable improvement secured by the irrigations. Many chronic cases were so much improved that an operation ceased to be necessary, and in grave gonorrheal affections the ability to conceive returned. No inconveniences were observed from this treatment in the 3,000 irrigations made in his clinic during the last three years. Transient pain in a few cases was relieved at once by repose or a morphin suppository, 0.01.—*Therapeutische Wochenschrift*, August 22.

Oil of Wintergreen as an External Application in Rheumatism.—According to M. Lemoine, local applications of oil of wintergreen are valuable in rheumatic fever, acting more rapidly in relieving pain than salicylate of soda and being less liable to produce tinnitus or giddiness, which sometimes follows the use of the latter drug. He soaks a piece of lint in two or three drams of the essential oil, and applies it to the skin; the whole is then completely covered by oiled silk, which well overlaps the lint, and carefully bandaged so as to prevent external evaporation. The application is made over the painful spot if this is conveniently situated; if otherwise, the thigh or arm is chosen. In this case the oiled silk should be long enough to encircle the limb, and the absorption of the salicylate of methyl which forms some 40 per cent. of the oil produces almost as good result as if applied to the seat of the pain. This method of treatment answers very well also in some cases of sciatica and, according to M. Siredey, in chronic rheumatic affections, where it may be used for a considerable time without any ill effects, either local or general. Here it acts better when applied directly to the affected joints than when the dressing is placed round the shaft of the bone. The strong smell of the oil is the only inconvenience. The same application has proved useful in relieving the lightning pains in a case of locomotor ataxia. The use of oil of wintergreen as an external application in chronic and subacute rheumatism is not anything novel, though the particular method of its employment may perhaps be so. Mr. J. D. Staple, however, used it in the Stockport Infirmary several years ago as a liniment combined with an equal quantity of olive oil, and reported that in only two out of a hundred cases of chronic rheumatism did it fail to relieve the pain.—*Lancet.*

The Treatment of Surgical Tuberculosis with Koch's New Tuberculin.—Eve (*Lancet*, September 18, p. 705) reports eight cases of surgical tuberculosis subjected to treatment with Koch's new tuberculin (T. R.). Three cases of tuberculous disease of joints, without sinuses or evidence of softening of caseous material, were the only ones in which favorable results were observed. Two of these were examples of early tuberculosis of the elbow and hip respectively. Of these it was thought that the same results might have been anticipated from surgical rest, improved diet, etc. In the other, occurring in a patient with relapsing tuberculosis of the knee of four years' duration, it seemed probable that the remedy exercised a favorable influence. One case was an instance of tuberculous peritonitis with ascites, which was treated immediately by celiotomy. During the administration of the tuberculin there was no reaccumulation of the fluid, but the child continuously lost weight. It was necessary to give the tuberculin slowly and gradually, owing to the weakly condition of the child, and to avoid pyrexia. The remaining four cases were all examples of tuberculosis with sinuses. These, with one possible exception, were absolutely uninfluenced by the treatment. The sinuses did not heal and in three instances operation was ultimately required. The case of a child with tuberculous tenosynovitis of the dorsum of the hand seemed clearly to show that no immunity to tuberculosis was established by the treatment. The tuberculous material had become caseous and broken down, with sinus formation, but was not, in the ordinary acceptance of the term, septic. After the conclusion of the course of treatment with tuberculin, all of the tuberculous material was freely and carefully removed by operation, no bone disease being found. The wound healed by first intention, but two or three weeks later recrudescence occurred in the scar and subjacent tissues. The exceptional case referred to occurred in a patient with tuberculous epididymitis. A sinus that remained after the opening of an abscess healed during the administration of tuberculin. The personal impressions of the results of the new remedy are summed up as follows: Some slight, although no markedly favorable, influence may be exerted in cases of early tuberculosis of joints or in which no evidence of softening of caseous material exists, but the effect when caseous material has broken down, and especially if the disease has become septic, is negative.

Recovery after Stab-wound of the Heart and Pericardium.—Williams (*Medical Record*) has reported the case of a colored expressman, 24 years old, who, during an altercation, received a stab-wound through the fifth costal cartilage, injuring the internal mammary vessels and wounding the pericardium and heart. The wound was about an inch long, three-fourths of an inch to the left of the sternum, through and in the long axis of the fifth cartilage. With a probe only a superficial wound could be made out, but during the night there was such persistent hemorrhage, pain over the cardiac area, short, sharp, shrill cough and such pronounced symptoms of shock that a re-examination on the following morning showed that the knife had penetrated the fifth costal cartilage in its long axis at least far enough to wound the internal mammary artery and veins. When the knife had been withdrawn the elastic cartilage had closed behind it, preventing the introduction of the probe the night before. Operation was decided on and the original wound lengthened to the right as far as the middle of the sternum. A second incision about six inches in length was made from the center of the first and carried over the middle of the cartilage and fifth rib. The sternum, cartilage and about one inch of the fifth rib were exposed. The cartilage of the fifth rib was separated at its junction with the sternum and at a point two and a half inches from the sternum and one-fourth of an inch from its attachment to the rib. The inferior attachments of the incised piece were separated, leaving the superior ones in place. The incised piece was reflected upward, making an opening about two inches long and one and a half inches wide, bringing the internal mammary vessels into view. These vessels were ligated above and below with small catgut. This large opening permitted easy ligation and manipulation. To secure additional room an incision was made in the fifth intercostal space. The heart and lung being displaced backward, a small punctured wound of the heart about one-tenth of an inch in length and about half an inch to the right of the right coronary artery, between two of its lateral branches, was seen. The wound in the pericardium was about an inch and a quarter in length. There was no hemorrhage from the heart or the pericardium. The edges of the pericardium were held by long, smooth forceps and a continuous suture of fine catgut was introduced. Before the pericardial wound was closed it was irrigated with normal salt solution. Catgut was used in closing the intercostal and subcartilaginous wounds and silkworm gut in the cartilages and the skin. A few silkworm gut sutures were left long in the external wound, so as to permit of easy removal in case this should become necessary on account of infection or hemorrhage. A dry dressing was applied. The surgical progress of the case was not especially eventful. An effusion formed in left pleural cavity and in that of the pericardium. An incision in the seventh left intercostal space, two inches long parallel to the rib, gave exit to eighty ounces of bloody serum. There was no further complication and the patient left the hospital, well, seven and a half weeks after the reception of his injury. He was subsequently at work in the stock yards at Chicago two years later, and again three years later.

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SATURDAY, OCTOBER 30, 1897.

THE DEADLINESS OF THE HARMLESS.

There is an ancient sentiment of the human mind which is continually receiving unexpected corroboration from modern sources. It has expressed itself in various ages in the paradoxes that the Gods are jealous of prosperity, "Woe unto you when all men speak well of you;" " It's dangerous to be safe," etc. Self-contradictory as it appears, it has a basis in fact and nowhere has this been more surprisingly demonstrated than of late years in the realm of dietetics. Wine, for instance, was to the patriarch a thing "which maketh glad the heart of man ;" to the apostle the very life-juice of the universe, the best symbol of the blood of Christ; to Old Omar "the gift of God," "the Mighty Allah;" to the Greek, the crimson joy of the universe; but now, thanks to that distinguished band of scientists, FRANCIS MURPHY, T. DE WITT TALMAGE and FRANCES WILLARD, we know it in its true colors as a demon, an adder, a corroder of mucous membranes, the mother of murder and the grandfather of gout.

Again, what could have been more guileless in appearance, more blandly innocent in (and of) flavor, than the harmless, necessary potato, and yet after enjoying the confidence of the human species for centuries it has just recently been unmasked and denounced publicly, by no less an authority than the great Mrs. RORER, as a treacherous member of a murderous family, the Solanaceæ. Innocent as it appears, it is a first cousin of the deadly nightshade, the reformed member of a vegetable " tribe of Ishmael," and in the circus-poster language of the LOMBROSO mountebanks, "a criminal born." In spite of all the pains lavished upon its education it may "revert" at any moment and anyone who would avoid an attack of solanin poisoning is adjured by Mrs. R. to shun the treacherous tuber, and under no circumstances to imbibe more than one *per diem.* So that the real trouble with Paddy is not the potheen but the "praties." Like Mr. PICKWICK after the cricket-dinner, "It washn't the champagne, it wash the shalmon!"

Of course every person today who is half-educated knows that to indulge in the juicy grape or fragrant raspberry is simply equivalent to tempting "Providence" (the orthodox term for anything discomfortable), in the shape of an attack of appendicitis.

But worse is to come. When the denouncers of the drink demon had succeeded in dragooning us into shunning the flowing bowl and contenting ourselves with the lady-like lemon and the chastely cool soda-water, we were assured that the battle of Armagedlon was practically won and the race saved. Now, however, in the fullness of time arises another prophet from our own ranks to cry aloud and spare not, in the columns of one of our esteemed contemporaries, against the terrors that menace our national life in the increasing consumption of acid foods and drinks. According to him the situation is most serious. The depraved palate of New York City requires more than twenty-five carloads of lemons *per diem* to glut its cravings. Oranges and limes are poured in, in equally appalling quantities. "The grateful acid of the rhubarb in conjunction with binoxalate of potash, with the malic acid contained in gooseberries, currants, cherries, plums, apples and pears adds to the acidulous tide!" "Tide" is no word for it; "avalanche" is the only adequate term.

Tomatoes have "multiplied in production ten times since 1800 until, from comparative obscurity, they have reached the head of the list." And we wonder that heart disease and cancer are on the increase, both of which, as everyone knows, are due to the acid of the truculent vegetable. Sergeant BUZFUZ had indeed a gleam of deepest prophetic insight when he thundered "Chops! merciful heavens, gentlemen of the jury, and *tomato sauce!* Are the hearts of confiding females to be broken in this fiendish manner !" "Forty thousand tons of cucumbers and a million gallons of vinegar" are certainly enough to set the national teeth on edge. Even the preservatives which are added to the canned fruits are by a positive fatality "acids" too, salicylic and boracic, although no one would know it from their taste or effects, but "'tis down in the play" and adds to the general acidulous ruin. "Thirteen millions of pies per week," 80 per cent. of them acid, of course, while a fashionable dinner is "a feast of sours and a flow of acids from first to last."

And this is only the solid half of our sins of sourness, for "the realm of acid ingesta geometrically expands when we enter the domain of drinks." It is true that the floods of mineral waters give our scientist pause for a moment, but only a moment, for do they not contain acid also? Certainly, carbonic acid, and behold another nail in our coffin! In his despair he cries aloud that "the acidulous habits of the body mark a stage in civilization," this golden Victorian era is an acid age, an age of puckerings, of wry faces, of sour stomachs.

So terrible is the prospect that his reason well-nigh totters on its throne, and he detects the deadly traces of sourness in the smell of things, nay even in the very sound of words. The innocent term "ascetic," for instance, which to uninitiated ears has almost a note of sanctity, becomes to him phonetically full of deadliest significance. "The modern fashionable women are rendered not only somatically but also psychologically *ascetic*," we are assured, and the prophecy closes with this awful threat of doom, that "the coexistence of somatic and psychologic *asceticism* can no longer be ignored!"

And to think that this fearful fate is hanging over all of our ignorant heads and we can not even grasp what it means when we are told in plain English.

Would we fain know just how are these tons and oceans of acid ingesta to produce their harmful effects? By "reducing the alkaline bases and salts in the fluids and tissues of the economy," and as "the alkalinity of the blood is the measure of its germicidal capacity," one can easily see what terrible things may happen. What makes the situation so serious is that with the obstinate short-sightedness characteristic of mere theorists, all our psychologists assure us that the vegetable acids, including acetic, are promptly converted into alkaline carbonates, that all fruits and vegetables contain large proportions of sodium, potassium, calcium and magnesium in combination and *increase the alkalinity* of the blood and lymph. Not only so, but our physicians are under the same grave delusion, and insist that in scurvy, for instance, which is caused by a deficiency of vegetables and fruit-acids in the diet, the blood becomes acid and can be restored to its normal alkalinity by those acids of acids, lemon-juice or pickled limes. And to such lengths is this blind perversity carried that citrates, acetates, tartrates and even lemonade and acid fruit-juices are freely given in rheumatism and gout, cystitis or any condition in which lessened alkalinity of the blood is suspected, thus really, according to Dr. ENGLISH, adding fuel to the flames. And, of course, having once committed themselves to this position they are going to brazen it out to the end, for they unblushingly declare that the appalling "sour habit of the American stomach," next on our author's list of horrors, is produced entirely by the acids of fermentation of starches, sugars or fats, lactic, phosphoric, butyric or by an excess of HCl, none of which are in any way related to the acids of foods and drinks, but are animal and mineral instead of vegetable. But all these are of course simply instances of the absurd positions into which the scientific mind permits itself to be drawn step by step by the fatal chains of logic and necessary causation. Turn the light of common sense upon them and they collapse at once. The thing tastes acid, it smells acid, it is called "acid," it *is* acid and must inevitably turn anything sour to which it is added, even the fluids of the human body. The damage which we have done and are doing in our ignorance is simply blood-curdling to think of. "Blood-curdling"—why, there is another acid at work, and what must be the coagulating effects of this "acid tide" upon the milk of human kindness. No wonder the race becomes more cruel and wicked every day. And think of the irrepressible conflict between this overwhelming sourness and the "sweetness and light," which we are so vainly striving toward. But there is a ray of personal comfort in this for our prohibition friends. Think of all the agonies and discomforts that they have endured both personally and by proxy in depriving themselves and others absolutely of the enjoyment of the "good creature" in every form, when it was only the acid ones which they need have shunned. For no one, we feel sure, can read Dr. ENGLISH's eloquent denunciation without becoming convinced that at least two-thirds of the evil effects attributed by temperance reformers to alcohol are really due to the acids with which it is usually combined (or the human "chemicals," or the eye of the writer, or anything else *but* the alcohol).

This will at last explain why almost the only penalty to be paid by the (alkaline) beer-drinker is to become "fat and scant o' breath" after forty, while the (acid) wine-bibber lays up a future of gout, insanity and Bright's disease. Why the man who mixes soda with his brandy and Apollinaris with his whisky lives to a good old age, while the imbiber of "sour mash," champagne or gin-fizz, winds up with a private view of the pink alligator and a stomach-lining like that of a condemned boiler. The danger of the wine-cup is literally in its sparkle, for that is due to (carbonic) acid. Cassio's tragic apostrophe should read in the light of this revelation: "Oh thou invisible spirit of wine, if thou hast no name to be known by, let us call thee CO_2!" And as every free drinker will tell you the real "stingo" of the Manhattan cocktail lies in the (acid) cherry at the bottom of the glass. No wonder that alkalies relieve that familiar dark red taste in the mouth. To be alkaline is to be safe.

THE MORTALITY OF HEATSTROKE.

During the record-breaking weather of the month just ending there have been a number of prostrations from heat in some of our cities, and a consideration of sunstroke may therefore appear less unseasonable than might otherwise be the case. It is suggested at this time, however, by an article in the *Sanitarian* for

October, which originally appeared in the *Spectator*, a life insurance publication. The author, Mr. **Frederick L. Hoffman**, has analyzed the available statistics of mortality from heatstroke, and his conclusions and deductions are certainly deserving of notice and comment in a medical publication.

It is a curious fact that has not infrequently been remarked upon, that the death rate from this cause is extremely light in our more southern cities as compared with that of many of the northern ones. The statistics here given show this and something more; while the summer of 1896 had beaten the record in this respect up to that date in New York, Philadelphia and St. Louis, and in the two first named cities at least there had been up to 1896 an apparently progressive increase for a number of years back, in Cincinnati, on the other hand, there has seemingly been of late years a correspondingly steady decrease of deaths from this cause. It is evident from these facts that mere solar heat is not the only efficient factor, for, as Professor **Trowbridge** remarks, in the *Monthly Review of the Weather Bureau* for 1896, the inhabitants of Boston suffer under a temperature which is readily endured by those of New Orleans, and a personal factor, the accommodation of the individual to physical environment, must be added to that of the actual climatic conditions. His " provisional index," however, "that sunstroke becomes imminent during the summer months when the mean temperature of any one day, or of several consecutive days, becomes equal or nearly equal to the normal maximum temperature for the same period," does not appear to practically cover all the facts, as such days must occur as frequently in Cincinnati or Chicago as in New York, where the death rate from heatstroke is highest. It would seem that we should also consider other factors as well as heat alone, and as New York is the great entry port for immigration, and statistics show that the mortality as compared with the number of cases amongst the foreign born is very much greater than amongst natives, though the number of cases may not be so disproportionate, we may, as has been generally done, count acclimatization as one important factor. The Italians alone, in Mr. **Hoffman**'s statistics, appear to enjoy a corresponding immunity, but the figures given are too small for generalizations.

Acclimatization alone is, however, not a sufficient reason for the difference between the eastern and western or southern cities, and the well known and often quoted fact, that is supported also by the insurance journals' statistics, of the evil influences of alcoholic indulgences will also afford no explanation of this regional difference. Why sunstroke should be so much more fatal in New York with a maximum temperature of 94 degrees, than in Chicago with one of 98, Cincinnati with one of 96, or St. Louis with one of 100, is not entirely clear; the conditions of living, etc., are not so obviously in favor of the last named cities as to afford any ready explanation. In New Orleans and other southern towns, and possibly to a certain extent in Cincinnati and St. Louis, it may be reasonable to assume that the habits and customs are more sanitary as regards exposure to heat; the residents do not expose themselves as a rule with the same recklessness as do the laboring classes of the north, who furnish the greatest part of the victims of heatstroke, and to this it is probable that they owe in great part their immunity. But even this may be insufficient to altogether account for the fact; there may be other elements, climatic or otherwise, of which we know little or nothing, that come into play to reduce the mortality. Consideration of the local conditions is certainly inadequate to satisfactorily explain all the phenomena that are sometimes observed.

If heatstroke is due to a toxin as some have suggested, whether of external or internal origin, there is need for its careful and thorough study to check the waste of human life from this cause. There are other affections, far less fatal in the aggregate, that have claimed and obtained more attention, and there are not so very many that when not fatal are yet so disastrous in their after-effects as is this. In view of this last fact which, considered in all its aspects, is even more serious than the actual immediate mortality (though this may, as in 1896, reach into the thousands in this country), we are not likely to over-estimate the importance of this accident.

THE BACTERIOLOGY OF WHOOPING COUGH.

While it is generally agreed that whooping cough is an infectious disease, there is as yet no agreement as to the specific micro-organism to which etiologic activity can be attributed. Such organisms have been described by **Burger** (*Berliner Klin. Wochenschr.*, 1883, No. 1); by **Afanassiew**, who in 1887 isolated a bacillus; by **Ritter** (*Deutsche Med. Wochenschr.*, 1892, No. 45, p. 1020), who found in the bronchial secretion a diplococcus, and by **Kurloff** (*Centralb. f. Bakteriologie*, Vol. xix, Nos. 14 and 15), who isolated a ciliated ameba. It is still a matter of doubt which, if any, of these is the actual cause of the disease.

To these contributions to the subject another has been recently added by **Czaplewski** and **Hensel** (*Deutsche Medicinische Wochenschrift*, 1897, No. 37, p. 586), who describe the isolation of bacilli corresponding in some respects with those observed by **Burger**. The observations were made with fresh sputum, obtained directly after a paroxysm of coughing. The more dense flocculi were selected and washed with agitation not less than thrice in tubes containing peptone-water to remove the more gross contaminations. Streak-preparations were then made and stained with diluted carbol-glycerin fuchsin or with diluted carbol-fuch[illegible] F[illegible] ultivation, LER's serum in Petri dishes was employed. The micro-organisms isolated by these means proved to be small, slender bacilli with rounded extremities. They resembled in several respects influenza bacilli, from which they differed, however, in growing upon ordinary culture media. They varied considerably in size.' The smallest bodies resembled cocci, and those in process of division diplococci. The developed bacilli are two or three times as long as thick. In cultures, less commonly in the sputum, the organisms were joined in more or less long filaments. In their morphologic variability they resembled plague bacilli, which, however, are much larger. They are immobile, and permanent forms could not be made out. The bacilli can be stained with ordinary aniline colors and by GRAM's method. They are usually found in the sputum in large numbers in severe cases of whooping cough. They are principally free, but less commonly enclosed within cells. At the beginning of the disease bacteria are present in small numbers and are to be found only with great difficulty. When the sputum is not washed thoroughly other bacteria are found, the presence of which interferes with the development of the organisms in pure culture. Experiments upon animals have thus far proved unsuccessful. The organisms described are believed to be the cause of whooping cough, having been found in all of the thirty cases examined. This assumption was strengthened by the discovery of the bacilli in several cases at the time unrecognizable clinically as whooping cough, but which subsequently developed the disease. The organisms described were found in the nasal secretion. Further, one of the authors was seized during the progress of the investigation with severe coryza, accompanied by constitutional disturbance and slight cough, on one occasion paroxysmal. The whole attack lasted but one week, but the organisms in question were repeatedly found in the nasal secretion, apparently in pure culture.

ON RETROPERITONEAL AND PERIRENAL LIPOMA.

As is well known, the fat normally present around the kidneys is liable to overgrowth when these organs are diseased; especially when the kidney has undergone atrophic changes is an apparently compensatory hyperplasia of fat liable to occur—compensatory in the sense that it replaces the loss of volume due to the shrinking of the kidneys. But there is another form of overgrowth leading to the development of large neoplasms in which the kidneys primarily seem unaffected. Prof. J. GEORGE ADAMI, of Montreal, has recently subjected the instances of this form of tumor reported in the literature to a careful study and added two cases of his own.[1] This article must be considered as timely because there does not exist any general résumé, in our language, of this form of abdominal tumor.

Prof. ADAMI's first case occurred in a man 45 years old. It concerned a huge retroperitoneal lipoma which presented areas of mucoid degeneration and in other parts a structure resembling sarcoma. The tumor weighed no less than forty-one pounds; the left kidney was imbedded in the growth, the ureter passing down along the back of the tumor, the right kidney being unaffected. Death occurred, after symptoms referrable to the abdomen had existed for about eleven years; during the last weeks of life large quantities of pus were removed by repeated aspirations, in all about sixty pints. An exploratory laparotomy had been made, but the relations of the solid tumor, occupying practically the whole abdominal cavity, did not warrant any attempts at removal (Dr. SHEPHERD).

The second case occurred in Brooklyn under the care of W. W. BROWN, the specimens being deposited in the Army Medical Museum at Washington. A slowly growing abdominal tumor existed for two years before death, which resulted from acute pulmonary disease. At the autopsy an irregularly flattened tumor, weighing forty-one and a half pounds, was found adherent to posterior peritoneal wall and exerting marked pressure on the abdominal viscera and the diaphragm. The descending colon passed over the growth and the left kidney was imbedded in and firmly fixed by adhesions to the tumor. Microscopically the tumor consisted "largely of adipose tissue in a voluminous stroma of embryonic connective tissue with abundant nuclei between the fat cells."

ADAMI found forty similar cases recorded in the literature. The most important previous contributions are those of TERILLON[2] in France, who collected fifteen cases, and by JOSEPHSON and VESTBERG[3] in Sweden, who analyzed thirty cases.

As to the primary seat of origin of these huge lipomas exact statistics can not be given. ADAMI divides them into those of peritoneal origin, those whose origin was doubtful, and into those which appeared to have originated either in the mesentery or its root. About one-third of the cases may reasonably be described as having a perirenal origin; the largest collection of retroperitoneal fat occurs physiologically around the kidney and here is a most likely place for retroperitoneal lipoma to begin. The condition is more frequent in women than in man, in the proportion of 25 to 16. The tumor occurs almost exclusively in middle and late life, but in LAUWER's[4] case the growth was recognized fourteen days after birth and "growing steadily, attained such a size and led to so much emaciation, that when removed at the age of seven, it weighed six pounds, or almost a third of the total weight of the child after its removal (twenty pounds).

The rate of growth of this form of tumor is slow.

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[1] Montreal Medical Journal, January and February, 1897.

[2] Arch. Génér. de Méd., 1886, p. [illegible]

[3] Hygeia (Stockholm), lvii, 1895, p. 209.

[4] Josephson and Vestberg, l.c.

On an average between two and three years elapsed between the first recognition of the tumor and removal, or death of the patient. In some cases the growth was observed for five, seven, eight and even twelve years. The size attained in the majority of the cases exceeded twenty English pounds, in weight; many were above forty and fifty pounds and one weighed sixty-three pounds.

The general disturbance is slight. Case after case is recorded without pain or disorder of the intestinal or urinary functions. As the end approaches pain may shoot down the extremities and edema of the legs may develop. Extreme emaciation and dyspnea are common features.

The definite presence of fluctuation has frequently led to diagnostic errors. Ascites, multilocular ovarian cysts and echinococcus cysts are examples of false diagnosis. A fluctuating abdominal tumor of the abdomen from which repeated puncture fails to draw fluid should lead one to think of lipoma.

The divergent descriptions of the histology of these growths are easily reconciled by the fact that every member of the group of connective tissue tumors may pass into or show areas of metaplasia into other members of the group. Hence all forms of mixed mesoblastic tumor tissue may be met with in varying proportions. True fibro-chondro-osteo-lipoma may occur.

In the forty-two cases, twenty-six extirpations, complete or almost so, were made with success in twelve cases or 46.1 per cent. In general the huge mass peels out with fair ease, though accessory lobules often have to be removed after the main mass has been shelled out. Recurrence is rare. In most of the fatal operations death may be attributed to the cutting off of the blood supply of the overlying intestine, followed by gangrene. When possible the tumor should be removed by lateral or lumbar incision. If this is impossible without gross injury to the peritoneum then free excision of the overlying intestine must be made as has been done in several cases.

In recapitulation: A retroperitoneal lipoma may be suspected when there is a very slowly growing tumor oftener situated more toward one side, accompanied by no special symptoms except progressive emaciation and eventual dyspnea, crossed by a length of intestine, and giving a sense of fluctuation, from which, further, repeated puncture fails to draw fluid. Successful operation presupposes the preservation of the blood supply of the intestine crossing the tumor; if the supply of blood is endangered resection of the intestine becomes necessary.

THE REFORMATION IN ENGLISH SPELLING.

A valued correspondent invites our attention to a letter by Mr. ROBERT BARNES, and another by Dr. JOHN WM. MOORE, both on the subject of "Reform in the spelling of the medical vocabulary," in the venerable London *Lancet* of October 2. Both these writers deprecate any change in the sacred diphthongs, and inasmuch as these were used in the original Greek, according to Dr. MOORE, we must continue to use them. This would all be very proper if we were speaking Greek, but as we are speaking English, we do not see why it is any more difficult to trace the etymology of a word in the one case than in the other. Even in Dr. MOORE's letter it is shown that "empyema" was the spelling of the word, and therefore instead of deviating from archaic models, we are simply returning to them. What about the Greek words that are from the Sanscrit? The same argument logically applies, and at the last we must, if etymologic exactness be required, go back to the Egyptian and Assyrian hieroglyph.

Moreover, it is of no use for the brethren to waste their time in fighting for the reinsertion of letters which time has shown to be obsolete and which simply add to the difficulties of English and accomplish nothing; we might as well return to the spelling of CHAUCER and SPENSER for ordinary English words. The English language has grown by evolution, one might say by excision. As we have before pointed out, nobody now spells thigh "thighe" or leg "legge," and yet this was the mode of spelling during the first half of the 16th century. We suppose that many learned heads were shocked at the dropping of the letters, and Dr. MOORE himself admits that "changes are constantly taking place and will in the future take place." Some of our transatlantic brethren still retain the u in "labour," "ardour" and "colour," and the k at the end of the word "musick," but we doubt if the Americans have time, much less inclination, to reinsert these superfluities, and if the Americans are a little faster than the English and have adopted these reforms more quickly, it is not from any disrespect to the language, nor the source from which it is derived, but from a desire to economize time, labor, material and money. Then, if the Americans can improve the language by pruning its excesses and eccentricities, the Englishman should at least rejoice with us in the establishment of a more modern language in which he need have no part.

THE NEW YORK STATE MEDICAL ASSOCIATION.

The annual meeting of this society was held in New York October 12, 13 and 14. The most interesting part of the meeting was the discussion of the abuses of medical charities. Dr. WIGGINS opened the subject with a startling array of figures from Dr. STEPHEN SMITH's report. Among them was noted the startling fact that at least 49 per cent. of the entire population of New York city was receiving free medical care and medicines. A number of physicians followed adding equally strong testimony, and showing that most of the great charity clinics and hospitals were literally pauperizing and creating more abuses and distress than they relieved. While this is an old story in New York, and an outrage on progress and rational science, which the profession submit to with stolid indifference, it is strangely spreading to other cities and even small towns of the country. Within a few months over a dozen hospitals and free dispensaries have been established in small suburban cities and villages, with a flourish of names and donors as if they were really charities. The profession have themselves to blame for this sad state of miscalled charities. This discussion only brought out in clearer light an evil, which it is hoped the leaders of the New York medical profession will cure with skill and success. It is a curious commentary on the fads of the profession, that twenty-six of the forty-five papers read were on surgical subjects. Two on alcohol and tobacco, one on expert testimony, one on materia medica, and twelve on abuses of medical charities and allied subjects. This meeting always brings together a large number of country and village practitioners of the better class, and the papers and discussions are always of a high order, and very practical. While the New York medical teachers contribute their full share of papers, the men from outside are equally clear and practically scientific, their contributions are as eagerly followed, and many of them are better contributions to medicine. It is interesting to note that this Association is the only State society with a permanent home in America. The Mott Memorial Hall was a gift of that distinguished surgeon, and includes a fine building, library and museum, with a fund to perpetuate it.

By an arrangement with the trustees the New York State Medical Association came in possession of this property, and through its trustees continue the care and management of the building, and hold its annual meetings and committee meetings in its halls. The building and site are valued at $80,000, and the museum and library are equally valuable. The New York State Medical Association is the permanent trustee and manager of this property, using it for their purposes, and it is open to members as a place to resort while in the city. The library is open to the public, and contains a rare collection of books on medicine, and a very extensive pamphlet and journal literature. This Society has always been in close affiliation with the AMERICAN ASSOCIATION and has done much to redeem the mistakes of some other medical men in this State. The president elect was DOUGLAS AYERS, M.D., of Fort Plain, N. Y., and the secretary, the well-known E. D. FERGUSON, M.D., of Troy, N. Y. This Association is divided up into five district societies which hold quarterly meetings in different parts of the State. These meetings are very popular and largely attended, and are noted both for their social and scientific attractions. The interest which they create extends to the State Association, and is in many respects a model for other State societies.

CORRESPONDENCE.

Ballston Springs, N. Y. as a Resort for Invalids.

HARTFORD, CONN., Oct. 23, 1897.

To the Editor:—In answer to some inquiries, I would say that the famous old watering place of Ballston Springs, New York, is practically an ideal place for nervous and dyspeptic persons who need a change of surroundings, with quiet, and nature's great remedies, mineral waters. Half a century ago this was the most prominent mineral springs resort in America. Saratoga, four miles north, was a mere hamlet. Now Saratoga has become a great center of hotels, sanitariums and springs, and Ballston is a quiet, dreamy suburban village. Down in a valley protected from the high winds, in the dry bracing air of the Adirondack snow belt, free from fogs and sleet storms, it has many attractions as a residence for invalids. To many persons the invalid atmosphere of sanitariums and the unrest and excitement of hotels are depressing and injurious. Whereas the geniality and quietness of a private family is a strong tonic of great value. The springs of Ballston are the same as at Saratoga, being on the same mineral belt, and are mostly soda, magnesia, potassa, iron and lithia waters. Some of them are strong carbonated waters and very agreeable to the taste. I should urge invalids from deranged digestion and nervous debility, to go to Ballston, select some private house as a home, near some of the many springs, and drink freely of the waters. This, with the rest and change, will bring a recovery and full and final restoration in many cases. This advice followed by an invalid physician, resulted in his return home restored after a two months residence. Personally I have seen most excellent results from the use of these waters drunk at the springs regularly every day, and I am convinced many persons supposed to be chronic cases would be restored by such treatment. Beyond this a number of persons who are semi-invalids, would find this an excellent place for the change of scenery and surroundings. The town is a very old one and rich in historic interest, and contains many quiet old homesteads where visitors can find most agreeable places of residence. I believe the waters and the quiet restful atmosphere of Ballston, make it far superior to many foreign springs that are famous resorts, and it will be a pleasure to be of any assistance to any one who would like to spend a short time at this place. T. D. CROTHERS, M.D.

Lepers of New York Turned Loose by the Board of Health.

NEW YORK, Oct. 20, 1897.

To the Editor: -The public be d——! Whether leprosy is contagious or not does not seem to be the question with our New York Board of Health. The point is to escape responsibility, care and trouble. Let the leper go; we are glad to get rid of him on any terms!

It is a lamentable circumstance that such devil-may-carelessness should exist just on the point where it can do the most evil. New York is the most important port of our country. The lepers are foreigners; most of them come from Norway, Sweden, Iceland, South America and the West Indies to New York. Most of the lepers who live in Minnesota and Wisconsin came through New York. Had they remained here instead of going to those far off States, would the New York Board of Health dare to have let them run loose? Horrified public opinion would have compelled their isolation.

There is another question which regards the leper himself rather than the public. What will become of him, left to himself, ejected from one house, finding by deceit a short-lived shelter in another, every man's hand against him? Who will employ him? How will he live? A public charge he must be; if not on the board of health, on the State. I would not answer for his not being stoned or hung to a lamp-post by an angry populace.

Whether the board of health will take the trouble of keeping apart and taking care of the lepers is not a thing in which the City of New York, or the State of New York, alone is interested. All the neighboring States, New Jersey, Pennsylvania, Illinois, etc., are interested in the matter, that is, in the question whether the board of health maintains isolation, or *defies* not only public opinion, but professional opinion; that is the declaration of the most eminent body of leprologists that the world has ever seen assemble; I mean the Conference at Berlin. ALBERT S. ASHMEAD, M.D.

Ship Island Quarantine.

NEW ORLEANS, LA., Oct. 17, 1897.

To the Editor:—In reference to an editorial in the JOURNAL of Oct. 9, 1897, "The Public Health Bill," it seems right to say: This editorial implies that the epidemic of yellow fever now existing in the Gulf States was introduced through the Ship Island Quarantine. Now, I would say that there is no evidence whatever that it was so introduced and much to the contrary. I have not the time now to give the results of the investigations that have been made, but would say that the professional members of the Board of Health of Louisiana have expressed to me decidedly the contrary opinion. All the members of the Mississippi State Board with whom I have spoken, including its secretary and president, have expressed a similar opinion. Dr. Dunn, the member of the Mississippi Board stationed at Ocean Springs, Miss., who took especial pains to investigate the origin of the fever, stated that there is not the slightest reason to believe that the fever in Ocean Springs came in via Ship Island and that everything indicated that it was introduced from another source. Very respectfully,

H. R. CARTER, Surgeon U. S. M.-H. S.

ANSWER.—We have advice to the contrary, and would in reply ask Dr. Carter what form of night patrol, if any, has been in use at the Ship Island Quarantine, and what precautions have been taken to prevent ships' crews from rowing ashore at night?

Rapidly Performed Pyloroplasty.

ROCHESTER, MINN., Oct. 18, 1897.

To the Editor:—My article on "Cicatricial Stenosis and Valve Formation as a Cause of Pyloric Obstruction, with a Report of Five Cases Relieved by Operation," published in the JOURNAL Oct. 16, 1897, contains three cuts of a method of rapidly performing pyloroplasty which add largely to the interest of the publication.

These cuts were furnished me by Dr. A. J. Ochsner of Chicago and represent a method original with him, and not with myself, as would appear. The proofs which I examined did not contain the diagrams and by some oversight their source was not properly acknowledged.

Very truly yours, W. J. MAYO, M.D.

Prizes for Medical Essays.

To the Editor:—What prizes, if any, are now open for competition to the writers of medical essays? Could you inform me what the prizes are, when they are to be awarded and to whom the essays are to be sent? Truly yours, N. O. N.

ANSWER.—"Competition for the Senn Medal," *vide* JOURNAL, July 3, 1897, p. 42; "The Alvarenga Prize," this issue, page 927.

PUBLIC HEALTH.

An Epidemic of Whooping Cough much Attenuated by intercurrent vaccination is reported in the *Gaz. d. Osp.*, of August 3. Sixty-three children were vaccinated and 50 per cent. of those under 4 years were cured completely. In those over 4 years there were six cured, eleven much improved, while thirteen were not affected. Marigo adds that the satisfactory results secured should encourage further trials.

The Question of Serotherapy in the Bubonic Plague has been solved, Metchnikoff reported at the Moscow Congress, but in practice it will be necessary to produce serums far more active than those hitherto in use, and especially stronger in antitoxic power than those employed in British India during the campaign of 1897. Even with the weak serums at his disposal, Yersin succeeded in reducing the mortality from 80 to 49 per cent., and his prophylactic vaccinations were signally successful.

The Value of Mallein as a Test for Glanders is confirmed by Nocard, who states that every animal responding completely to the test (organic and thermic) should be killed and that those who do not respond are not affected by glanders, no matter what symptoms they may present. He recommends inspection by the authorities and licenses for the horses in livery stables, etc., frequently renewed, with disinfection of stables, etc., after a fair or other gathering.

Mortality and Hereditary Syphilis in Children of Prostitutes.—It has been a regulation in Hamburg, for twenty seven years, that every prostitute confined at the public hospital must bring her child to the city physician every month or oftener for examination, until it is a year old. S. Werner publishes a report of the results in the *Woch. f. prak. Derm.*, Vol. 24, Nos. 4 and 5, which is an important contribution to the study of hereditary syphilis. The mortality among the children is high, 63.5 per cent. from syphilitic mothers; 57 per cent. from non syphilitic. Several instructive instances are related of inheritance of post-conception infection, and one of the still disputed *choc en retour*. Tardy symptoms after the first year were seldom noted. Four healthy and five diseased children were born in nineteen cases of simultaneous conception and infection; the rest aborted. Fourteen children inherited syphilis in 31 cases of tertiary disease. The effect of treatment before and during pregnancy is also studied.—*Cbl. f. Chir.*, August 4.

Resolutions of the Illinois State Board of Health.—The secretary reports as follows: "The Board at its meeting (*vide* JOURNAL, October 6, p. 817) adopted a resolution recognizing the diplomas of the Playfair School of Midwifery, 169 South Clark St., and the Chicago Midwife Institute, 233 La Salle Ave., on condition that these institutions comply with the schedule of minimum requirements for schools of midwifery. It was also resolved that after Jan. 1, 1901, no schools of midwifery or medicine will be recognized unless their instruction is in the English language. A resolution was also passed requiring all non-graduate applicants for license to practice medicine and surgery in Illinois, who are required to submit to examination in accordance with the provisions of the Medical Practice Act, to present as evidence of satisfactory preliminary education, either a diploma or certificate of graduation from a high school, evidence of having passed the matriculation examination to a recognized literary or scientific school, or a certificate of successful examination by the faculty of any reputable university or college, or by the State Superintendent of Public Instruction in the following branches: English grammar, arithmetic, elementary physics, United States history, geography and Latin (equivalent to one year in a high school). As a further test of the qualifications of the candidate as a practitioner, each applicant is required to present a certificate signed by a demonstrator of a medical college in good standing with this Board, attesting that the applicant has pursued the study of practical anatomy in said college and has made dissections of the entire cadaver."

Low Death Rate in Brooklyn.—The *Bulletin* of the Department of Health of Brooklyn, October 9, shows for that week the low rate of 14.7 deaths per 1,000. The deaths from all causes were 332 in number, the population being estimated at 1,180,000. There were no deaths registered from variola, measles or scarlet fever. By the first named cause there has been no death for a period of eleven weeks; by measles none for four weeks; by scarlet fever, with one exception, none for nine weeks. Diphtheria and croup have their fluctuations, but no material change from month to month. Typhoid fever mortality is higher than in the former quarter, but about the same as in the year previous. The number of reported cases has been so great as to induce the health commissioner to address a circular to the medical profession, inviting its co-operation in his efforts to seek out the sources of trouble; that circular, bearing date October 4, is as follows: "As typhoid fever is unusually prevalent in the city this fall, unusual efforts to determine, and if possible to abolish, the source or sources of infection, are eminently advisable. You are urgently requested to aid the department in this work by reporting promptly every case of typhoid that comes under your care. Beyond leaving at the house the usual circular of information, it is not our intention to interfere with these cases in any way, as it is not considered that isolation or school exclusion is called for. Our inspectors will be instructed to confine their inquiries to possible sources of infection." Deaths by malarial fevers are rare and for a period of one month six fatal cases only were recorded. The mortality of New York City, for the week ending October 9, was about four points higher per 1,000 than that of Brooklyn for that week. Can it be that the attention of the authorities of the former city has fallen off in regard to the cleaning of streets and the arrest of pasteurized milk purveyors, about which so much has been written during the past few months?

The Paris Sanitary and Biologic Plant.—Dr. E. H. Wilson, bacteriologic expert of the Brooklyn Board of Health, visited Paris last summer and was most hospitably entertained by Dr. Roux. The doctor says that the antitoxin plant is located at Garches, a suburb of Paris, and is about nine miles from that city. It is an auxiliary to the Pasteur Institute and is under the direction of Prof. Roux. "The professor was very courteous and drove me out to Garches, where the entire day was spent by him in showing me the details of the plant. They produce there antitoxin for diphtheria, tetanus and the bubonic (or Chinese) plague. The serum for the plague is sent out to Dr. Yersin in Amoy, where there is a branch of the Pasteur Institute, and his serum is being used with marked success in India. They have 150 horses for diphtheria antitoxin and the care bestowed on these animals and the general management of the plant is well worth observing. Each horse spends the third day in the field. An entry clerk keeps all the data in reference to the injections and the other details of the process. The horses are all in the very best of health and attended with the greatest possible care. All the guinea pigs used in the standardization of the serum and for other purposes are kept at this plant. They have over one thousand guinea pigs there. The personnel of the establishment numbers about 20, and consists of a director, a resident superintendent, 11 stable hands, 2 laboratory hands, 1 laboratory assistant, who is called the inspector; 1 record clerk and 3 women who are employed in bottling antitoxin. The general impression of the whole place convinces one that all such work involving care and health of animals should be done in the country and not attempted in the cities. In regard to municipal disinfection, for that was the next thing I investigated, as a preface I would say that the system used in Paris is in the main similar to that used in Brooklyn before the Board of Estimate cut down the appropriation so as to compel the discontinuance of our plant. It is called the Municipal Service of Disinfection and is under the care of the Prefecture of the Seine. It consists of two corps of men, one for disinfection of the house, and the other for the disinfection of the goods at the stations. They have in the city of Paris four disinfecting stations. The principal station is at 6 Rue des Recollets. The disinfection is done by steam under pressure. The goods are taken there by the collection wagons, which are used for no other purpose, and by men who do not handle disinfected goods. Then the goods are put in ovens on the infected side of the building and subjected for a certain time to a high temperature. They are then removed to the disinfected side by men who never handle infected goods. These two bodies of men have absolutely no communication with each other. After the process of disinfection the goods are delivered in clean wagons prepared for that purpose. Now while this is being done the corps of men at the house disinfects the sick room. This is done by scrubbing the floors, scrubbing the walls in case they are smooth, or in case of frescoed walls by spraying them with an atomizer filled with disinfecting solution. The appropriation for this service in 1896 was about 362,000 francs. Of this amount 353,000 francs were for the general service and 9,000 francs for the disinfection of schools.

Yellow Fever.—Our report for last week closed with dispatches of the 19th, announcing 56 new cases and 4 deaths at New Orleans. At other cities, on the same date, the following was the record: Mobile, 5 new cases, with 2 near Mobile; Edwards, 4 cases; Clinton, 4 cases, Scranton, 4 cases; Pascagoula, 1 case, while at Montgomery, Ala., State Health Officer Anders reported that there were 4 known cases there, and probably more. Biloxi reported 21 new cases and 1 death, and at Waveland, Miss., 2 of the 3 "suspicious" cases were declared yellow fever, while McHenry reported 1 new case. October 20, dispatches were as follows: Montgomery, Ala., 1 death and 5 new cases; New Orleans, 53 new cases and 6 deaths; Edwards, 4 new cases; Queen's Hill neighborhood, 3 new cases; Cayuga, 5 new cases. October 21.—New Orleans, 43 new cases and 2 deaths; Montgomery, Ala., 4 new cases; Mobile, 1 new cases and 3 deaths; Wheelerville, 2 cases; Flomaton, 2 new cases; Clinton, Miss., 4 new cases; Nittayuma, 2 new cases; Edwards, 5 new cases; Bay St. Louis, 7 new cases with 1 death, and Cayuga, 5 new cases. October 22.—New Orleans, 50 new cases, 5 deaths; Mobile, 10 new cases, 5 of which were taken from the Italian bark *Livomus*, also 2 deaths; Memphis, 1 "suspicious" case; Cayuga, 1 new case; Bay St. Louis, 1 new case; Edwards, 4 new cases. October 23.—As a result of investigations at Selma, Ala., 7 cases were declared yellow fever in that city; Montgomery reported 13 new cases and 1 death; Mobile, 6 new cases; New Orleans, 49 new cases and 7 deaths; Memphis, the "suspicious" case declared to be yellow fever; Bay St. Louis, 7 new cases; Clinton, 2 new cases; Cayuga, 1 new case; Nittayuma, 6 new cases; Edwards, 2 new cases. The State Board of Health on this date quarantined the State of Mississippi against Alabama. October 24.—New Orleans, 31 new cases and 3 deaths; Selma, Ala., 3 new cases and one death. October 25.—The Board of Health of Memphis. Tenn., reported 3 new cases and 2 deaths; Mobile, Ala., 7 new cases and 1 death; Montgomery, 4 new cases and 1 death; Raymond, Miss., 1 new case; Edwards, 1 new case; Bay St. Louis, 6 new cases and 1 death; Biloxi, 1 death; New Orleans, 57 new cases and 11 deaths, the largest number of deaths for any single day. Heavy frosts are reported from Atlanta, which makes the outlook there encouraging. Dispatches of the 26th report 50 new cases at New Orleans, with 5 deaths; Montgomery, 10 new cases and 1 death; Selma, 1 death; Mobile, 3 new cases; Baton Rouge, 2 cases; Memphis, 7 new cases; Biloxi, 14 new cases: McHenry, 1 new case and 1 death: Scranton, 10 new cases, and Bay St. Louis, 1 death. Yellow fever is also declared to exist at New Albany, Miss.

Yellow Fever Immunes.—The Florida State Board of Health has issued the following circular:

Pensacola, Fla., Sept. 27, 1897.

To the Citizens of Florida:—It has been computed from statistics upon the subject that only one person in nine thousand may suffer from a second attack of yellow fever. Therefore one seizure may be considered as determining for all practical purposes of public safety an immunity to the disease. In 1893 the State Board of Health of Florida adopted a method for the benefit of the many thus protected, by perfecting a system of "Immunity Credentials" by a certificate of immunity to yellow fever in the form of a card of convenient pocketbook size, which attests, under the seal of the State Board of Health and the signature of the State Health Officer, that the bearer had yellow fever, with place, date and name of attending physician, together with an accurate personal description and the autograph of the bearer. These cards are numbered and registered in the office of the Board at Jacksonville. They do not, however, exempt the baggage of the holder from disinfection should he or she have baggage from a yellow fever infected district.

As there are now many persons in Florida who, having had an attack of yellow fever, can be said to be "immune" and protected from subsequent seizure, it is desired to invite the attention of these yellow fever "immunes" to the great personal benefit which the possession of the card herein described confers, as giving freedom in travel in yellow fever districts (without baggage, of course, or baggage which has been disinfected). The identification of the party holding such card can always be established by comparing his or her signature and by telegraphic or other reference to the office of the Board at Jacksonville. This subject has been taken up with the boards of health of the Southern Gulf States, and already very encouraging replies promising co operation have been received.

There is no charge for these "immunity cards," nor for any health certificates issued by the State Board of Health of Florida. The proof of having experienced an attack of yellow fever must be substantiated by indisputable evidence before an "immunity card" will be issued.

JOSEPH Y. PORTER, M.D.,
State Health Officer of Florida.

YELLOW FEVER IMMUNITY CARD.

This certifies that . . . .
a native of . . . .
and resident of. . . . . .experienced an
attack of yellow fever at. . . . .
in 18 . . Attending Physician . . . . . .
No . . . .
State Health Officer of Florida.

This card does not exempt baggage and personal effects from disinfection.

NECROLOGY.

W. D. BRATTON, M.D., Passed Assistant Surgeon, United States Marine-Hospital Service, died at Sabine Pass, Texas, October 2. A circular from the Marine Hospital gives the following: During the present yellow fever epidemic in the South, Passed Assistant Surgeon Bratton, although an invalid and therefore on waiting orders, promptly volunteered his services to meet the emergency, and the tender was accepted. He was ordered to Sabine Pass where he arrived September 28. On Oct. 1 he had been superintending the disinfection of a vessel, and returning to the ship to reinspect it, he fell through a ventilating hole, striking his head upon an iron knee, producing concussion of the brain. He remained undiscovered for several hours and when found was unconscious and remained so until death occurred eighteen hours after the unfortunate accident. William DuBose Bratton was born in Fairfield County, South Carolina, June 23, 1860, the son of Gen. John Bratton of Winnsboro in that State. His early education was acquired in Mt. Zion School, Winnsboro, and at Abbeville, S. C. In 1874 he was matriculated at the Carolina Military Institute at Charlotte, N. C., remaining two years, and then entered the University of the South at Sewanee, Tenn., where he received the degree of B.S. in 1880 after a three years' course. He began the study of medicine and was graduated at the Medical College of South Carolina March 1, 1881, and for the year following was house surgeon at the Charleston City Hospital. He was commissioned as assistant surgeon April 1, 1885, and assigned to duty at New York. His subsequent stations while in that grade were San Francisco, Cal., as medical officer of revenue cutter *Corwin* for service in Alaskan waters and then for temporary duty at Port Townsend, Wash. He was commissioned a passed assistant surgeon April 2, 1888, and again assigned to duty as medical officer on the revenue cutter *Bear* for service in Alaskan waters. In May, 1889, he was ordered to duty in command of the service at Portland, Oregon, where he remained two years and was then assigned to duty at Chicago, Ill. In 1893 he was placed in command of the service at Buffalo, N. Y., where he remained till Jan. 9, 1894. In the fall of 1893 he first became aware that he had tuberculosis and he was sent to Wilmington, N. C., for its favorable climate, where he remained several months, meanwhile doing temporary service at Delaware Breakwater Quarantine, but later he was placed on "waiting orders" (Jan. 1, 1895), taking up his residence in Arizona and finally at Albuquerque, N. M., to obtain the advantages of the southwestern arid region. After a two years' residence there he reported, in March, 1897, his gradual return to health, which justified him in asking for an early restoration to active duty, but further delay was advised in order that he might have the benefit of a longer residence and, if possible, a permanent cure. Passed Assistant Surgeon Bratton, during the period of "waiting orders," became much interested in the climatic treatment of consumptives and wrote several reports on the arid region of the Southwest as the best locality for such work, recommending the establishment of a sanitarium in that section for the treatment of patients suffering from the disease. His literary and scientific attainments were of a high order and his studious habits and keen faculties enabled him to maintain in the service a reputation for unusual professional knowledge and skill in practice. Officially, devotion to duty was always a paramount consideration with him and his conscientiousness in respect thereto was a marked characteristic of his work. Personally, he was of modest and reserved manner, yet frank and manly in his demeanor and actuated by a high sense of honor in all relations with his associates. He hated subterfuge and despised an ingrate. He was an honest man and a gentleman.

JAMES P. DALY, M.D., Bellevue, N. Y., 1886, a candidate for Coroner in the borough of the Bronx, New York City, died at his home during the early morning of October 15. Apoplexy, the cause of his death, was thought to have been superinduced by excessive campaign work. He was of delicate health and had been a school inspector for six years.

GEORGE RICHARD SMITH, M.D., died at the Plaza Hotel, New York City, October 17. His remains were interred in Oneida, N. Y.

WM. H. FORD, M.D., University of Pennsylvania, 1863, President of the Philadelphia Board of Health, died suddenly at his summer home in Belmar, N. J., October 19, aged 58 years. He was a member of the board for twenty-seven years, and was a writer on sanitation and hygiene of considerable repute.

JOHN A. RAUB, M.D., University of Pennsylvania, 1862, at one time president of the Northampton County Medical Society, died in Philadelphia September 29, aged 61 years.

JARRARD K. SMITH, M.D., Government physician at Koloa, Sandwich Islands, was shot down in his doorway September 24 by a native whose mother and sister had been ordered as lepers to Molokai. There are some reasons for believing that he was identical with Dr. Jared Knapp Smith, College of Physicians and Surgeons, New York City, class of '76, as he was born on the island of Kaui and received his medical training in New York City.

VINCENT ZOLNOWSKI, M.D., University of Vermont, 1883, of New York City, died at his summer home, Lake Ronkonkoma, L. I., October 21. A son of the same name, also a physician, survives him.

R. A. EVERETT, M.D., Hillsdale, Mich., October 20, aged 58 years, one of the founders of and at one time president of the Southern Michigan Medical Society.——William H. Veatch, M.D., Carthage, Ill., October 10, aged 66 years.——Joseph C. Wheaton, M.D., Jefferson 1883, of Millville, N. J., died there October 13.——Girard R. Ricketts, M.D., Western Reserve Medical College, Cleveland, Ohio, 1855, died at his home in Proctorville, Ohio, September 20. Three sons, all physicians of Cincinnati, Ohio, survive him. He was born in Virginia in 1829.

BOOK NOTICES.

The Practice of Surgery.—A Treatise on Surgery for the use of Practitioners and Students by HENRY R. WHARTON, M.D., and R. FARQUHAR CURTIS, M.D., profusely illustrated. Philadelphia: J. B. Lippincott Company, 1897. Pages 1240.

The book has 38 chapters, which fairly cover the extensive field of surgery and surgical pathology.

Naturally there must be difference of opinion as to the relative space to be accorded each topic. But taking it as a whole it is perhaps as fairly divided as can be. Due consideration has been given to the wants of the student and practitioner, and in many respects the work is a praiseworthy one.

A great many of the illustrations we notice are from Agnew's great work on surgery by the same publisher, which doubtless accounts for their rather free introduction. The topics seem to be brought fairly down to date, and include the essentials of the practice of surgery.

Naturally in any work not encyclopedic there must be some omissions. we note for example in the operative treatment of varicose veins the Schede method is not referred to, and on the next page the presentation of the subject of "cirsoid aneurism," is entirely inadequate; but we have seen, so far as we have examined the book, no positive errors of statement, and the omissions are not of a character to make the loss deeply felt by those who depend upon it for information. We commend the book as the latest and one of the very best text books on surgery at this date.

A Manual of Medical Jurisprudence. By ALFRED SWAIN TAYLOR, M.D., F.R.S. Revised and edited by THOMAS STEPHENSON. London. Twelfth American edition. Edited with citations and additions from twelfth English edition by CLARK BELL, Esq., LL.D. Pages 832. New York and Philadelphia. Lea Brothers & Company. 1897.

It may well be conceded that the advent of an energetic editor like Mr. Clark Bell would result in vast additions to the book and one is not disappointed in so considering. To most of us the "Taylor Medical Jurisprudence" comes like an old friend to whom we turn for counsel and support in case of need.

The present edition has preserved all the valuable features which made the old Taylor so popular and at the same time has introduced much of modern matter.

The chapter on "Medico Legal Surgery" is a distinctly new feature of this edition and for the first time "railway" surgery figures as a recognized specialty in legal medicine.

Report of the Commissioner of Education for the Year 1895-96 Vol. 1, containing Part 1. Washington Government Printing Office. 1897.

The volume is a valuable addition to educational history. The introduction by the commissioner, William P Harris, PH.D., LL.D., contains statistic tables comparative of educational conditions in the United States since 1870, from which it would appear that while the population has nearly doubled, educational advantages have kept pace. The percentage of population enrolled in schools and the per capita expenditure are both greater; likewise the average time attended by each has been prolonged.

The remainder of the volume is taken up with various educational matter pertaining to the United States and countries of Europe.

SOCIETY NEWS.

The International Lepra Conference at Berlin was auspiciously inaugurated October 11 with 150 members, including forty four delegates from twenty seven governments and scientific societies, Virchow presiding. Carrasquilla's report is awaited with interest as his serum is being tested in France, Italy, Japan, India, Mexico, etc. The Paris committee consisting of Fournier, Besnier, Roux and Hallopeau, reported to the Académie de Méd., September 28, that they find the serum ineffectual, and that C.'s announcements of improvement and cure were premature. The subsidence of the disease in a few cases after treatment can only be ascribed to the intermissions characteristic of the affection. Buzzi of Berlin, on the other hand, is most favorably impressed with the results in his one case, and the South American papers state that delegates sent to Bogota from Mexico and Costa Rica, reported in favor of the treatment on their return.

The Association of Medical Officers of the Maryland National Guard has been organized in Baltimore. All the active medical officers of the Guard are members. The officers for the current year are: Major George H. Rohé, Surgeon 5th Reg. Veteran Corps, *president*, Brig. General Ridgley B. Warfield, Surg. Genl. Med. Nat Guard, vice president; Captain J. B. Schwatka, Asst. Surg. 4th Regiment, secretary treasurer. The Executive Committee consists, in addition to the above mentioned officers, of Col. Robert W. Johnson, Med. Director, 1st Brigade; Maj. J. D. Norris, Surgeon 4th Regiment; Capt. I. R Trimble, Assist. Surgeon 5th Regiment, and Lieut. Sidney O. Heiskell, Surgeon Maryland Naval Reserves. The Association has been formed in order to promote the efficiency of the medical service of the Maryland National Guard. The organization and its objects have the approval of the Governor and the military authorities of the State.

MISCELLANY.

The Use of Glass Weights has been authorized by the Swiss government, made by the Schmid patent (Schmid of Bulach).

To Succeed Dr. Bates. The President has appointed Medical Director W. K. Van Reypen to be Surgeon General of the Navy to succeed Surgeon General Bates, deceased. The duties of the office are quite familiar to Dr. Van Reypen, as he acted in the capacity for some time, and was also regularly detailed as Assistant in the Bureau of Medicine and Surgery.

The Benjamin Rush Monument.—At the recent meeting of the New York State Medical Association, the pledge made in the name of the Association, to give $2,000 to the Rush monument fund was redeemed, and $2,000 set aside for that purpose.

Office Removal.— The office of the Secretary of the Association of Military Surgeons of the United States has been removed from Columbus, Ohio, to Fort Crook, Neb., because of a recent War Department order transferring James E. Pilcher, M.D., the Secretary, to that point.

Proof of Death Demanded.— An insurance journal reports that a certain Dr W A Dunn of Elkhart, Ind., was insured to the amount of $20,000 He is alleged to have died in Naples, Italy. His body was brought home in a sealed casket and interred, the casket not having been opened. Companies refuse to pay on the ground that there is no evidence that he is dead. They will resist until such evidence is presented.

Hydrophobic Paralysis. Professor Calabrese describes in *Rif. M I*, p. 172 an unusual case of hydrophobic paralysis in a young woman, a hysteric, bitten on the lips, which combined all the bulbar and dorsolumbar symptoms. No antirabic treatment was attempted. The temperature fell from 42 to 37.7 degrees C. twenty-four hours before death. The disease lasted fourteen days. Some have ascribed the transient paralysis observed during antirabic treatment occasionally, to the treatment (*vide* JOURNAL, pp. 201 and 818), but facts like the above tend to prove that it is merely an attenuated form of the disease.

An Inflammable Cosmetic.—Of all the life-destroying devices employed by women a certain petroleum hair wash stands in the front rank. The *Insurance Observer*, London, mentions an accident caused by the ignition of this mixture. It is also known by the names "Antiseptique Liquide," "Dry Shampoo," "Pétrole," "Le Fin de Siècle," etc. It consists chiefly of petroleum spirits which give off inflammable vapors at ordinary temperatures.

Colds as a Factor in the Etiology of Disease.—E. Fischl reports some interesting experiments exposing rabbits to attenuated pneumococcus infection after allowing them to get chilled, the results of which show that getting chilled is a predisposing element of great importance in the etiology of disease. Further research showed that the bactericidal power of the blood serum is not altered, but that the phagocytosis is seriously affected.—*Wien. klin. Woch.*, August 26.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga and amounting to about $180, will be made on July 14, 1898, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but can not have been published, and must be received by the secretary of the College on or before May 1, 1898. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the College; other essays will be returned upon application within three months after the award.

A Defective Ambulance Service.—The JOURNAL, which has heretofore criticised the defects of the ambulance service in Chicago, and especially the want of proper medical attendance at the police stations and in cases of emergency, is gratified to learn that the Health Commissioner, Dr. Arthur R. Reynolds, has recently made a practical test of the service which discloses a condition of affairs fully justifying the JOURNAL'S strictures. The city provides six ambulances at police stations to cover 180 square miles of territory, but none of these is furnished with a medical man; occasionally a physician in the vicinity of a police station or a senior medical student volunteers his services. Dr. Reynolds selected four of these ambulances, assigned a surgeon to each and equipped each vehicle with the necessary appliances, etc., for furnishing "first relief." In an aggregate of 181 days of service these gentlemen answered 429 calls, traveling an aggregate of 2,441 miles, and gave "first aid" and then transferred 277 cases to hospitals and 81 to their homes by ambulance, the remainder being treated either where found or at the stations and then discharged. In addition to this service 51 cases among prisoners at the stations were also treated. Among the 429 ambulance cases were 24 injuries from street-car accidents, 13 from bicycles, 6 from railroads, 52 from falls from scaffolds, etc., 16 gunshot and 20 stab wounds. The injuries embraced simple and compound fractures, dislocations, contused, incised and lacerated wounds, sprains, bruises, etc. Among the remaining cases were resuscitation from drowning, bites by alleged rabid dogs, poisoning, burns, scalds, acute appendicitis, typhoid fever, rheumatism, delirium, insanity, attempted suicide, alcoholism, epilepsy and heat prostration. Dr. Reynolds says: "Some lives were undoubtedly saved by this service, as well as much suffering, through prompt treatment, correct diagnosis, arrest of hemorrhage, administration of antidotes, etc. A correct diagnosis, as, for example, of a person found unconscious, which condition may be due to a fracture of the skull, concussion of the brain, alcoholism or other cause, is of the first importance, as recent unfortunate occurrences demonstrate. Concerning the ambulances it is noted that none of these vehicles is of the modern style and all lack in important requirements. They seem to have been kept in as cleanly condition as the resources of the stations permitted; but an ambulance for the transport of the varied class of cases with which the police have to deal should be of the most approved type, strong but light, easy riding, rubber-tired and capable of being kept surgically clean, lest an unfortunate contract some other disease from a previous occupancy or have blood poisoning added to the dangers of his wound or injury." This object lesson should serve a useful purpose in arousing the city fathers to a condition of affairs which is a disgrace to the community, and should result in securing an adequate appropriation for the establishment of a creditable, humane and efficient provision under the supervision of the Health Department for the relief of emergency cases of sickness and injury.

Societies.

The Southern Missouri Medical Association will hold its twenty first semi-annual session at Malden, Mo., November 2, 3 and 4.

The following meetings are noted:

Connecticut.—Hartford County Medical Association, Hartford, October 20.

Illinois.—Chicago Medical Society, October 20: DeWitt County Medical Society, Decatur, October 12. District Medical Society of Central Illinois, Taylorville, October 26. Iowa and Illinois Central District Medical Association, Rock Island, October 14. Illinois Military Tract Medical Association, Galesburg, October 21. Morgan County Medical Society, Jacksonville, October 14.

Iowa.—Cedarville Medical Association, Independence, October 13.

Kentucky.—Clark County Medical Society, Louisville, October 12.

Michigan.—Detroit Academy of Medicine, October 12. Wayne County Medical Society, Belleville, October 11.

Missouri.—Jackson County Medical Society, Kansas City, October 14.

New Hampshire.—Strafford District Medical Society, Dover, October 13.

New York.—Central New York Medical Association, Buffalo, October 19. Niagara District Medical Association, Niagara Falls, October 13. Northern New York Medical Association, Ogdensburg, October 12. Oneida County Medical Society, Rome, October 12.

North Carolina.—The Medical Society of Mecklenburg was organized October 12.

Ohio.—Eastern Ohio Medical Association, Bellaire, October 20.

Pennsylvania.—Lebanon County Medical Society, Lebanon, October 12.

Vermont.—The eighty-fourth annual meeting of the Vermont State Medical Society, St. Albans, October 14.

Virginia.—Richmond Academy of Medicine and Surgery, October 12.

Washington.

HEALTH OF THE CITY.—Report of Health Officer Woodward, for the week ended October 16, shows the total number of deaths to have been 89, of which 49 were white and 40 were colored. There were 13 new cases of diphtheria and 12 of scarlet fever reported.

EPISCOPAL EYE AND EAR HOSPITAL.—At the semi annual meeting of the Board of Governors recently held, the report showed that there had been 1,132 visits to the eye department; 180 visits to the ear department; 609 to the throat department. While the total number of patients treated was [illegible], and 63 operations were performed. The me[illegible] have decided to give lectures to the nurses and [illegible] to a limited number of medical students. The [illegible] or showed, receipts, $3,056.22; disbursed, $3,461.13 for furnishing and maintenance of the hospital to date. Mrs. Mary M. Carter has donated $5,000 to endow a bed in memory of her parents.

Dairyman Fined.—W. V. Hoff was fined $20 in the police court for selling milk after license had been refused. The Health Office had declined the license because the place of business did not conform with the sanitary regulations of the department.

Medical Society.—At the meeting of the Medical Society held on October 20, S. S. Adams, M.D., presented a plan for the establishment of a milk laboratory and depot in this city. The subject was discussed fully, and a committee appointed to report on the same. Dr. Glazebrook presented a number of interesting pathologic specimens, illustrating the advantages of the Kaserling fluid as a preserving agent.

Denver.

The Medical Department of the University of Denver has inaugurated many changes. The seventeenth opening exercises were held October 5, one month later than in previous years. The term will close one month later. This was done with a view of giving both teachers and students the benefit of recreation and recuperation during the best portion of the year, and also in order not to subject the students to the hardships of working in the dissecting room during the warm days of the season. The antiquated method of dissecting at night was done away with forever. All the work in the anatomic laboratory is henceforth to be done by the light of the sun. While speaking of the Denver University, it is most appropriate to record the death of Dr. John Evans, the second Governor of the Territory of Colorado, which has occurred recently. In him the medical department has lost one of its staunchest friends, for every step in the earliest history of the college was taken under the guidance of the powerful intellect and indomitable will of this master mind.

The first fall meeting of the Denver and Arapahoe County Medical Society was held in the Brown Palace Hotel October 12. Dr. Waxham read a paper on the "Identity of Membranous Croup and Diphtheria." He cited many cases in which the membrane alone appeared in the larynx, yet the bacteriologic examination showed the cases to be diphtheria. Dr. Henry Sewall, Secretary of the State Board of Health, spoke of the difficulty encountered in quarantining such cases. In small towns everything is termed membranous croup, and the children from such families are allowed to attend the public schools. Dr. Levy spoke of two cases which he intubated, one of which had no membrane at all. Both died, and the cultures gave positive results. Dr. G. M. Black read a paper on "Simple Pterygium Operation" and presented a new instrument provided for this purpose. The instrument is a double blade, right-angled and pointed. Dr. Bane in discussing the instrument said he finds it not only useful in pterygium, but also in removing cysts and small growths from the eyeball. Dr. A. C. Godfrey reported a cases of abnormal position of the vermiform appendix in a boy 11 years old, who was suffering from curvature of the spine and frequent attacks of colic. He ate some green apples and had at first all the symptoms of cholera morbus, and later developed those of obstruction of the bowels with tumor palpable in left inguinal region. The autopsy showed the vermiform appendix to be enormously swollen, full of pus, containing several enteroliths and extending across the pelvis, pressing on the sigmoid flexure to such an extent as to produce obstruction. Dr. Axtell spoke of the various positions of the appendix which he had found in a large series of postmortem cases, and he called attention to recent report of three cases of left-sided appendicitis.

The Clinical and Pathological Society held its annual and first meeting of the season October 15. This society is "limited"; it confines its membership to the number of forty, and the roll is always complete. It enjoys the rare distinction of having a full attendance at each meeting, and during the four years of its existence never had a dull meeting. The reason of this signal success is said to be due to the fact that they do not tolerate set papers. Each member reports impromptu interesting cases from actual practice. At the last meeting Dr. Leonard Freeman reported a case in which he operated for inguinal hernia and retained testicle. He removed the testicle and found another one in hiding. The microscopic examination of the first, however, showed it to be an undeveloped kidney. Dr. J. N. Hall presented a patient in whom the flouroscope showed beautifully the transposition of the abdominal and thoracic viscera. Dr. Axtell reported a case of undoubted typhoid fever in which both Widal's and diazo tests were repeatedly made with negative results. Perhaps the most important factor which makes this society the dream of many candidates is the fact that the end of the scientific program does not mean adjournment. The society meets once a month in the office of one of its members, and each host vies with the preceding in the point of hospitality. The annual election of officers resulted as follows: C. K. Fleming, M.D., president; M. G. Black, M. D., first vice-president; Alfred Mann, M.D., second vice-president; J. M. Walker, M.D., secretary, and Leonard Freeman, M.D., treasurer.

Some prominent members of the profession are taking considerable interest in the crematory to be shortly erected by the Denver Cremation Society. Among the initiators are Drs. Axtell, Woodall, Mann and Minnie Love.

CHANGE OF ADDRESS.

Babbitt, W. H., from Raleigh, N. C., to Marion, Ind.
Behrens, B. M., from Benson to 9 E. 25th St., Minneapolis, Minn.
Culver, D. M., from 410 Virginia Ave. to 743 Fletcher Ave., Indianapolis, Ind.
Collins, R. G., from 5139 Wabash Ave. to 5059 State St., Chicago.
Derwent, A. E., from Elma to Lamoni, Iowa.
Dall, S., from 465 Milwaukee Ave. to 667 Oakley Ave., Chicago.
Davis, C. E., from Woodward, O. T., to 225 28th St., Chicago.
Eichberg, L. E., from 332 W. 85th St. to 211 E. 62d St., New York, N. Y.
Hughes, C. U., from Big Run to Eleanor, Pa.
McBride, M. A., from Senior to Yorktown, Texas.
Pilcher, James E., from Columbus, Ohio, to Fort Crook, Neb.
Ragsdale, J. E., from Chapel Hill to Marshall, Mo.
Rathbone, F. W., from Tonganoxi, Kan., to 1015 Prospect Ave., Kansas City, Mo.
Sabin, T. H., from Yuma to Mesa, Ariz.
Schultz, R. C., from 108 E. 54th St. to 305 W. 46th St., New York, N. Y.
Wallace, J. S., from St. Louis to Brunswick, Mo.

LETTERS RECEIVED.

Alvis, R. H., Ardmore, I. T.; Anders, H. S., Philadelphia, Pa.

Bromberg, F. G., Mobile, Ala.; Black, J. C. (2), Milford, Mich.; Broughton, R., Dwight, Ill.; Bausch & Lomb Optical Co., Rochester, N. Y.

Cleveland, E. L., Dundee, Ill.; Chilton, E. Y., Howard Lake, Minn.; Cooper, Joseph L., New Castle, Pa.; Courtney, Walter, Brainerd, Minn.; Cambridge, P. H. M., Tilden, Ill.; Curry, C. J., Hornbeak, Tenn.; Caldwell, J. J., Baltimore, Md.

Fite, C. C., New York, N. Y.; Frissell, Seraph, Springfield, Mass.; Friedenwald, Harry, Baltimore, Md.

Ginn & Co., Boston, Mass.

Howe, E. J., Newark, N. J.; Horlbeck, H. B., Charleston, S. C.; Harris, J. H., Franklinton, N. C.

Imperial Granum Co. (2), New Haven, Conn.

Jackson, Thomas J., Chicago.

Lentz, Chas & Sons, Philadelphia, Pa.; Larrabee, J. A., Louisville, Ky.; Lord & Thomas, Chicago; Leonard, Charles L., Philadelphia, Pa.; Lusk, Z. J., Warsaw, N. Y.; Little, C. H., Piqua, Ohio.

Montgomery, E. E., Philadelphia, Pa.; Marsy, J. S., Monroe, N. C.; Marchand, V. H., Haubstadt, Ind.; Marcy, H. O., Boston, Mass.; Mayo, W. J. (2), Rochester, Minn.; Marchand, Charles, New York, N. Y.; Manley, Thomas H., New York, N. Y.

Oakland Chemical Co., New York, N. Y.; Opie, Thomas, Baltimore, Md.; O'Gorman, James, Baltimore, Md.

Packard, Francis R., Philadelphia, Pa.; Parks, N. O'D., Ashton, R. I.

Rice, O. W., Neosho, Mo.

Staples, Franklin, Winona, Minn.; Stimpson, E. P., Tiverton, R. I.; Sander, Enno, St. Louis, Mo.

Wingate, U. O. B., Milwaukee, Wis.; Woodruff, Thomas A., Chicago.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from October 9 to 15, 1897.

Capt. Peter R. Egan, Asst. Surgeon U. S. A., is granted leave of absence for six months.

Capt. Ashton B. Heyl, Asst. Surgeon (Ft. Riley, Kan.), leave of absence granted is extended two months.

First Lieut. James S. Wilson, Asst. Surgeon (Camp Eagle Pass, Texas), is granted leave of absence for one month.

Capt. W. E. Purviance, Asst. Surgeon (Ft. Columbus, N. Y.), is granted leave of absence for one month.

First Lieut. Guy C. M. Godfrey, Asst. Surgeon U. S. A., is relieved from further duty at Ft. Yellowstone, Wyo., and is ordered to Ft. Yates, N. D., for temporary duty.

Capt. J. D. Poindexter, Asst. Surgeon U. S. A., now on temporary duty in New York City, is ordered to Ft. Hamilton, N. Y., for duty, when relieved from present duty by Capt. William C. Gorgas, Asst. Surgeon U. S. A.

Capt. Norton Strong, Asst. Surgeon U. S. A., upon being relieved from duty as attending surgeon and examiner of recruits at Chicago, Ill., to await orders in that city for the convenience of the Government.

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ADDRESS.

CHAIRMAN'S ADDRESS.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY MILO BUEL WARD, A.M., M.D.
KANSAS CITY, MO.

This semi-centennial meeting of the ASSOCIATION is without doubt the most important epoch in its history and forcibly reminds each member of the fact that whatever doctrines may at this time be presented, they will be taken as rules and guides until future events shall have proved them false.

That the teachings to be promulgated during this session of our Section will tend to make this occasion most memorable there can be no doubt. The universally recognized reputations of the authors, and the titles of their papers, make it certain that there will not be any lack of interest in our Section work.

If it be true, and we claim it is, that the happiness and usefulness of the present generation and the perpetuity of vigorous future generations depend upon healthy mothers more than all other elements, then certainly it must be important to give our best thought and labor along the line of greater attainments in preventing diseases peculiar to them and the cure of those suffering from the numerous ailments so common to the female sex.

On this auspicious occasion it seems fitting to occupy a brief moment in reviewing some of the work which has been accomplished during the last half-century by way of a more accurate comprehension of the etiology, pathology and treatment of diseases of women by our American profession, largely in connection with the history of the AMERICAN MEDICAL ASSOCIATION. To do more than to refer to some of the prominent members of the profession and the work they have accomplished is quite out of the question in the time allotted. This résumé must therefore be disjointed and probably disappointing to those who would wish a longer and more exhaustive dissertation.

The organization of the AMERICAN MEDICAL ASSOCIATION occurred at a most propitious time. As great men are always to be found for great emergencies, so this organization was launched just at the beginning of the great awakening of the members of our profession to the possibilities of more extensive fields of usefulness.

In 1847 the very common, and we may say almost simple, operation of ovariotomy had been done less than forty times in America and the mortality, the result of these operations, was over 50 per cent.

The first recorded paper on fibroid tumors of the uterus presented to this ASSOCIATION was read by Dr. W. L. Atlee in 1853. Nothing definite regarding the surgical treatment of these growths was recommended, but the value of ergot was highly commended by the author. The records of the progress of gynecology in America show fully as much advancement as those of the older countries, but nothing of special merit is recorded on these subjects until fully a half-century after McDowell's first ovariotomy.

The inventive genius and consummate skill of the father of American gynecology, Dr. J. Marion Sims, began to be recognized by the profession in the early days of this ASSOCIATION'S history, and the wondrous results of the work performed of this great and good man will continue to bless womankind to the end of the world.

Following closely in his footsteps came Dr. Thomas Addis Emmett, whose teachings and operative skill have tended to enrich the science of gynecology second only to Sims, and he still lives to give us wise counsel and valuable assistance in relieving suffering women. Sims and Emmett may truly be styled the pioneers of American gynecology. The great work accomplished by these two specialists entitles them to the highest encomiums possible to be bestowed by the profession. Imbued with the impetus given by Dr. Sims to gynecology, this great specialty was promptly and enthusiastically taken up by Drs. Emmett, H. R. Stover, Nathan Bozemann, E. R. Peaslee, T. Gaillard Thomas, James P. White, W. H. Byford, Robert Battey and scores of others of whose records the profession has just cause to be proud. Dr. T. Addis Emmett's contributions regarding the subject of laceration of the cervix uteri, the etiology of the affection, its symptoms, the effects on the constitution and the operation for its relief are too universally known to require special mention in this connection. Dr. Peaslee, in 1854, contributed a paper on the treatment of septicemia following ovariotomy, in which he recommended the introduction of a tube into the peritoneal cavity, through which the serous sac was irrigated. Time has proved the wisdom of this method of treatment for this grave condition.

In 1856 Dr. J. P. White of Buffalo reported the successful reduction by taxis of an inverted uterus of eight days' standing. He was the first successful operator in this country to reduce a chronic inverted uterus.

In 1868 Dr. Emmett reported that he had retained partial reposition of the uterus by closing the os externum with silver sutures.

Prior to 1862 but one case of pelvic hematocele had been published. That year three essays on the subject were written, respectively, by John Byrne of Brooklyn, Fordyce Barker and E. Noeggerath of New York.

Dr. Shupper of New Orleans gave the profession, in 1866, an exhaustive treatise on vesico-vaginal fistula.

Dr. Theophilus Parvin operated in [illegible] for [illegible]o-vaginal fistula by turning the displa[illegible] of the ureter into the bladder [illegible] vaginal opening. The operation was successful and original with Dr. Parvin.

The removal of a small ovarian cyst through the cul-de-sac of Douglas was first done by Dr. T. G. Thomas, in 1870.

Dr. Robert Battey of Georgia reported in 1870 a case of extirpation of the ovaries for the relief of dysmenorrhea, the result of which was satisfactory. His name has been made immortal through his acumen in selecting suitable cases and performing what he termed normal ovariotomy.

In 1873 Dr. John Ball of Brooklyn recommended the rapid dilatation of the cervix uteri for constrictures and irregularities of the canal from flexions and versions. Dr. William Goodell of Philadelphia invented a valuable instrument for uterine dilatation and successfully performed a great number of these operations.

One of the greatest advancements in modern gynecology was Dr. Emmett's contribution, in 1874, on the pathology and treatment of diseases of the neck of the uterus.

In 1874 Dr. Sims contributed a valuable paper on the enucleation of intra-uterine fibroids. The same year Dr. Byford of Chicago read a paper on the treatment of uterine fibroids by ergot. Dr. Byford was the first to advocate the use of this drug in very large doses to cause expulsion in addition to atrophy.

In 1874 Dr. Alexander Skene performed successfully to both mother and child, the operation of laparo-elytrotomy. The operation has been done only a few times, with a mortality of about 50 per cent.

Dr. Fordyce Barker of New York, and Dr. H. R. Stover of Boston, were the first American surgeons to call the attention of the profession to the causative relations of uterine and ovarian disease to mental disturbances in women. The former published an article upon this subject in 1872, and the latter a monograph upon the same subject in 1871.

Dr. George J. Engelmann, in 1877, gave the profession a collection of facts concerning hysteroneurosis of the brain, pharynx, larynx, eye, stomach, intestines, bronchi and joints of severe and misleading character, frequently produced by non-development of the uterus or ovaries, or both, or peri-uterine disease.

In 1882 Dr. Christian Fenger of Chicago recorded the first successful operation of kolpohysterectomy for uterine cancer, and at the same time advocated the operation as a justifiable one.

It is claimed that Dr. Charles K. Briddon performed the first celiotomy in 1883, after rupture of the fetal sac in tubal pregnancy.

Dr. Matthew D. Mann was the first to publish a successful operation performed in February, 1883, in which he removed a small subperitoneal fibroid tumor of the uterus through the anterior wall of the vagina.

Dr. Burnham was the first American gynecologist to perform successfully supravaginal hysterectomy. This was in 1853. Dr. Stover and Dr. Kimball were among the first to *boldly operate for large fibroids of* the uterus.

In 1884 Dr. R. S. Sutton did the first celiotomy for pelvic abscess.

Dr. T. G. Thomas performed the first systematic vaginal ovariotomy in February, 1870. Dr. Robert Battey performed the operation first in 1874, and in 1877 successful cases were reported by Drs. Gilmore of Mobile, Clifton E. Wing of Boston and William Goodell of Philadelphia.

To Dr. Robert Newman of New York is given the credit of being the veteran advocate in America of the electrolytic treatment of fibroids of the uterus, thirty years ago.

The first journal devoted to obstetrics and gynecology appeared in 1868, edited by Dr. B. F. Dawson. The specialty of gynecology was not recognized exclusively by any medical journal until, 1869, when the *Journal of the Gynecological Society of Boston* was published and edited by Drs. H. R. Storer, G. H. Bixby and W. Lewis.

The first book published on diseases of women after the organization of the American Medical Association was by Dr. C. D. Meigs, and although it ran through several editions, it would be considered a "back number" if compared with the present status of gynecology.

Obstetric societies were formed many years ago in some of the large cities, but the first gynecologic society organized was the Gynecological Society of Boston in 1869. Where obstetric societies existed gynecology shared with obstetrics in the attention which was devoted to it.

In 1870 the American Medical Association passed resolutions recommending that the establishment of chairs of gynecology, separate from obstetrics, be more generally adopted by medical colleges and schools throughout the country. To this great organization, therefore, credit must be given for this timely and important step along the line of greater attainments in this, the most important branch of medicine and surgery.

As early as 1871 there were thirteen medical colleges in the United States in which were full professorships of gynecology and obstetrics. Of this number there were seven schools with full professorships of diseases of women, incumbents teaching nothing else. At the present time every fully equipped medical school has a professor of gynecology whose lectures are devoted exclusively to diseases of women.[1]

A comprehensive review of the progress of obstetrics and gynecology in America during the past fifty years would require too much of the time of the Section. Perhaps sufficient reference has been made to meet the requirements of this occasion.

The last decade has been a period of advancement without parallel in the world's history. It is not within the power of tongue or pen to fittingly present the good accomplished in preventing suffering and saving life, the results of the progress along these branches of the healing art. Today health is restored and life saved where, in like conditions, a few years ago, patients were doomed to suffer on until death summoned them to eternal rest.

In making mention of the recent progress in obstetrics and gynecology, very little can be added to the recorded facts presented by my distinguished predecessors. During the past year operative procedures have in some quarters of the globe and by a few members of the profession, been severely criticised, and instead, palliative measures recommended. Conservatism has been and always should be the watchword of surgeons; just what conservatism stands for, is the all important question. Is it conservatism to permit our patients to suffer and eke out a miserable life, when it is within our skill to restore them to health and happiness? Our mission is most clearly defined by the motto: *Strive to prevent sickness, learn to restore*

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[1] Compiled from the "American System of Gynecology."

health, and delight in prolonging human life by such methods as have been found the safest and surest, regardless of any dogma presented to us by the unfortunate or inexperienced members of the profession, who would have us follow their ipse dixit on the pretext that surgery was never intended to take the place of medicine. The writer is not to be understood as deprecating the teachings of any individual along any special line, neither that medicine has not a field of usefulness in the management of some of the conditions which we are constantly called upon to treat. But the important proposition for our consideration is: What can be accomplished by the conservative plans of our predecessors, which compare favorably with the modern methods of gynecologists? The answer is obvious. While it is true that much harm has been done in the past few years by ambitious and enterprising gynecologists, at the same time were we to compute the awful results of the other class of the profession who would recommend that operative measures should never be resorted to until the suffering patient is about to depart this earth to that country from whose bourne no patient ever returns, then the members of the profession would change their verdict. Is it not entirely pertinent to call a halt, and ask ourselves the question: What is the occasion for this constant play to the galleries, on the part of some of our professional brethren?

The use of vaginal antiseptic douches prior to parturition, which a few years ago were thought essential, are now discarded by many prominent obstetricians, unless it is apparent that there are present septic micro-organisms. All are agreed that surgical cleanliness should be rigidly observed in all other particulars. Too much stress can not be put on the importance of preparing the patient's body, bedding and room, with as much care as is observed in abdominal surgery. After parturition the genitals should be protected by antiseptic dressings.

Symphysiotomy, which has been so ably supported by Dr. Robert P. Harris of Philadelphia and others, has not, so far as the writer has observed, materially grown in favor during the past year. Porro's operation can be performed with quite as much safety to the life of the mother and at the same time gives more certain promise of complete restoration to health. The relative merits of these procedures must be left to individual obstetricians. The use of obstetric forceps to bring down the head to the soft parts, meets the approbation of many of our most experienced practitioners in cases where there is too much delay in labor, and the parturient is becoming exhausted.

Many recent reported cases of gestation complicated by ovarian tumors and other abdominal growths, which have culminated safely to mothers and children, go to teach that nature is equal to great things, and that for these conditions operative procedures may often be postponed till after parturition.

The use of the sharp curette in the treatment of endometritis, either acute or chronic, is now recognized as meeting the gravest conditions so common after abortions, and septic infection during labor.

The merits of electricity in the treatment of pelvic exudates and some forms of fibroid growths are still urged by numerous enthusiasts, and their opinion should receive the unprejudiced consideration of those whose experience has not afforded them the opportunities enjoyed by those whose work is along this line. It may truthfully be said that electricity has been discarded by many who formerly had much faith in its efficacy in the treatment of fibroids. At the same time it is not possible to write a final verdict relative to the future of this element in medicine. It has done incalculable harm in the hands of an army of followers and, unless it can be used by those whose experience has been such that the dangers are reduced to a minimum, it had better be discarded altogether. If it were possible for the profession to comprehend the awful condition resulting from tinkering with this most powerful and therefore dangerous element, its employment would be relegated to those only who have given sufficient time to investigate and master the intricacies of its action. To arrive at the comparative benefits of electricity in the treatment of conditions which are considered amenable to its influence, one must be thoroughly experienced in all that goes to make a careful and conservative specialist. The thought is, no one can be in a position to give an unbiased opinion regarding the merits or demerits of any plan of treatment until opportunity has been afforded to carefully investigate other methods for like conditions. The surgeon who never did anything but surgery for pelvic exudates and fibroids, would not be in a position to pronounce eternal damnation on electricity, even though he is quite familiar with some of the harm that has been done by this method, for he can not anticipate in every case what the condition was prior to its use or what it might have been without it. Neither can the electrician comprehend what may have been accomplished by methods entirely different. This important problem must, then, be relegated to a careful, conscientious and unbiased investigation, and the verdict will be recorded in the future.

It is quite apparent that much of the sentimentality connected with operations for diseased uterine adnexa has given place to more sober investigation relative to the results after these operations. It has become a universally recognized fact that patients whose lives have been spent in suffering, causing them to be burdens to themselves and anxious cares to their friends, are now with only an occasional exception restored to health and happiness by the skilled operator. This being a recognized fact, what is the cause of the hue and cry of those whose experience is too limited to comprehend the wonderful boon to suffering women afforded by the physicians who are giving their lives to this noble work. It is unnecessary to rehash the trite statement that "operators have manifested too much enthusiasm regarding the benefits to be expected from surgery." It is only injudicious surgery and surgical interference when other methods would promise more, that furnish topics for adverse criticism. To state it differently, we need a higher standard of excellence, a broader knowledge of etiology and pathology and a more conscientious, painstaking profession, whose whole aim in its work should be centered around the one all-important factor, namely, the best treatment for each individual patient regardless of financial and all other considerations. A few years ago it was thought wise to urge members of the profession residing in every town and at almost every cross-roads, to familiarize themselves with the operative procedures of pelvic surgery, but the more we become acquainted with the awful complications so very frequently met with, complications which baffle the most skilful operators, the more convincing it is that these obscure conditions should be referred to those whose large experience and careful training have fitted them for the great responsibility of thus dealing with precious human lives. It has now become a law of duty to refer our patients to those who have proved themselves competent to offer in their treatment the greatest assurance of success and the least risk to life. What conscientious physician would do otherwise? It always pays from every point of view, and, therefore, it has grown to be a custom which all recognize, to send patients to those who have shown by their attainments that they are especially fitted for the field they have chosen to follow. All that is needed, if the foregoing be true, is that greater excellence shall be attained, a broader knowledge of all that goes to make better diagnosticians, pathologists and therapeutists, electric, medical and surgical—elements to success that mean almost a lifetime in experience and a fortune in money to possess.

Considerable investigation is now being made by gynecologists with the view of testing the merits of leaving portions of the ovarian structure *in situ*, in order to prevent the establishment of the menopause, and in some instances with the hope of future pregnancy of the patient. Sufficient time has not been given this experimentation to afford us any definite conclusions. Doubtless some good may accrue from these methods in carefully selected cases. It should be the unvaried rule of all operators to preserve to the patient all her natural functions, unless perchance these functions are menacing to her health and endangering her life.

The advisability of removing the uterus, in every case of extensive suppurative disease of the adnexa, has grown in favor during the past year. The procedure has many earnest supporters and numerous opposers. In order to accomplish this end it is usually considered the safest to make the operation by the vaginal route. This question opens up an extensive field for discussion, and it has been found a most serious subject to dispose of satisfactorily.

The various methods for the removal of uteri for fibroids have had their share of attention by the profession, and no universally approved plan has been found. Each method has its merits in the hands of those who are attached to their special way, and all methods have their good points in properly selected cases. It would seem to be the ideal method where a hysterectomy is necessary and the patient has a fair amount of vitality, to remove the entire uterus. It has appeared to the writer that in a large per cent. of cases this operation may be done as safely as any other. That this method has not yet been perfected seems quite apparent, in view of the discussion relative to variations in the technique. Much adverse criticism has been indulged in on account of the fact that so much time is required in completing the toilet after the uterus is extirpated. This is perhaps an uncalled-for objection. My method is to grasp the anterior and posterior walls of the vagina as they are separated from the uterus with forceps, and as soon as the uterus is removed, pass with a curved needle a catgut suture through the lower portion of the stump of the right broad ligament and the anterior vaginal wall, the lower portion of left broad ligament and the posterior vaginal wall, then tie this puckering string as tightly or loosely as seems wise, keeping in view the propriety of passing a wick of gauze from above into the vagina for drainage. To execute this does not require more time than to write its description. Nothing more remains but to close the abdominal parietes and the operation is completed.

The use of pedicle clamps in vaginal hysterectomy has been the cause of much suffering and no little danger to life, and the aim should be to avoid their use if possible. It is more surgical and satisfactory to ligate with small strong silk the broad ligaments in sections and, after the uterus is extirpated, use slight traction on the attached ligatures, bring down below the peritoneum the stumps of the pedicle, and with a small curved needle carrying a catgut suture, the anterior and posterior walls of the upper portion of the vagina and the peritoneum are sutured in mass to the stump above the ligatures. Only one suture on each side is needed and they are introduced in the briefest time and your patient is ready for the introduction of a small wick of gauze drainage and tight or loose packing of the vagina with gauze. The ligatures, if properly used, will come away within twelve days and, in the meantime, they are out of the peritoneal cavity. No odor need be expected from the stump and the convalescence is established in twenty-four hours. This is my method and no case has been found where it could not satisfactorily be employed. It is always prudent to have the most approved clamps at hand, but not often necessary to use them.

Each year new evidence is added to justify the removal of the entire uterus for cancer of the cervical portion. All other methods of treatment have been found to be less promising and hysterectomy (thanks to the skill of modern gynecologists) is now one of the safest of major gynecologic operations. Amputation of the cervix by the galvano-cautery knife and the thorough use of a sharp curette is a method of dealing with cervical cancer which has some enthusiastic supporters and will doubtless prove of great value, especially in the management of conditions too grave for total extirpation.

The relative merits of Alexander's operation and hysteropexy for uterine displacements have been subjects for unusual discussion during the past year. Some of the histories of cases and arguments presented have been very instructive and if the individual operator can not decide upon the best method it will not be for want of an abundance of literature on this subject.

No absolute evidence has been furnished the profession relative to a permanent cure by ligating the uterine arteries for fibromata, further than the reports of a few cases, which have been temporarily relieved. It is possible that further time and experimentation will bring results commensurate with the enthusiasm of the originator of this procedure, a distinguished ex-chairman of this Section.

The administration of glandular extracts after the removal of uterine appendages and in conditions demanding nutritive tonics, is attracting much attention and are considered by many who have used them to possess much value.

Thorough ablution of the peritoneal cavity with normal salt solution for the treatment of tubercular peritonitis has been found so efficacious that this procedure should not be rejected in the gravest conditions.

Time will not permit of further reference to the many important gynecologic and obstetric questions, which will continue for years to furnish matter for scientific discussion.

Before concluding, it gives me great pleasure to make honorable mention of this wonderful city, the home of many great and good men, who have done, and are continuing to do, so much for the advancement of the science of obstetrics and gynecology. Without deprecating other cities, and other honorable, earnest and conscientious men, Philadelphia may be given the palm for being the home and field of research, of as great and honorable men as have ever wielded a pen, handled a scalpel, or disseminated from the rostrum the sterling truths and doctrines of our science. The names of some of those who have made medical and surgical records were mentioned in connection with the brief review of some of the work which was done earlier in the history of our ASSOCIATION. Nothing could afford me more pleasure than to record at length the work and special merits of all of Philadelphia's obstetricians and gynecologists. My personal acquaintance with some of them makes it nearly impossible to refrain from mentioning those who were my teachers and friends, when only a few years ago I was seeking knowledge in this special field, and received from them such earnest and thorough instructions that, whatever of success may have come to me from that time till the present hour, to the kindness of these great masters is due the entire credit.

Finally, I desire to attempt feebly to express my endless gratitude for the great honor of having been elected Chairman of this Section on this occasion. My sensibilities would, indeed, be obtuse, if I was not inexpressibly thankful for the honor. All that I can say will be merely words. My appreciation is heartfelt and genuine. No greater honor can be conferred on a member of the profession than to be chosen to preside over a body of men so cultured and distinguished in the profession as are you who compose the members of this Section of the AMERICAN MEDICAL ASSOCIATION.

ORIGINAL ARTICLES.

THE DIFFERENTIAL DIAGNOSIS OF SURGICAL LESIONS IN THE RIGHT HALF OF THE ABDOMEN AND PELVIS, WITH ESPECIAL REFERENCE TO THE DIAGNOSIS OF APPENDICITIS.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

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Inflammatory and other lesions in the right half of the abdominal and pelvic cavities have of late years assumed an increased importance. This is owing to the prominence given to the disease appendicitis, as well as to those inflammatory conditions of the adnexa in women to which the broad term pelvic inflammation is applied.

There can be no question in the minds of those who have given the subject much attention that the inflammatory conditions of the vermiform appendix constitute the most important surgical lesions of the abdominal cavity. This is true both for the male and female sex. While it is true that in the female it is less frequent in its occurrence than in the male, and in addition, the female is subject to inflammatory suppurative conditions peculiar to the sex, yet in estimating the importance of an affection we must take into account its life-destroying characteristics, the difficulties encountered in its diagnosis, the necessity for prompt action in its early treatment and for highly skilled surgical help in its later stages in addition to the frequency of its occurrence. So far as the danger to life in an unrecognized case is concerned, this is as great in the female as in the male. In the matter of difficulties of diagnosis, these are greatly increased in the female, owing to the possibility of errors arising from the presence of organs in the neighborhood that take on suppurative inflammation, which, in not a few instances, closely simulate that of the appendix; or possibly the occurrence of diseased conditions of these as a complication. The necessity for careful watching and prompt action in appendical lesions, as compared with those of the adnexa, is another feature which emphasizes the importance of the affection in the female. The mistake of postponing interference is more remote in the male than the female, owing to the absence of that element of doubt which must frequently exist in the latter. Upon the basis of these considerations it may be claimed with reason that inflammatory conditions of the appendix in the female lose none of their importance because of the lesser frequency with which women are attacked with the disease as compared to men, since it is in these very cases that errors in diagnosis with resulting failure to operate are most likely to occur. On the other hand, the preponderance of males loses its relative importance when the comparative ease of diagnosing the affection in this as compared with the female sex is taken into account.

All conditions which may be mistaken for appendicitis in the male, with the sole and rare exception of an inflamed right undescended testicle, occur likewise in the female. Some of these occur with even greater frequency in women, these constituting additional sources of error in the case of the latter sex. Of these latter may be particularly mentioned cholelithiasis and gall bladder affections, such as impaction of gallstones and resulting dropsy and empyema of the gall bladder, hyperacute inflammation and occasionally gangrene of that viscus, and angulation or torsion of the ureter occurring in connection with a movable right kidney. Gallstones occur nearly five, and floating kidney six or seven, times more frequently in women than in men. With special reference to the diagnosis of right-sided lesions it should be borne in mind that the right kidney is affected four times as frequently as the left.

When all these circumstances are taken into consideration it will be found that appendical lesions rank first in importance among the surgical affections of the abdominal and pelvic cavities.

With these facts before us the logical course to pursue in the present presentation of the subject will be the consideration of the diagnosis of appendicitis, and the differentiation of this disease from other inflammatory conditions, as well as such neoplasms as may simulate it.

Appendicitis, although in the great majority of cases pursuing an acute course from the commencement to the end of the attack, may be subacute or chronic in the beginning, afterward developing an acute condition; rarely it may remain subacute or chronic throughout its entire course; occasionally a chronic condition may follow an acute attack with the supervention of subacute, acute or even hyperacute exacerbations. Clinically, therefore, the cases may be divided into the acute, the subacute, and the chronic. It is true that the acute cases may be still further subdivided into the hyperacute and the subacute, and the chronic division into cases which are chronic from the commencement (and remain without acute or subacute exacerbations, a rare occurrence in my experience), and those which follow an acute attack and are subject to more or less frequent relapses of the original acute condition. But for the practical purposes of the surgical diagnostician these subdivisions may be disregarded.

For the sake of laying a proper foundation for our study of the subject I will briefly call attention to the principal points to be borne in mind in the objective and subjective symptoms of these clinical forms of the disease.

Acute appendicitis.—The acute form of appendical inflammation is characterized by: *a*, sudden onset; *b*, colicky or cramping abdominal pains; *c*, vomiting; *d*, localized pain and tenderness; *e*, rigidity of the right rectus muscle; *f*, the presence of a tumor; *g*, fever. The pain is referred at the commencement, in the vast majority of cases, to the region immediately above the umbilicus, but finally becoming diffused in the entire abdominal region. If the patients are asked to point out the place where the pain was first felt they will most frequently indicate the center of the epigastrium. This fact has been a very frequent source of error, particularly when considered in conjunction with the symptom next to be considered. The occurrence of nausea and vomiting is of such frequency as to lead me to pursue the inquiry as to this symptom if it is not mentioned by the patient, and to look upon a case in which it is absent as being irregular or atypical in its development. The pain may be finally localized in the right iliac region, but the usual hypodermic injection which the patient receives at the hands of the attending physician is sufficient to allay all pain at first, both epigastric and iliac, and therefore this symptom does not count for much by the time the surgeon sees the case. Localized tenderness in the right iliac region however, is not so easily abolished although markedly diminished and perhaps more difficult of differentiation from the existence of a certain amount of sensitiveness which many observers have noted as being present in this region in conditions of health, or in connection with abdominal or pelvic lesions other than those of appendical origin. and in hysteric women. Rigidity of the right rectus muscle at its lower part is the result of an instinctive effort to prevent this portion of the muscular abdominal wall from taking part in the respiratory movements. It may likewise be prevented from manifesting its full significance by the attempts made to allay the pain by the administration of opium. The rigidity of neurotic subjects with hypersensitive abdominal surfaces should not be confounded with that arising from underlying inflammation. A tumor in the ileocecal region makes its appearance after the first or second day, and is situated directly opposite to and close upon the anterior superior spinous process of the ilium, or below this point opposite the upper concave portion of Poupart's ligament. When fully formed its presenting area corresponds to that of the superficial tenderness present. Fever is not marked in the commencement; some acceleration of pulse and elevation of temperature however is generally observed.

The variations from the usual and typical characteristics of the acute attack consist of: 1. The occurrence of primary, general abdominal pain rather than localized pain in the epigastrium, or a localization of the pain in the right iliac region in the beginning of attack. 2. Absence of vomiting due to the fact that the stomach is quite free from ingesta, although even under these circumstances nausea will be complained of, and the administration of some domestic cathartic, usually a dose of caster oil, will be almost certain to bring on vomiting. 3. Localized pain will usually be abated, and right iliac tenderness diminished by the administration of opiates. Cases of rapid gangrene of the organ may be unattended by pain in the region of the appendix in the beginning. 4. Opiates may so modify the respiratory movements as to render unavailable for purposes of diagnosis rigidity of the right rectus muscle, as well as to destroy that reflex tension of this muscle so frequently observed when pressure is made upon the wall of the abdomen in the ileocecal region. 5. The presence of a tumor is not usually available for diagnostic purposes until after twenty-four hours at the earliest; it is usually delayed until after forty-eight hours. In an exceptionally long appendix inflamed at its digital extremity, the tumor may be located elsewhere than in the ileocecal region. If the organ points downward and inward the tumor may be in the pelvis; if directly inward, behind the linea alba or beneath the left rectus muscle below the umbilicus; if upward and inward, behind the right rectus muscle and on a level with or even above the umbilicus; if directly upward and under the colon it may be found just beneath or at the usual site of the gall bladder; if upward and outside of the colon it may be found at varying points from the level at the crest of the ilium to the last rib. In deviations from the normal anatomic disposition of the ileocecal junction still further variations of position of the tumor may occur. In this manner cases of left-sided appendicitis, deep pelvic abscesses of appendical origin, and appendical abscesses in the right hypochondrium are to be accounted for. In the same manner and for the same reasons varying points of maximum tenderness occur. 6. *The pulse rate may be but slightly affected in the commencement, and ulceration and perforation of the organ may occur at any time during an exceptionally mild attack, with practically no rise of temperature.*

2. *Subacute appendicitis*.—In this form, as the term implies, the onset is less acute. The attacks may be so mild as to pass for a simple indigestion, or intestinal colic. A number of cases of indubitable appendicitis with hyperacute attacks have come under my observation, in which a history of preceding attacks that had been treated for "colic" or "indigestion" was obtained. Indeed, I have never known subacute appendicitis to be mistaken for anything else. The error is not a grave one, provided opium be not given and the possible onward course to the development of an acute or a hyperacute attack masked. The inflammatory action may now and then reach a sufficiently high grade to call attention to the ileocecal region. Tenderness at the site of the appendix may usually be elicited. There is usually no tumor to be found. In the cases of appendicitis that have come under my care, in which a history of preceding subacute attacks has been obtained, there has usually been found at the operation either one or more hardened fecal masses in the appendix, or an accumulation of secretion; the latter sometimes to the extent of an empyema, the secretion having undergone suppurative changes. In the

latter instances there have been found either partial or complete obliteration of the appendiculo-cecal orifice. This condition may be acquired as the result of previous disturbances, or be congenital in its origin. In any event, if permitted to continue, these cases of subacute appendicitis will almost of a certainty eventuate in an acute attack.

3. *Chronic appendicitis.*—Cases coming under this head may, as a rare circumstance, be chronic from the beginning. In the vast majority of cases they either eventuate from repeated subacute attacks, or follow a well defined acute attack. The characteristic clinical picture is marked by tenderness in the ileocecal region, with or without the presence of a tumor. The latter is usually the case if an acute attack has preceded the symptoms, particularly if this has been recent. The tumor is the result of an inflammatory environment of the organ; exceptionally an empyema of the organ may be sufficiently pronounced to constitute a tumor.

Practically, the differential diagnosis will lie between lesions of gall bladder origin; those originating in the intestine and not of necessity involving the appendix; and tubo-ovarian disease.

Of the gall bladder lesions, those involving the simple passage of a gallstone along the ductus communis choledochus may simulate the occurrence of acute appendicitis. Here the pain may be referred to the epigastrium, as in appendicitis; it radiates, however, toward the shoulder and the angle of the scapula. In the vast majority of cases it starts from the gall bladder as a fixed point. Whatever tenderness exists is referred to the lower border of the ribs and the region of the gall bladder. A gallstone impacted in the cystic duct and followed by dropsy of the gall bladder may give rise to some of the symptoms of chronic appendicitis; the downward projection of the gradually distended gall bladder may give rise to a tender tumor below the level of the umbilicus and beneath the right rectus muscle; infection of the gall bladder contents by bacterial migration through its walls, enervated by extreme pressure from within, may give rise to empyema of the gall bladder and cholecystitis, which in its turn is followed by febrile movement, abdominal pains and increased sensitiveness, all of which in their subjective symptomatology, may simulate appendicitis. On the other hand, even without the downward displacement of the gall bladder, the presence of an unusually long and vertically placed appendix, when inflamed, may complicate the differentiation between this and a gall bladder lesion.

Of the intestinal lesions in the ileocecal region, those involving an acute obstruction or a perforation of the bowel are the most important, as well as, in some instances, difficult of diagnosis, and these require a sharp differentiation and prompt operative treatment. Here the absence of a tumor can not be of practical utility in the diagnosis, since its appearance may be postponed for two or three days, and in the meanwhile the patient will certainly lose the chance of recovery offered by operation. Of less importance are the chronic obstructive conditions and neoplasms, for the reason that these of themselves do not, as a rule, urgently demand operative treatment when first discovered, nor do the appendical conditions for which they may be mistaken require that promptness in diagnosis and celerity of action necessary for the proper care of cases of acute appendicitis. The presence of a comparatively insensitive movable tumor characteristic of a neoplasm of the bowel, or of a doughy mass suggestive of impacted fecal matter, on the one hand, and an immovable and tender tumor on the other, to say nothing of the information to be gained by a close scrutiny of the history, offer a sound working basis for reasoning out the true condition present.

A close study of the question impels me to the belief that the surgical clinician will probably be called upon oftener to differentiate between appendicitis and tubo-ovarian lesions, than between the former disease and all others for which it is likely to be mistaken, combined. As a result of a somewhat extensive experience in appendical lesions, as well as in those conditions of the uterine adnexa that have been most frequently mistaken for the former, I would emphasize the following as the most important points to be borne in mind in the differential diagnosis:

Frequency.—Based upon the study of a large number of cases, the proportion is as 1 to 4 (males 80 per cent., females 20 per cent.).

History of the attack.—In a large proportion of cases the history in appendicitis is that of an acute onset. In tubo-ovarian disease a previous history of infection, with endometritis, salpingitis, ovaritis and pelvic peritonitis, and coincident progressive menstrual disturbances, may generally be obtained. Further, in considering the possibility of ectopic gestation in a given case, the fact that the diagnosis may be obscured, in an unmarried woman, by false statements made by the patient regarding the menstrual history, should not be lost sight of.

Pain.—In appendicitis the pain is usually acute and radiating, while in adnexal disease it is more apt to be dull and localized. Three considerations having a bearing in this connection should be borne in mind, however. The first relates to the fact that in subacute and chronic appendicitis the pain may be dull and localized; the second, that in acute appendicitis the pain may have been masked by the injudicious administration of opium; and the third, that the supervention of an acute exacerbation of a chronic pelvic inflammation may give rise to pain sufficiently acute and severe to simulate appendicitis.

Vomiting.—This is exceedingly common in appendicitis, and of much less frequency, relatively, in adnexal disease.

Tenderness.—In the great majority of cases the tenderness, in appendicitis, is located at the site of the appendix, and in tubo-ovarian disease it may be traced to the adnexa. The maximum point of tenderness in appendicitis corresponds to or above the level of the anterior superior spinous process of the ilium, while in adnexal disease it is located well below this level. Considerable force is required to elicit the point of tenderness by the vaginal touch in appendicitis; this is easily accomplished by this route in adnexal disease. *Per contra*, the tenderness brought out by external pressure in the last named, is nothing like as great as that by the vaginal touch, while considerably less pressure in the appendical region will show the latter to be extremely sensitive in appendicitis. Movements of the uterus by the examining finger do not, as a rule, give rise to complaints of pain from the patient, in appendicitis, while they are almost certain to do so in adnexal disease. The nearer proximity of the tenderness to the median line and bony anterior pelvic wall, examined either externally or by the vagina, the greater the chance of pelvic inflammation being present, and *vice versa.* The remarks concerning the possibility of masking pain by opium apply with equal force to the symptom of tenderness.

Chill or rigors.—A chill is of infrequent occurrence in appendicitis, and is a not uncommon symptom in acute exacerbations of adnexal disease.

Fever.—Fever is present in appendicitis, although its grade is of no service in estimating the severity of the attack, particularly in cases in which the temperature is but slightly elevated, and the pulse not markedly accelerated. It may be absent, or nearly so, in chronic adnexal lesions, until a spread of previously existing infection, or the introduction of fresh infectious agents is announced by its presence.

Muscular tension.—While rigidity of the right rectus muscle is occasionally absent in appendicitis, it is almost invariably so in adnexal lesions, unless the latter is complicated with considerable peritonitis. So marked is this difference, as between the two conditions, that this sign is almost pathognomonic in the differential diagnosis. It is rarely marked in tubo-ovarian disease, although like the symptoms of pain and tenderness, it may be masked by opium in appendicitis.

Tumor.—Tumor may be present after the second or third day in appendicitis; rarely before the latter. In tubo-ovarian disease it is usually present when the surgeon is called in. In appendicitis its usual location is beneath the right rectus muscle and opposite the anterior superior spinous process of the ilium, or to the outer side of this area, where it is easily made out by abdominal palpation. In tubo-ovarian disease it is more easily found by vaginal touch, while abdominal palpation may fail to reach it altogether because of its low position behind the pubic arch. It is rare that a tumor of appendical origin can even be felt by the vaginal touch, much less satisfactorily palpated by conjoined manipulation.

Course.—Appendicitis usually follows an acute course, while in adnexal lesions a subacute or chronic course is the rule. In chronic appendicitis there is almost always a history of at least one acute attack and relapses are common as long as there is any impairment of the nutrition of the organ, even with but slight infection present. In adnexal disease, while the chronicity of the course may be disturbed by the supervention of acute exacerbations, it is rare to obtain in the history a statement of a well defined and sudden onset. The practitioner should be well on his guard to distinguish between the last named and chronic relapsing appendicitis. The subjective symptoms alone will not suffice for this, and physical examination only can reveal the true condition of affairs. Rupture of a pyosalpinx offers a grave condition and presents great difficulties in differentiation between this and perforative peritonitis of appendical origin. Fortunate it is that to open the abdomen promptly in either case offers the patient the best chance for recovery.

Of the rarer conditions known to simulate appendicitis may be mentioned a case in which a lithopedion escaped from a right Fallopian tube (Martin of Berlin), a fibromyoma of the ileocecal region (Sonnenburg), a small suppurating dermoid (Bergmann), a ruptured right rectus muscle occurring while the patient was under the influence of liquor, and a ruptured gall bladder under the same circumstances (my own cases). I have been compelled to reopen the abdomen a second time in two cases in which adhesions formed between the stump of a removed right ovary and tube and the appendix gave rise to symptoms of appendical origin. Since these experiences I have made it a rule to remove the appendix when intraperitoneally located, in all cases of abdominal section. Further, one should not fail to take into account the possibility of the coexistence of chronic and acute lesions of the adnexa and appendix, or the simultaneous presence of an acute lesion of the one and a chronic lesion of the other. The presence of the appendiculo-ovarian ligament of Clado furnishes a route of bacterial migration from the intestine to the right ovary. The presence of the bacterium commune coli has been demonstrated by Kiefer in an ovarian abscess, and Dr. Robert L. Dickenson, one of my colleagues at the Brooklyn Hospital, recently operated on a case in which the appendix was directly attached to the right ovary, inflammatory conditions of both coëxisting. The focal lesion in this case probably existed in the appendix.

Finally, one should not fail to take into account the difficulties which may present themselves in establishing the diagnosis of appendicitis in the male sex under circumstances of an exceptionally long appendix passing deeply into the lesser pelvis. Sonnenburg reports two such cases where the primary abscess was situated in the Douglas *cul de sac*, in which access was gained to the suppurating mass through an opening made between the rectum and bladder. The following list embraces some of the most important of the conditions which have been mistaken for appendicitis within my own knowledge or have been reported upon good authority:

Acute conditions.—Subphrenic peritonitis, gall bladder lesions, acute intestinal obstructions, paratyphlitis, rupture of right rectus muscle, ruptured pyosalpinx, ruptured ectopic gestation, acute torsion of right ovarian cystoma, acute torsion of right hydrosalpinx, right-sided hemato-salpinx, acute peritonitis, paroxysms of pain due to right movable kidney.

Chronic conditions.—Abscess in the abdominal wall, impacted ureteral calculus, fecal impaction, tubo-ovarian inflammation, carcinoma in the ileocecal region, retroperitoneal sarcoma presenting in the right iliac fossa, neoplasms of the right ovary, right-sided chronic salpingitis with recurring acute exacerbations, fibromyoma in the cecal region, adhesions following operations on right adnexa.

In order to facilitate the study of the differential diagnosis of the surgical lesions of the right half of the abdomen and pelvis, I have prepared the following:

ACUTE APPENDICITIS.

Anamnesis, etc.—Most frequent in males (80 per cent.) Rare at the two extremes of life. Previous good health immediately preceding present attack as a rule. History of previous attacks in a certain proportion of cases. Sudden onset.

Pain.—Cramping or colicky and rather constant. Most acute in epigastrium and region about the umbilicus; more or less diffused later on, and may finally center in right iliac region.

Nausea and vomiting.—Present in great majority of cases. Usually ceases when contents of stomach are vomited, unless extensive peritoneal inflammation occurs early. Rarely persistent and intractable.

Tenderness.—Markedly localized in the center of the right iliac region at the commencement, but becoming more diffused with the extension of the peritoneal inflammation. Is frequently marked along the middle of Poupart's ligament. In the rare cases of non-descent of the cecum the tenderness may extend to the parts immediately below the umbilicus or be located to the left of the median line. Present, although in lesser degree in the direction of the ascending colon particularly when the appendix lies to the outer side of the colon and points directly upward. When the appendix is extraperitoneally situated the tenderness may be pronounced in the lumbar region.

Muscular tension.—Right rectus muscle tense at its lower part. Rigidity pronounced in proportion to peritoneal involvement.

Tumor.—Rarely present before the lapse of forty-eight hours following the attack and may be delayed until the third or fourth day. Its location is quite constant in the right iliac region but may vary with abnormalities in the location of the cecum. Is immovable and usually rounded and smooth.

Impairment of function of intestinal canal.—Distension of coils of intestine in the neighborhood. Bowels may be moved by enemata and cathartics before diffuse septic peritonitis sets in.

Fever.—Slight elevation of temperature and acceleration of pulse in the commencement but not a trustworthy guide in their relation to the threatened severity of the attack, particularly when these symptoms are not marked.

SUBPHRENIC PERITONITIS.

Anamnesis, etc.—History and mode of onset will vary with source of peritonitis. Arises most frequently from perforating ulcer of stomach or duodenum; next in frequency from the appendix. Abscess of the kidney, cholecystitis, lesions of the pancreas, and perforation of intestine elsewhere, furnish examples.

Pain.—Pain severe and more constant and less colicky and lancinating in character than in appendicitis. Located in upper part of abdomen.

Nausea and vomiting.—Not marked unless peritonitis becomes general. When due to ulcer of the stomach the vomiting precedes the attack.

Tenderness.—Localized in epigastrium or hypochondrium.

Muscular tension.—Limited to region above umbilicus.

Tumor.—Not discernible until abscess forms. Then demonstrated by percussion. Littre's diaphragmatic sign (drawing in of the intercostal spaces one after another, as contraction of the diaphragm takes place) is of importance.

Impairment of function of intestinal canal.—Not marked.

Fever.—Fever varies with infection. With formation of abscess becomes more marked.

GALL BLADDER LESIONS.

Anamnesis, etc.—Cholelithiasis, the most common underlying cause, occurs five times as frequently in females as in males and in women over thirty as a rule. Dropsy and empyema usually preceded by indefinite feelings of distress referred to region of gall bladder; less frequently by recurrent attacks of hepatic colic, not necessarily accompanied by jaundice. Perforation by gallstone, supervention of suppuration in dropsy, and the occurrence of acute inflammation of gall bladder marked by sudden onset.

Pain.—Less acute and colicky in dropsy and resulting empyema than in acute inflammation of gall bladder and perforation from gallstones. In the latter equally so with appendicitis. More distinctly localized in the commencement in all these than in appendicitis. Generally referred to right hypochondrium.

Nausea and vomiting.—Absent as a rule.

Tenderness.—Present. Marked in acute inflammation and perforation. Less in empyema. Occupies a somewhat larger area in the right hypochondrium than that which is characteristic of appendicitis in the right iliac region, but may extend below the line of the umbilicus when the gall bladder is greatly distended.

Muscular tension.—Upper portion of right rectus, and sometimes both recti, more or less rigid.

Tumor.—Generally present when patient comes under surgeon's care. Is rounded, smooth, immovable, and usually found at normal site of gall bladder. Exceptionally and under circumstances of considerable distension, may reach below umbilicus.

Impairment of function of intestinal canal.—None as a rule. There may be some distended coils in the neighborhood.

Fever.—Fever present and pulse correspondingly accelerated.

ACUTE INTESTINAL OBSTRUCTION.

Anamnesis, etc.—*Invagination:* Two-thirds of the cases occur in males, one-third in females. Three-fourths of all cases of invagination are in the neighborhood of the cecum. It is especially an accident of the young (34 per cent. under 1 year and 56 per cent. under 10.) *Volvulus:* Eighty-seven per cent. occur in large intestine; of these one-half occur in the neighborhood of the sigmoid flexure, and less than one-third in the ileocecal region. Occurs in males in the proportion of two to one. Most frequently absent between the ages of 30 and 40. *Obstruction of abnormal contents or foreign bodies:* Almost 50 per cent. due to gallstones; 43.5 per cent. due to fecal impaction; remainder due to enteroliths and substances swallowed. Obstruction by gallstones three times as common in females as in males and usually in patients past 50. The ileocecal region the most frequent seat. Usually preceded by hepatic colic, jaundice or symptoms pointing to the entrance of the gallstone into the intestine by ulceration through the gall bladder and bowel wall. *Internal strangulation:* The most frequent cause of intestinal obstruction (35 per cent. of all cases); 90 per cent. in the small intestine; 83 per cent. in lower abdomen; 67 per cent. occur in the right iliac fossa; 70 per cent. occur in males; 40 per cent. occur between the ages of 15 and 20; of these, inflammatory adhesions cause the strangulation twice as often as vitelline remains (Meckel's diverticulum and persistent remains of vitelline blood vessels). Relatively uncommon in childhood, when it does occur is usually caused by vitelline remains. *Strangulated diaphragmatic hernia* occurred in 10 per cent. of 1,134 cases of internal strangulation (Lichtenstein). Usually regarded as a very rare condition. Internal strangulation when due to *adhesions* may be preceded by history of some inflammatory abdominal or pelvic lesion, recent or remote. *Invagination* and *volvulus* give us preceding history. *Obstruction by gallstone* is usually preceded by jaundice, hepatic colic or symptoms pointing to entrance of the gallstone into the bowel by ulceration through the gall bladder and bowel wall. In strangulated diaphragmatic hernia there is almost always a history of severe injury, although the original condition may be congenital.

Pain.—Severe and intermittent at first; finally rather constant, with acute exacerbations. Location has no diagnostic value in differentiating between the different forms; most frequent in the neighborhood of the umbilicus. Does not become localized.

Nausea and vomiting.—Frequent and persistent. When contents of stomach are vomited the vomitus is first bilious, then yellow and finally fecal.

Tenderness.—Limited tenderness less easily differentiated.

Muscular tension.—General rather than limited to lower portion of the right rectus.

Tumor.—Rarely present except in invagination, when it may be fixed after inflammatory action occurs. Occasionally found in obstruction by foreign bodies, when it is mobile.

Impairment of function of intestinal canal.—Constipation complete; passage of flatus absent. Tenesmus in 15 per cent. of cases of volvulus and in 55 per cent. of invagination. Bloody discharges. Tympany present, increasing with the duration of the obstruction.

Fever.—Pulse more or less accelerated, increasing in frequency with duration of obstruction. Absence of fever in the beginning rather characteristic.

PARATYPHLITIS.

Anamnesis, etc.—Exceptional and of rare occurrence, as compared with appendicitis. Follows inflammatory condition of cecal wall (typhlitis) and of its serous covering (perityphlitis), having its origin in fecal accumulations. History of loss of appetite, disturbance of digestion and constipation. More or less sudden in its occurrence, but less abrupt than in appendicitis. The first acute symptoms may be due to ulcerative perforation of the bowel wall.

Pain.—Dull and constant, and less diffused as compared with that of appendicitis, usually limited to right iliac region from commencement.

Tenderness.—Present and limited to area involved. Less acute than in appendicitis.

Muscular tension.—Marked in proportion to acuteness of the symptoms.

Tumor.—Present early in cases of stercoral origin, in which case the tumor will present as a sausage-shaped mass in the cecal region, which may be indented with the finger. When suppuration has taken place tumor will present same characteristics as in suppurative appendicitis.

Impairment of function of intestinal canal.—Constipation, overcome by cathartics, which in the early stages of the affection sometimes relieve all the symptoms.

Fever.—Slight fever in commencement. With advancing suppuration, becomes more pronounced.

RUPTURED PYOSALPINX.

Anamnesis, etc.—Comparatively infrequent. Pelvic inflammation. Gonorrheal or other infection, pelvic distress and pain varying in intensity, and menstrual disturbances. Onset sudden.

Pain.—Severe, diffused, constant and of long dur

Nausea and vomiting.—Rarely present or marked until diffuse septic peritonitis sets in.

Tenderness.—Extreme and general below umbilicus. Location of tenderness made most easily manifest by vaginal touch.

Muscular tension.—Absent until diffuse septic peritonitis occurs, which supervenes rapidly in case of rapid emptying of abscess cavity.

Tumor.—Sensitiveness usually so great that induration can only be felt by vagina, and then not always satisfactorily as a distinctly defined tumor.

Impairment of function of intestinal canal.—Not present until intestinal paresis and finally complete paralysis of peristalsis from diffuse septic peritonitis occurs.

Fever.—Steady and marked increase in pulse rate and rise of temperature.

RUPTURED ECTOPIC GESTATION—PELVIC HEMATOMA.

Anamnesis, etc.—More frequent in its occurrence than formerly supposed (35 times out of 3500 autopsies; Formad). Less frequent in young primiparas than in older multiparas. Symptoms referable to normal pregnancy (absence of menses, nausea, swelling of breasts, softening of cervix, etc). A bloody vaginal discharge may take place subsequently to last menstruation. Labor-like pains, bloody vaginal discharge and if the pregnancy is advanced the casting off of a decidua may precede the rupture of the fetal sac. Onset sudden with symptoms of collapse and internal hemorrhage.

Pain.—Acute and diffuse over lower portion of the abdomen. Is of short duration.

Nausea and vomiting.—Absent.

Tenderness.—Not localized, if present.

Muscular tension.—Absent until peritonitis sets in, then general.

Tumor.—If patient survives primary rupture sufficiently long, the physical signs of pelvic hematocele or pelvic hematoma may be found. These distinguishable by conjoined manipulation and are more easily determined from the vagina than from the abdominal surface. In many cases identification of tumor not at once possible even under an anesthetic.

Impairment of function of intestinal canal.—None.

Fever.—With profuse hemorrhage, pulse rapid and feeble, temperature subnormal, later rising slightly. General symptoms of acute anemia present, such as pallor, thirst, air-hunger, etc.

ACUTE TORSION OF RIGHT OVARIAN CYSTOMA.

Anamnesis, etc.—Occurs in about 10 per cent. of cases of ovarian cystoma. Occurs most frequently in small tumors. If tumor is large a history of such may be obtained. In two out of four cases observed by the writer the symptoms came on while the patients were leaning over a wash tub engaged in rubbing clothes upon a washboard. Sudden onset.

Pain.—Violent pain in the right side of abdomen.

Nausea and vomiting.—Generally present.

Tenderness.—Considerable area of tenderness below and to the right of the umbilicus.

Muscular tension.—Present and somewhat general. Localized rigidity not marked.

Tumor.—Present. Increases rapidly in size.

Impairment of function of intestinal canal.—Absent.

Fever.—Fever absent in the commencement.

TORSION OF RIGHT-SIDED HYDROSALPINX.

Anamnesis, etc.—Rare. The writer has seen but one case and finds no other in the literature. Disturbances of menstruation (frequent, painful, and prolonged flow). Pelvic distress incident to pelvic inflammation in general. Sudden onset.

Pain.—Acute pain referred to entire right side of pelvic region.

Nausea and vomiting.—Absent.

Tenderness.—Localized and marked just above bony brim of pelvis.

Muscular tension.—Absent.

Tumor.—Located just behind insertion of right rectus muscle and extending to the right about half way to Poupart's ligament.

Imparment of function of intestinal canal.—None.

Fever.—Pulse accelerated. No fever.

RIGHT-SIDED HEMATOSALPINX.

Anamnesis, etc.—Infrequent in occurrence. Previous history of menstrual disturbance, the flow usually appearing too frequently and lasting beyond the usual time. Dysmenorrhea. Onset of symptoms rather sudden and usually due to escape of blood from distal end of tube and resulting localized peritonitis.

Pain.—Not marked save when peritonitis occurs. May be at first localized, afterward referred to the pelvic region generally.

Nausea and vomiting.—Absent.

Tenderness.—Not well marked by palpation from the abdominal surface. If present is below the level of the middle of Poupart's ligament. Usually easily elicited by the finger in the vagina.

Muscular tension.—Absent as a rule.

Tumor.—If felt from without is well below the level of the middle of Poupart's ligament. Is much more readily distinguished from the vaginal than from the abdominal surface.

Impairment of function of intestinal canal.—None.

Fever.—Varies with the acuteness of the inflammatory conditions. Fever *not* a marked feature.

ACUTE PERITONITIS.

Anamnesis, etc.—Frequency depends upon affections underlying the attack. Idiopathic or primary peritonitis probably never occurs. *Perforative peritonitis* usually results from acute appendicitis, typhoid ulceration, foreign bodies, penetrating wounds, intestinal obstruction, strangulated hernia, blows upon the abdominal surface, and excessive handling of the intestines in the course of operations involving opening of the abdominal cavity. *Infective peritonitis* is caused by extension of infection from inflammatory lesions of the uterus and Fallopian tubes in the female, suppurative hepatitis, gall bladder affections, suppurative kidney lesions, and operative infection. *Symptomatic peritonitis* occurs in the course of an acute or chronic disease such as pleurisy or pneumonia. *Tubercular peritonitis* usually pursues a chronic course. *Syphilitic*, *rheumatic* and *gonorrheal* peritoneal infection very rare.

Pain.—Varies with the virulence of the infection and the rapidity of the extravasation. At first localized, afterward becoming general; may not be sufficiently prominent to occasion complaint.

Nausea and vomiting.—Early, persistent and intractable nausea and vomiting almost invariably present. Contents of stomach first vomited, then bile, and finally in fatal cases, material from small intestine. Hemorrhage from mucous membrane causes a dark brown vomitus.

Tenderness.—At first localized at point of original infection, then becoming generalized.

Muscular tension.—Progressively increases from original focus of peritoneal infection until in diffuse septic peritonitis the entire muscular abdominal wall becomes excessively rigid.

Tumor.—None present in diffused peritonitis. When more or less circumscribed a sero-purulent collection may occur in the course of time and give rise to a tumor.

Impairment of function of intestinal canal.—Early occurrence of paralysis of peristalsis, and resulting intractable constipation. Distension due to the forcing of gas from the still functionally unimpaired portion of intestinal canal into the paralyzed coils. In some instances the entire tract is almost simultaneously paralyzed, in which case distension may be less marked or absent.

Fever.—The pulse is rapid, out of all proportion to the rise of temperature. Fever is present as a rule.

PAROXYSMS OF PAIN DUE TO RIGHT SIDED MOVABLE KIDNEY.

Anamnesis, etc.—Proportion of women affected greatly in excess of males. Most frequent between the thirtieth and fortieth years. Right kidney twelve to thirteen times more often affected than left. Child-bearing appears to have a decided influence in its production. Previous history of symptoms of movable kidney, viz., dragging, weight and dull pain in loin and side of abdomen, aggravated by exercise and relieved by rest. In women, suffering is increased by menstruation and pregnancy. Occasional sense of something moving. History of previous attacks of paroxysmal pain resembling renal colic. Sudden onset if torsion is present, accompanied by suppression or marked diminution of the quantity of urine.

Pain.—Paroxysmal. Referred to the renal region and extending in the course of crural or sciatic nerves.

Nausea and vomiting.—Frequently present during paroxysm.

Tenderness.—Not a marked symptom. Palpation gives rise to a peculiar sickening sensation.

Tumor.—Present and movable. Characteristic outline save where hydronephrosis has supervened as a result of frequent angulation of the ureter. May usually be traced to or replaced in renal region.

Impairment of function of intestinal canal.—None during attack. Disturbances of the large intestine, either diarrhea or constipation may form a part of the history.

Fever.—Negative.

CHRONIC APPENDICITIS.

Anamnesis, etc.—History of at least one preceding acute attack as a rule, with relapses. Rarely the clinical picture presents as a chronic condition from the commencement. This, however, may obtain in tubercular infection of the appendix.

Pain.—Referred to right iliac region betwen relapses.

Nausea and vomiting.—Not marked. Generally absent.

Tenderness.—Marked. Located at site of appendix.

Muscular tension.—Not marked.

Tumor.—Present. Immovable and usually located opposite middle of Poupart's ligament and attached to extreme right lateral lining of abdomen.

Impairment of function of intestinal canal.—Not marked.

Fever.—Fever not marked.

ABSCESS IN THE ABDOMINAL WALL.

Anamnesis, etc.—Is quite frequently of appendical origin, and therefore may give a corresponding history.

Pain.—Present. Strictly localized at the inflamed point.

Tenderness.—Localized. Greatest at most prominent part of tumor.

Nausea and vomiting.—Absent.

Muscular tension.—Not marked. Secondary induration may be mistaken for it.

Tumor.—Present. Fluctuating when sufficiently advanced. May be demonstrated in abdominal wall by lying patient prone and having him voluntarily lift occiput or feet from table.

Impairment of function of intestinal canal.—Absent.

Fever.—Present. Subject to remissions as in suppurative processes elsewhere.

IMPACTED URETERAL CALCULUS.

Anamnesis, etc.—Previous attacks referrable to nephrolithiasis, viz., lumbar distress aggravated by exercise; pus, blood and albumin in the urine; vesical irritability; pain in testicle, etc. Attacks of renal colic preceding the impaction and diminution of amount of urine excreted accompanying it.

Pain.—Dull, boring, intensified and becoming paroxysmal by spasmodic contractions of ureters. Radiates toward the groin and testicles, and sometimes to rectum.

Nausea and vomiting.—Not a frequent nor prominent symptom.

Tenderness.—Present, but not so definitely marked or fixed as in appendicitis.

Muscular tension.—Usually absent. When present, spasmodic.

Tumor.—Absent.

Impairment of function of intestinal canal.—None.

Fever.—Absent as a rule. At no time a marked symptom.

FECAL IMPACTION.

Anamnesis.—Follows most frequently a constipated habit and is observed oftenest in females and the aged. Favored by sedentary habits. May give a history of previous attacks. Hysteric and hypochondriacal, as well as spinal cord affections may form part of the history. Gradual onset.

Pain.—Not marked. Dull and obscure when present.

Vomiting.—Not a characteristic feature.

Tenderness.—Slight as compared with that of appendicitis.

Muscular tension.—Absent.

Tumor.—Presents itself as a doughy swelling.

Impairment of function of intestinal canal.—Constipation. Sometimes obstruction; but this rarely intractable.

Fever.—Absent.

TUBO-OVARIAN INFLAMMATION.

Anamnesis, etc.—History of menstrual disturbances usually of the too frequent type. Flow apt to become dark and clotted, thin leucorrheal, vaginal and muco-purulent discharge from endometritis. Symptoms gradual in their early development, but occasional acute exacerbations may simulate chronic relapsing appendicitis.

Pain.—Not severe, as a rule, save in acute relapses. With peritoneal involvement it may be sharp, but is constant, and not paroxysmal. Referred to iliac region, extending at times down the thigh and frequently accompanied by backache. Increased by over distension of bladder, distension of the intestines with gas; pressure and walking, riding or jarring aggravate it.

Nausea and vomiting.—Absent as a rule. Where present, accompanies supervention of an acute exacerbation.

Tenderness.—Not so marked as in acute appendicitis. More easily elicited by vaginal examination than external manipulation.

Muscular tension.—Absent.

Tumor.—The formation is an inflammatory mass. Conjoined manipulation maps it out distinctly and locates it in vaginal fornix. Uterus is pushed forward by mass. An exceptionally long appendix may give rise to a similar tumor.

Impairment of function of intestinal canal.—Constipation as a rule. This may be occasionally due to adhesions between adnexa and intestines. It is most apt to take place upon left side, the sigmoid flexure approximating more closely the left broad ligament. The appendiculo-ovarian ligament takes but little part in inflammatory attachments. Flatulence.

Fever.—Present in the relapses, and absent or nearly so in in the intervals.

CARCINOMA IN THE ILEOCECAL REGION.

Anamnesis, etc.—Symptoms come on slowly and increased by occurrence of constipation. Cancerous growths of bowel most frequently found in large intestine. Ten out of thirty-seven cases involved the cecum (Frank).

Pain.—Dull, with occasional exacerbations of lancinating pain.

Vomiting.—Absent.

Tenderness.—Usually spread over a larger area than in appendicitis.

Muscular tension.—Absent.

Tumor.—Hard, irregular, not of large size, and movable through a limited area. Not usually limited to cecum, but involves either ileum or colon.

Impairment of function of intestinal canal.—Obstruction to passage of intestinal contents when disease is advanced. One case of primary carcinoma of the appendix observed by the writer (see *Brooklyn Medical Journal*, April, 1897, p. 252).

Fever.—Absent.

RETRO-PERITONEAL SARCOMA PRESENTING IN THE RIGHT ILIAC FOSSA.

Anamnesis, etc.—Progressive loss of health and strength in youth or early adult life. Less frequently observed in those at or past middle life.

Pain.—Dull, aching, constant.

Vomiting.—Absent.

Tenderness.—Present; not distinctly defined or limited to point of invasion.

Muscular tension.—In advanced cases the corresponding thigh may be retracted from involvement of psoas muscle suggesting morbus coxarius.

Tumor.—Fixed, smooth and broadly definable.

Impairment of function of intestinal canal.—Absent.

Fever.—Absent.

DISCUSSION.

Dr. J. McFadden Gaston of Atlanta.—Some years ago I undertook to lay before this Association a paper upon the surgical lesions of the iliocecal region and it was upon such points which at that time were likely to attract attention. Dr. Fowler has brought forth a subject of great interest at this day. When we come to the bedside we have much difficulty in analyzing these points, especially in the case of families where one suspects appendicitis complicated with peritonitis. There are several points in connection with the troubles in this region that Dr. Fowler did not allude to. I had quite a puzzling case myself in this very line. The general symptoms simulated typhoid, but the local indications pointed to a local development of inflammation, and we thought of appendicitis. By temporizing, the case turned out to be one of typhoid. You have all seen cases of extreme sensitiveness in the iliocecal region in typhoid fever. There is sometimes also an inflammation of Brunner's glands which leads to the development of a tumor; and some of you have probably also met with cases in which you have had enteroptosis occurring in the ileocecal valve. I remember such a case in which death resulted in forty-eight hours. Even after death the grip of the valve was so tight that it would have torn it rather than give it up. In a simple case of contraction of the valve the intestine was readily liberated. There are other troubles that one can have at this point and it is important that we should study the matter up.

Dr. Howard A. Kelly of Baltimore.—I have been accustomed to pay close attention to this matter for some years and there are a number of diagnostic points which are very important and satisfactory. One can localize appendical inflammations in a woman and differentiate them from pelvic inflammations by paying attention to several points. In spite of the difficulties which may be maintained and demonstrated in most cases, there are cases of inflammation of the appendix and the right adnexa, probably 10 or 15 per cent. In one case reported in the Johns Hopkins Hospital Reports, a streptococcus inflammation was found in both the tubes and the appendix. I can hardly agree as to the propriety of removing the appendix, but I would rather get the meso appendix and lift it up over the pelvis. I know of three cases, like those the author has described, in which the appendix has become attached to a stump, and I operated on one case a year ago. One was also operated on by Dr. Hunter Robb and one by Dr.

Maguire. They found adherent appendices being pulled upon.

Dr. F. W. MCRAE of Atlanta, Ga.—In two of the cases I have had; the only symptom present for the first forty-eight hours was pain in the bladder, and in both cases there was retention of urine. The cases did not occur in my practice and the trouble with the appendices was not discovered for several days.

Dr. GARDNER of Rome—In reference to the class of cases of which Dr. McRae speaks I can report one. The patient was attacked suddenly with pain over the entire abdominal cavity. I saw him a few hours after the first attack and my diagnosis was a probable recurrent appendicitis, as he had had appendicitis one year before. The pain grew rapidly worse but was not altogether on the right side. The patient died in thirty-six hours and postmortem examination revealed the fact that an adhesion existed underneath the bladder.

Dr. FOWLER—In reply to Dr. Gaston, who stated that I did not mention typhoid, I would state that I came as near to it as I dared to, consistent with the title of my paper. There is a suppurative condition which occurs around the appendix giving rise to abscess, but all abscesses in the iliocecal region are not of appendical origin. I have knowledge of one case in which a perityphlitis formed about the site of an appendix, that had been removed. It was a case of secondary infection and the gut showed marked thickening. There was a history of impacted feces. The co-existence of ovarian and appendical disease is very important. Whenever I open the abdomen for appendical disease, and the inflammation is confined to the appendix, I carry my finger down into the pelvis and ascertain the condition of the adnexal organs. I have found in a good number of cases that a cirrhotic condition of the right ovary is frequently present as compared to the left. This is the case in that peculiar anatomic condition known as Clado's ligament, which is a peritoneal fold from the meso-appendix to the ovary itself. There is a constant irritation arising from this connection which will give rise to changes in the appendix. These inflammatory conditions, which evidently give rise to the cirrhotic condition of the ovary, may have their origin in the bacterium commune coli. As to receiving the appendix when you open the abdomen for other purposes, this is a question. If I thought its removal would add to the dangers of the patient I should prefer to let the patient take the chances of having appendicitis rather than remove it. In a typical excision of the appendix I use the thermo cautery so as to thoroughly sterilize the point of section, and with this precaution I believe it is safe to remove the appendix in any operation that you may do. The method which I employ takes no longer than does any other. Dr. Kelly's suggestion to elevate the appendix may be a good one, but he evidently overlooks the fact that this may imperil the integrity of an organ which already possesses but a low degree of vital resistance and in which inflammatory conditions may easily follow circulatory disturbances. The latter may be induced by the altered position of the meso-appendix which he brings about.

THE ETIOLOGY AND CLASSIFICATION OF TUMORS.

Presented to the Section on Surgery and Anatomy at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

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A comparative histologic study of normal cells, those of all tumors and the two malignant growths, cancer and sarcoma, indicates some striking similarities and differences. These cells arising as they do from previously existing normal cells, this is not especially remarkable, though it is worthy of note. Enumerated these differences are: 1, a limiting membrane; 2, fibrillar; 3, protoplasmic; and 4, nuclear structure in all. In benign growths this varies in predominance according to structural origin; but in the two malignant growths there is: *a*, an increased thick limiting membrane in cancer and a normal one in sarcoma; *b*, an increased protoplasmic structure and nuclei in both, especially striking in cancer where the nuclei predominate. The study of the biology of these malignant tumors indicates this: 1, that they are rapidly growing cells; and 2, that this rapid growth is intimately associated with the predominance of nuclei in the cell. An examination of all of the different cells of the tissues of the normal organism gives but two sets of cells which bear a striking resemblance to these cells as to nuclei and protoplasmic structure present. These are the ovum and spermatozoa and the leucocytes of the blood. This similarity is suggestive. Tracing the origin of the leucocytes of the blood, from the work which the investigations of Ehrlich stimulated, and the zeal of Schwartze, Golasch, Fink, Gabriczewski, Müller, Reider, Neusser, Weiss Piorry, Boeckmann, Halla, Tumas, von- Jaksch, von Limbeck,[1] Pée, Goldscheider, Jakob and many others roused, all indicate that these leucocytes are, 1, locally increased whenever any cause determines blood to a part; and 2, generally increased in all digestive processes, in diseases of the blood-making organs and in most acute febrile and in many chronic conditions, irrespective of the organ or organs diseased. Cohnheim[2] first advanced these theories, Neusser[3] further advanced them and Weiss[4] directly suggested them. The leucocytes are produced by any and all tissues of the organism. The inductions of Cohnheim, Neusser and Weiss, taken with the following, indicate the truth of such an interpretation and its application to pathologic phenomena.

As first observed by John Hunter and as others have confirmed, there is an increased number of leucocytes at the seat of a cut. I will simply draw the attention to this phenomenon as occurring not only in all traumatisms but, as above stated, in all normal functional action and conditions where there is a sudden or a prolonged determination of organic, inorganic, mechanical, electric and chemic action and matter to a part. As to the place of the leucocytes in physiologic activity and in the healing processes, details are unnecessary. Though their origin in traumatisms has been determined, yet a recapitulation may prove suggestive. If a cell or cells of the skin or muscle be cut or bruised, or if it be stimulated beyond a definite range, the immediate effect is to determine excessive blood containing excessive leucocytes to the parts and to stimulate the entire cell. So it not only attempts but does rapidly reproduce itself. While in a normal condition of the organism the phenomenon of cell division is produced within a definite range of time, by karyokinesis in an abnormal state, as in traumatisms, etc., the phenomenon is hastened and, as a result, borne out by investigation, the normal cell stimulated and, as if to compensate for the new environment of the tissues, reproduces itself not only by normal but also abnormal karyokinesis, and likewise by simple division and gemmation. A cut, a bite of the skin, etc., irrespective of the structural or functional agent, affects the true skin, all of the cells[5] which make it up as an organ and the entire organism. Locally the structure of the blood vessels, blood, lymphatics, hair and sweat follicles, muscles, etc., have their reproducing powers augmented as enumerated, and the result is an innumerable number of new cells having the characteristics of leucocytes. An investigation of the blood demonstrates that these cells and those brought to the parts are thrown in and about the wound, and that some leucocytes, more than normal, independently find their way into the blood by their very motion. The fact that infection progresses and becomes general or special either through the agency of the leucocytes containing the organism or by their being independently carried into the blood vessels or lymphatics, proves the same truth. That under the same and different conditions these processes also occur within the organism, seems a natural inference.

Studying micro-organic diseases, especially when some lesion exists, one of the first observations made either in an examination of the blood and of the tissues involved, is an increased number of cells and leucocytes in the parts. As has been observed, first by Virchow in his observations of the tissues surrounding a new growth, as described in tubercular processes, and more recently noted by Metschnikoff in the struggle of the phagocytes, the leucocytes are the natural protectors of surrounding normal tissue. Again, in the blood of those having cancer or sarcoma, as investigated by Velpeau, Breard, Bouillaud, Broca, Jollin, Cruveilhier, Paget, Lücke, Andral, Gavaret, Hayem, Palma, Rieder and many others, a leucocytosis is the rule. To detail all the conditions where this phenomenon is observed is unnecessary, for the entire phenomenon can be included in the following: All organic structure and function, chemicals whether organic or inorganic, mechanical, thermal, electric contact, in the organism and organic chemicals by excessive activity, numbers and quantity, in the mechanical, thermal and electric processes by direct excessive contact, can produce an excessive cell reproduction. The process of this is that excessive quantities of blood and leucocytes are determined to the parts and furnish excessive nutrition to the overstimulated cells. A study of all normal tissues indicates that each and all have a definite, constant number and arrangement of cells. Diseased tissue indicates the contrary, that is, an indefinite number and partial disarrangement of the structure and function of the cells. Taking the histology of cancer or sarcoma as an illustration, these growths are types of both, the normal arrangement persisting being the general structure of cell which adheres to that of hereditary mother cells. Going back to the above generalization in regard to the stimulus of cell reproduction, and as Roux[6] intimated, in localized abnormal cell reproduction, as in all natural phenomena, there is a struggle made by all cells of organs and tissues to retain their original form, size, arrangement, function, numbers, etc. Applying this to the above and to all blood studies, the indication is that all overproductions, 1, either find their way into the blood or, 2, if retained in a part, become starved and starve the fixed cells or, 3, are consumed and furnish extra nutrition or, 4, become infected and die or, 5, there is a localized overgrowth, and in these ways the cells of tissues of organs and systems attempt to protect themselves, the organ and the entire organism from an overgrowth. When a certain number is reached in the blood, the normal process appears to be that the liver and other organs destroy the overproduction. As understood, each cell of each organ and tissue has a normal overproduction of cells and supplies a certain number to the blood, and of the entire organism, a constant number persists in the blood. An organ or structural part of an organ becoming diseased does one of many things: It either increases or diminishes both function of the organ and tissue, and that of the entire organism. To illustrate: In typhoid fever the digestive processes are inhibited; in tuberculosis of the lungs the respiration action is inhibited; in meningitis the nerve function is increased, etc. Varying with these inhibitions and excitations there can be observed concomitant inhibition and excitation of other functions. In some conditions one or more functions are excited, others inhibited. As can be observed in some cases of tuberculosis, while the rule is for a leucocytosis to exist, yet in some cases a leukopenie occurs. This evidence demonstrates the interdependency of the entire organism. In localized functional and structural disease this evidence would seem to indicate that where the normal range in numbers of leucocytes does not occur in the blood and is not compensated for, the production or the overplus reproduction of the cell of the entire organism is inhibited, and that the overproduction of cells in the diseased tissue is retained within that area. As is indicated by giant cells and the ring of granulation tissue limiting tuberculous processes, this evidence would suggest, as first observed by Virchow, that this ring of cells was present to protect the tissue of the entire organism from infection. As understood at the present time, this is not only true but, as first suggested by Metschnikoff, the cells of this tissue attempt to destroy the organisms present. We have learned that not only cells and minute organisms and their chemic products excite cell reproduction, but likewise many chemicals, as the alkaloids, acids, salts, thermal agents as heat and cold, electricity and mechanical pressures, as observed by Hirt, H. Meyer, Pohl, Binz, Löwit, Goldscheider, Jakob, Winternitz and many others. These facts are demonstrated by direct clinical and experimental observation. It will hardly seem necessary to go into the minute details of the increased production or different kinds of cells[7] in all normal and abnormal phenomena. The only limitation is the cells of the different tissues. Yet, upon observing the abnormal production externally, irrespective of its cause, and knowing that the same process and phenomenon must occur internally, one asks, when they have neither external nor internal outlet nor compensate for some pathogenic process, what becomes of the cells? Studying the blood of those having external wounds, structural diseases of different organs, internal and external new growths, we find that while there is an increased number of loose cells about the parts, there is also an increase of leucocytes in the blood. All of this evidence with that of those mentioned demonstrates, from the similarity of the cells produced to the leucocytes of the blood, that, as Weiss concludes, their relationship is not a coincidence, but they are the same cells. This conclusion brings to the etiology of new growths an entirely new interpretation and to our knowledge much light.

Reasoning now as we can upon biologic,[8] embryologic,[9] comparative anatomic,[10] pathologic,[11] physiologic[12] and clinical evidence,[13] that knowledge combines to indicate that we can typify the structure and function of the organism of man as a single cell. This is indicated by the integumentary system corresponding to the limiting structure and function; the osseous system corresponding to the fibrillar structure and function; the muscular, nervous, blood vessel, digestive, excretory and secretory system corresponding to the protoplasmic structure and function; the ovaries and testicle corresponding to the nuclear structure and function. As the entire organism can be so typified, so can each system, organ and cell or combination of cells making an organ and system. All detailed studies demonstrate this and also that the integumentary structures and function of man is an evolution of the limiting membrane of lower organisms. It has passed through and represents the different stages, namely: 1. Chitinous cells, fibrous, calcareous, scales, horn, feathers, hair, with the evolution and specialization of the present limiting membrane structure with its epidermal specialization; 2, a fibrillar network beginning with fibrous, elastic, fibro-elastic, calcareous and being gradually specialized to represent all structure with the evolution and specialization of an osseous system as represented in man; 3, a protoplasmic structure ranging from the complex structure within the limiting membrane and fibrillar structure, as indicated in the lowest organisms, to the evolution of the specialization of digestive, vascular, secretive, excretive, muscular, sensory and motor nervous structure of man;[4] a nucleus being a part of the whole structure, as indicated by the function of gemmation and division in lower organisms. Then arises an evolution of the nucleus. Though it be retained in every cell of the organism it ranges gradually to the evolution of the complex structure and function as indicated in the ovaries, uterus, vagina, testicles and penis of man.

Functionally it can be observed that each part of this structure has a definite range of action. Studying this comparatively it can be observed that this limiting membrane protects the three internal structures from these external natural and artificial environments: Atmospheric, liquid and solid pressure, heat and cold of gases, liquids and solids, electricity, chemical affinity, cohesion, adhesion, the attacks of other animals. This analyzed indicates, as is absolutely known, that variations of all of these forces exist and have a definite action on the organism. Applying this interpretation to man it can be observed that the limiting membrane directly and the other structures indirectly have, besides these natural forces, an environment subject to known action within definite limits, known and applied by man, evolved by him, organized by limitation. By this new environment man is made capable of accommodation irrespective of the natural environment. This makes an artificial environment, which though distinct is so intimately associated with the natural environment that it is of difficult discrimination in its activity. Yet it has likewise a definite direct action upon the action of the entire structure.

Studying again, comparatively, the functional action of the external environment on the protoplasmic, fibrillar and nuclear structure, it can be observed that this functional action has also a direct connection or communication as indicated by the gases, liquids and solids absorbed. These in turn, while producing direct action of the three named structures, also produce an indirect action on the entire structure. Analyzing the matters absorbed by lower organisms, making a direct and indirect internal environment we find them to be gases, liquids and solids, both inorganic and organic, producing direct functions and persistence of all the structures. Applying this again to man we find the same with the difference that gases, liquids and solids absorbed are artificially prepared, and that as a result of the aggregation of man and the consequent organization of communities and cities these matters are contaminated. The result is still further contamination owing to this artificial preparation and contamination. This result is due: 1, to matters excreted, and 2, by increase of the range of forces necessary to convert these matters to the complex simplicity of matters for the requirements of persistence of all divisions of structure.

Studying comparatively the action of lower organisms and man, we find that in the former this is confined to motion, absorption, secretion, excretion and reproduction, that is, the action of primary instincts. Following each function we find that this is gradually augmented until the complex instinctive and conscious activity of man is reached. Here can be observed the specialization and effects of the control of instincts, conscious control of nature's forces, the limitation of the activities of lower animals and for the specialization and vocation of man for necessities of persistence in time and space, the use of inorganic and organic matter. As all investigations indicate, man's original environment was tropical and subtropical. He collected in varying numbers over large spaces of land and his functional activities were confined to absorption, secretion, excretion, reproduction and excessive motion in quest of foodstuffs and preservation of life against enemies. Studying man as affected by a changing environment and comparing this with his present activities the following as mentioned is demonstrated: That he has augmented and modified through the instinctive recognition of the laws of the survival of the fittest, compensation and accommodation, both the natural environment and himself; and as a result in the building of cities, etc., he has made an artificial environment. Through the application of the laws of the forces of nature's phenomena, by these forces he has also increased the activities of producing a survival and persistence of self by making vocations which through training specialize the special senses and entire organism and which have a value for sustenance and survival. This is dependent on supply and demand and an interchange.

The artificial environment evolved has been the shelter of clothing and house and the use of prepared foods, the former two compensating the variations in atmospheric temperature and pressure, etc., and all used in functional activity. The first, clothing, has developed from the use of skins, pelts, etc., to the gradual employment of the limiting membrane of animals, their larvæ and vegetable matter which are prepared by man—an exchange of his labor or action for other necessities—these materials to compensate for variations of temperature, etc., are made into clothing for body, foot and headwear. The second, house, has been evolved from caves, the use of skins, branches of trees, grasses, earth, to the gradual use of logs, stones, the manufacture of bricks, etc. Thence the evolution proceeds to the present heterogenous matter combining all and compensating not only for variations in temperature, but likewise for protection against storms of wind, water, hail, snow, etc.

The third, food, has been evolved from the use of unprepared animals, vegetables, to the evolution of the preparation and preservation of both and the concentration of some as sugar, salt, fats, etc. These concentrations compensate for the renewal of structural matters used in man's functional activities. Man is then a natural cell and an artificial organism. As a natural cell he has the activities of motion, absorption, secretion, excretion and reproduction. As an artificial organism he has acquired compensatory shelter of clothing, house and preparation of foodstuffs. *These are produced by him through the specialization of all of his activities.* The effect of the compensations is to produce activities of parts and the whole structure not normally, hereditarily developed. As can be observed the newly born infant is almost immediately tightly clothed, and as a rule in this country fed with artificial foodstuffs. Even in earliest infancy either the one or the other or both produce skin or limiting membrane eruptions. Take again in later childhood, there can be observed the development of various structural changes as could be endlessly enumerated. These changes produced directly on those using and making artifices occur in the infant, child, youth and adult. The process is, that active and passive structural parts and normally retrograding structure are abnormally stimulated in a range out of harmony with normal structural and functional possibilities. As a result overgrowths are produced. As is borne out by pathologic investigation these overgrowths can be classified naturally under four original typical, structural and functional biologic divisions, namely: 1. Limiting membrane; 2, fibrillar; 3, protoplasmic and 4,. nuclear with the various combinations as observed clinically, anatomically and histologically as follows:

1. Excessive growths or tumors of the limiting membrane typified by clavus, cornu cutaneum, etc.
2. Excessive growths or tumors of the fibrillar structure typified by fibroma, chondroma, osteoma, etc.
3. Excessive growths or tumors of the protoplasmic structure typified by myxoma, myoma, lipoma, neuroma.
4. Excessive growths or tumors of the nucleus typified by sarcoma and cancer.

As microscopic evidence indicates these pathologic overgrowths, give the following mixtures either alone or in combination, making the following subgroups:

a. Excessive limiting membrane with diminished fibrillar, intraprotoplasmic structure and nucleus, typified by dermoids.

b. Excessive fibrillar with diminished protoplasmic, limiting membrane and nucleus, typified by fibroma, osteoma, chondroma.

c. Excessive protoplasmic structure with diminished nucleus, fibrillar and limiting membrane structure typified by lipoma.

d. Excessive nucleus with diminished protoplasmic and fibrillar and limiting membrane structure, typified by sarcoma of special organs and tissues.

e. Diminished limiting membrane with excessive fibrillar, protoplasmic structure and nucleus, typified by cancer or sarcoma of special organs and tissues

f. Diminished fibrillar with excessive limiting membrane, protoplasmic structure and nucleus typified by papilloma.

g. Diminished protoplasmic structure with excesive limiting membrane, fibrillar structure and nucleus typified by cancer or sarcoma of special organs or systems as the lip, tongue, etc.

h. Diminished nucleus with excessive limiting membrane,fibrillar and protoplasmic structure, typified by angioma.

i. Absent limiting membrane with excessive or diminished fibrillar, protoplasmic structure and nucleus typified by polypi.

j. Absent interfibrillar with excessive or diminished limiting membrane. protoplasmic structure and nucleus typified by adenoma.

k. Absent protoplasmic structure with excessive or diminished limiting membrane, fibrillar structure and nucleus as typified by cystic tumors. The processes and effects of all of these are determined by the laws of the survival of the fittest, compensation and accommodation. This functional action determines excessive cell division and blood to the parts containing excessive nutrition held in solution and in the leucocytes. Both of these give one of the four parts of the structures represented in every system, organ and cell an advantage in predominance.

Studying their clinical histories we find that while the origin of some tumors in certain places can not be defined, yet the same growths in other places give a definite etiology. Reasoning as we can that all organs, systems and cells have represented all four structural parts as a result, it is made possible to apply the logic of that history to the growths hidden to the naked eye. I speak of intra-abdominal, thoracic and cephalic growths. As is indicated by external tumors whether they be benign or malignant, all growths have a definite cause. As already stated it can be demonstrated that all cell division can be excited or increased in time by organisms. It matters not if the organisms are excited by cells of tissue pathogenic organisms; by chemicals of both organic and inorganic matter, which includes the products of micro-organisms; by mechanical, thermal and electric applications. This cell division is further demonstrated by physiologic and embryologic evidence which indicates the excitation of the reproduction of all structural divisions of organic cells. This can be seen in the impregnated ovum, which not only is itself stimulated, but likewise stimulates an excessive motion, absorption, secretion, excretion, reproduction, etc., of all structural divisions of itself and the organ or tissues in which it lodges. The uterus in normal pregnancy and the Fallopian tubes in extra-uterine pregnancy indicate the same things.

Physiologic and experimental evidence also indicates how cell reproduction of protoplasmic structure is stimulated in functional excess as in specializing systems and organs, as the muscular, digestive systems, etc., seen in athletes, gourmands, etc.

Biologic, pathologic, clinical and experimental evidence indicates such excitation of all structural division of the cells or minute cell organisms by pathogenic organisms. This appears in tubercular processes, etc., and as is indicated by clinical and experimental evidence, the same excitation occurs through contact with organic and inorganic matter by chemicals, mechanical pressure, heat, cold and electricity, organic cells in excess, bacilli and micrococci, acids, ptomains, alkalies, excessive pressure of clothing, etc., excessive heat and excessive cold, then heat, and lastly through galvanic electricity.

As pathologic evidence of the pure mechanical excitation of the reproduction of protoplasmic and nuclear structure, we know that epithelioma of the lip may be caused by pressure. In embryologic excitation we have dermoids, which indicate the persistent determination of excessive nutrition to a part by either rests and vestiges of congenital significance. A periodic wandering and retention of fixed cells likewise observed in metastasis indicates the same determination. We know that sarcoma or nuclear excitation of bone structure may be produced by excessive pressure, as by excessive lying upon a firm hard matter such as a hard board table. Here the great trochanter undergoes too much pressure and consequently excites excessive division and leucocytes to the parts and compels a too rapid and perverted cell division. In clavus, fibroma and myoma, etc., the same logic of either organic, inorganic, chemic, mechanical excess, etc., will hold good save that in these cases the rapidly dividing cell which matures represents equally one of the structural parts of the cells of its original tissue. This is probably caused by a normal mitosis, the quality of the stimulus and the nutrition coming to the parts. This pathologic evidence indicates that irrespective of the location of the overgrowths the same etiologic application of excessive cell reproduction, etc., obtains. An analysis of the cell of cancer and sarcoma indicates, as already mentioned, that both represent structurally and functionally a predominance of protoplasmic and nuclear structure, their discriminating difference being in the limiting membranes. The former is said to have its origin in epithelial, the latter in connective tissue cells. From the above interpretation of the entire organism this division is quite irrelevant, as boths cells practically represent a predominance of the same structural divisions of the cell, namely, protoplasmic and nuclear structures. As these structures exist in all cells of all tissues these two growths can be found in any tissue of the entire organism.

Studying the microscopic and macroscopic area of both cancer and sarcoma we find that they have a definite and constant physiognomy. Detailed this picture shows in cancer first an overgrowth of the distinctive cell and a compensatory growth as if to limit the extension of the growth of these cells, of the connective or fibrillar cells. In sarcoma the growth is of the same cells without any attempt at compensatory hyperplastic, morphologic limit of surrounding cells caused by a too rapid formation of the cells. Yet a close study shows the great similarity as detailed, but while both cells grow rapidly in sarcoma the cells develop so rapidly that the impressed phenomena of cohesion, adhesion, etc., have a diminished force. It is needless to remark after carefully detailing the organization of the two structures that their similarity is striking and their etiology is suggested to be the same. Studying these suggestions physiologically, clinically and histologically, and from the comparative points of view, they demonstrate that these overgrowths are caused by a predominant stimulus to the nucleus of the cell in a range not in harmony with functional requirements or with the development of the mature cell from which they originate. The presence of a perverted mitosis demonstrates microscopically its biology. This stimulus is either long continued or persistent, periodic, organic, chemic of both inorganic and organic matter; mechanical either long continued, persistent, periodic excess, as pressure, heat, cold or electric application with a concomitant excess of the absorption of cells rich in chromophilic matter. If now we recall the origin and cause of the rise and fall of the leucocytes in the blood we have demonstrations of their sources and kind; the effect of their retention and excessive numbers. As already stated, as suggested by Cohnheim, Neusser, Weiss, and as is indicated by all clinical evidence, by the effect observed microscopically in the immediate effect in the healing process of cuts and bruises, the leucocytes of the blood are an overproduction of cells of all the different tissues. Some of these tissues are richer in nuclear and other matter than others. The question then comes what becomes of these cells when they are predominantly retained within the tissues? As is indicated by pathologic evidence we have atrophies, hypertrophies, hyperplasias and tumors as final structural disease effects. All are caused by structural and functional excess. Reasoning from these premises the mechanism of structural and functional organic and inorganic, chemic, mechanical, thermal and electric action upon the cells of tissues is to produce an excessive determination of blood to the parts. This mechanism also produces an excessive motion, absorption, secretion, excretion and division of the cells of the part and of the cells of the entire organism, consequently of the leucocytes brought to the parts. As is indicated in traumatisms this demonstrates that more converted and to be converted nutrition comes to the part than is normal. If this overproduction is not compensated for by being taken into the general circulation, etc., there is then produced, as pathologic evidence demonstrates, either atrophy, hypertrophy, hyperplasia or tumor. As observation and experimentation indicates and pathology demonstrates, the application of the above to these four structural changes, is as follows: When a retention of these overproduced cells occurs, a time will occur when they will produce an excessive: 1. Reproduction; 2, absorption; 3, excretion; 4, secretion; 5, motion, which in turn will react upon each cell exciting a further cell division. The effect of this must then be to excite either all the cells of the different divisions of the tissues of the part or of a single tissue or division of tissues, when there will be an overgrowth of all or one or two, or three, or four structural divisions of the cell of the tissue.

Studying the histology of an atrophic cell we find that the nuclear and protoplasmic structure is predominated by fibrillar and limiting membrane structures with a change of form and size of cell, and chemically a change in the secretion and excretion. The interpretation of this implies that the overproduction of cells have become starved and in turn have starved the fixed cells and compelled a lower structural organization. The scar cells especially show this. The scars produce before antiseptic surgery was known emphasize this. The small hemorrhages in the brain and spinal cord producing the well-known sclerosis also show this. The process and effect of all this is determined by the predominant action of the law of accommodation.

If not atrophy but hypertrophy occurs, then the contrary can be observed. All structural parts of the cell become equally enlarged and with the all there is an abnormal function. This indicates that the structural and functional increase is simply compensatory and in harmony with requirements, the increased soluble nutrition and leucocytes furnishing the necessary matter. The process and effect of all this is determined by the predominant action of the laws of accommodation and compensation.

If again such an abnormal activity exists and neither atrophy nor hypertrophy occur, but a hyperplasia, then the interpretation is: That the matters absorbed have contained pathogenic organisms or that man has had external contact with them. These lodge: 1, in a fixed cell, and excite excessive activity, or 2, are carried to a distant division of the organism either in the blood current or, 3, are taken up and so transported by leucocytes already existing in the blood and ultimately lodged in a fixed cell. In this fixed cell, in the struggle which occurs, all activities are increased. This struggle not only calls for and receives extra nutrition, but stimulates all of the cells surrounding the parts, as is demonstrated by all pathogenic symptoms and microscopic investigation of typhoid fever, tuberculosis, etc., and all kinds of septic wounds. As is indicated in the healing processes, these abnormally stimulated cells are of two kinds, viz.: auxiliary or vanishing, and fixed cells, the first being the wandering leucocytes, which as above detailed are normally compensating and protecting. They have predominating protoplasmic and nuclear structure and as compensatory function an excessive motion, absorption, secretion, excretion and reproduction. The structure and function can be demonstrated histologically and chemically by the tissues and the blood. The presence of fixed cells is indicated by the healing process. This demonstrates that some of the excited and rapidly dividing, absorbing, etc., cells persistently grow and develop compensatory structure and function of original mother cell, and in this way produce compensatory regeneration by producing a cell as detailed in atrophy. Applying the laws of biologic phenomena to this process and effect, the indication is that the laws of the survival of the fittest and accommodation have a predominant action.

If instead of atrophy, hypertrophy or hyperplasia, an overgrowth occurs, the indication is that the causes as mentioned produce and persistently determine an excess of the leucocytes and the fixed cells. This interpreted indicates the following simultaneous phenomena: Excessive motion, absorption, secretion, excretion, perverted mitosis of fixed cell of part, in the two malignant overgrowths. There is also excessive determination of blood to the parts together with its excess of converted nutrition held in solution and an excess in number of leucocytes coming from tissues (apply Weiss' conclusions), leucocytes structurally rich in nuclear and protoplasmic matter. Besides having their activities augmented these leucocytes are consumed by the fixed cells and furnish extra nutrition. This makes a definite reinforced mechanism dependent upon the persistence of the original cause amplified by biologic activities. Applying the laws of biologic phenomena to this process and effect. the indication is that the laws of the survival of the fittest, compensation and accommodation predominate.

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X-RAYS AND X-RAY DIAGNOSIS.

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A great discovery, great in the sense of discovering a fundamental principle or a fact profoundly modifying existing theories or hypotheses, is not infrequently found to be of most value, from the purely utilitarian standpoint, in some branch of science, or some art, other than that in which it was primarily made. One of the most striking examples of this statement is to be found in the history of what has become bacteriology. Pasteur was seeking for the cause of fermentation, and more particularly the fermentation of grape juice: yet his discovery has revolutionized the practice of surgery and almost transformed the practice of medicine.

Admitting that science and many of the useful arts have profited largely by the discovery of Pasteur and the researches of subsequent investigators the fact remains, and I think will not be disputed, that society has been most benefited through the influence of the discovery and its developments upon medicine and surgery. Many other discoveries exhibit the same fact though hardly so clearly and typically as the one cited.

Very recently we have been furnished an illustration in the discovery of a new form of radiation made by Professor Roentgen in December, 1895, and announced by him at Wurtzburg in January, 1896. The researches of Roentgen were no more due to a desire to advance the practice of medicine than were the researches of Pasteur; the one was investigating certain physical phenomena in the domain of pure science; the other was investigating the cause of certain processes in a commercial industry, the production of wine. But as with the discovery of the yeast fungus, so with the discovery of the X-ray the principal benefit has accrued to medicine. I therefore deem myself justified in considering "X-rays and X-ray diagnosis" as eminently a subject in medicine.

A detailed and connected account of the steps in the process which led up to the discovery by Professor Roentgen of this form of radiation, unknown and unsuspected, would mean a careful review of the work of Galvani, Faraday, Coulomb, Thompson, Geissler, Crookes, Hitthoff and Leonard, to say nothing of many other and less widely known investigators. Coulomb and others studied carefully the inductive capacity of dielectrics, and naturally gases at various pressures were included. From a study of inductive capacity, it was but a step to the observation of disruptive discharge, and Geissler made the first notable advance in regard to discharge through gas at lower than atmospheric pressure.

In Geissler's experiments polarity first assumed an important position as presenting certain different and interesting phenomena, depending upon the direction of current flow; Crookes and Hitthoff, by virtue of improved apparatus enabling them to obtain higher degrees of vacuum, were able to more accurately differentiate the phenomena exhibited at the kathode and anode poles during discharge in vacuo. Crookes particularly was impressed with the anomalous character of the phenomena exhibited at or by the kathode terminal during discharge in a vacuum, and was led to suggest a fourth state of matter, being otherwise unable to explain the conditions found. This announcement and his experiments, which were exhaustive, naturally evoked much interest and criticism among scientists. Philip Leonard commenced investigating the subject with the result that he was very soon able to obtain much more curious manifestations of kathode discharge—he demonstrated the possibility of detecting the presence of rays, which he assumed to be kathode rays, outside of the vacuum in which they were produced. These many discoveries attracted the attention of numerous scientists, among whom was Professor Roentgen, and it was while studying the phenomena recounted by Crookes, Hitthoff and Leonard, that he observed another form of radiant energy emanating from the vacuum tube, a form of radiation apparently different from any previc [illegible] oted; for while light and kindred rays could [illegible] d, reflected and refracted, and kathode and Leonard rays could be deflected by a magnet, the rays observed by Roentgen were not subject to reflection, refraction or magnetic deflection. Hence as they were unknown he called them "X." This X radiation, merely another discovery in pure science, has become one of the most if not indeed the most valuable aid in the diagnosis of a large majority of surgical cases, and this within little more than a year. Its present value if only in presenting bone lesions and foreign bodies to the visual examination of the surgeon will hardly be denied by any competent observer, and its possibilities can not be prophesied.

So much interest has been evoked by the possibility of "seeing one's own bones," that a great deal of kindergarten investigation has been done, and too often conjecture and speculation have assumed the rightful places of scientific observation and cool-headed deduction; opinions have been asserted as facts by men who unquestionably should know better. With no discovery within my recollection has the immediate and general excitement been so intense, or the subsequent deluge of absurd and improbable statements so great as with this discovery of Professor Roentgen.

The requisite conditions for the production of X-rays are essentially, first, an apparatus capable of producing a difference of electrical potential sufficient to produce a spark in air of three or more inches, and second, a non-conducting vessel of some material penetrable by X-rays, and in which a vacuum of three mm. or less may be maintained—this ordinarily takes the form of a glass tube or bulb, with one or more platinum wires sealed into the glass terminating within the tube in a variety of shapes. It is not essential but it is desirable that the terminal to which it is intended to attach the leading-out wire (the kathode terminal) be made of aluminum, except the portions making the glass seal and external to the tube. The anode terminal may be of any conducting material, preferably platinum. When an excessively high potential current is used, one terminal only need be made in the tube, but the generally available apparatus necessitates the operation of the tube on a closed circuit of which it is itself a part, and hence the tube must be provided with two or more terminals. A large number of tubes of different materials, shapes, sizes and arrangements have been made and experimented with; and the question of the material, size and relative position of the terminals has been carefully studied, the consensus of opinion being that for the production of X-rays of high penetration and in considerable volume, the tube must be of German or lime glass, generally spherical, and the kathode terminal of aluminum in the shape of concavo-convex disk, the concave surface being directed inward and the curve and position such as to bring the kathode rays to a focus upon the platinum disk in which the anode terminates. The anode disk should be inclined at an angle of about 135 degrees from the kathode. This style of tube, now generally called the focus tube, I concluded from my early experiments would be most satisfactory, and subsequent trial demonstrated the value of my conclusions. . I was not alone in the discovery, for a few days after I had my first focus tube made I received a description of a form of tube precisely similar which had been designed by a professor at Kings College, London. Several times I have made discoveries which in a short time I found had been independently made by other investigators.

The high tension current for exciting the tube may be obtained in a variety of ways which are divisible into three general types, *i. e.*, the induction or Rhumkoff coil, the high tension alternating current transformer or "Tesla coil" and the friction or influence machine.

In the induction or Rhumkoff coil, the high voltage is produced by breaking a direct current circuit in a primary of few turns of large-size wire wound about a soft-iron core, the high tension current being induced in a secondary winding consisting of many turns of fine wire insulated from the primary coils. There is a certain amount of current induced in the secondary upon making or closing the primary circuit, but as it is the result of electric induction only, it is very small in comparison with the current made by breaking the primary circuit, the high voltage in the latter case being the result of the electric induction plus the magnetic induction of the soft-iron core. When a high resistance is introduced into the secondary circuit, the current in that circuit produced on closing the primary circuit becomes negligible and the effective voltage may be regarded as unidirectional. Coils of this type have been constructed to give a spark in air forty-two inches long. I have made a number of such coils of various sizes, using different wire for the secondary winding.

The high frequency high potential alternating current transformer, sometimes called "Tesla coil," offers a very inviting field for the experimenter. The apparatus consists essentially of some source of E.M.F., which may be made to charge condensers, the latter being disruptively discharged into the primary circuit of the coil immersed in oil and consisting of a primary and secondary coil, each being of comparatively few turns of wire, the secondary, however, having more turns than the primary; the resultant high potential current is produced by electric induction and is an alternating current.

The influence machine is sufficiently well known to need no description and may be constructed to produce very high differences of potential and a current either direct or alternating. To produce the best effects from either the Tesla apparatus or the static machine a very careful adjustment and balancing of the apparatus is essential; therefore, when the apparatus is intended solely for the production of X-rays, the direct current coil is preferable to either of the other devices as being more easily, uniformly and satisfactorily operated. I have experimented with all three of these forms, but for actual diagnostic work employ only the induction coil.

In physics, not a great deal more is known now than was contained in Professor Roentgen's orginal paper. I early found the X-rays to emanate from two or more points in the tube, the anode terminal and the area bombarded by the cathode stream. I also made several experiments to ascertain the law of absorption of these rays and found that the metals increase in absorptive power with increasing atomic weight; the salts of the same metals may be arranged with reference to their absorptive power in an increasing series as follows: carbonate<nitrate<sulphate<chlorid<bromid<iodid.

Several theories are current as to the nature of these rays; some investigators deem them longitudinal ether vibrations, others regard them as streams of projected particles; the majority of physicists, however, are of opinion that in this phenomenon we have only another electro-magnetic wave, an ultra violet wave of very short wave length, probably about three octaves above the shortest previously known ultra-violet waves. Certainly the X-rays are non-homogeneous, for several quite different series of phenomena may be observed, produced by them. I myself demonstrated either four distinct forms of X-rays, or else rays of four different wave lengths, almost a year ago. The dermatitis Roentgenii, which will be subsequently mentioned, seems to have some relation to this question of non-homogeneity of the radiations from the vacuum tube, indifferently called "X."

The application of X-rays in medicine has thus far been confined almost entirely to surgical diagnosis; a few instances are recorded where they have been therapeutically employed, or rather empirically employed, in the treatment of tuberculosis pulmonalis, with, in some cases, apparently good results. Whether the benefit in these cases was, however, to be assigned to the action of the rays *per se*, or to the counter-irritation produced by extensive dermatitis R., remains an open question.

The list of foreign bodies that have been accurately located by means of the X-rays is a very large one and includes the greatest diversity of objects and covers almost the entire body. I have personally located and by that means enabled the operator to easily remove needles and pieces of glass from the hands and feet, and bullets from various parts of the body, including the second lumbar vertebra, and a hypodermic needle in the thorax. As most of the foreign bodies with which we have to deal are metallic, and as the coefficient of absorption is greater for the metals than for any of the salts of the metals or any organic substances, the foreign body usually intercepts many more of the rays than the surrounding medium and consequently casts a more dense shadow.

Fractures and dislocations, though usually easy of diagnosis, are sometimes very puzzling, especially when near joints and when some time has elapsed after the injury and the soft parts are much swollen. No matter what the natural ability, education or experience of the fingers they may often be at fault; here, however, we have an agent that can not err; if it give an answer at all, it must be truthful and must show to the examiner the actual conditions. The fractures and dislocations that have been examined with much profit by this means includes almost every large bone, almost every joint in the body, and no man who has availed himself of this aid in such cases will speak of it in any terms save those of highest praise.

Certain diseases of bone are also diagnosable by means of these rays, owing to the difference in absorption existing between the diseased bone and normal healthy bone. Exostoses intercept a number of rays equal to the number absorbed by the same quantity of similar normal bone, and hence are diagnosed by comparison with a skiagraph of the same region showing the normal anatomic outline and relations. In necrosis and tuberculosis, however, the conditions are different and diagnosis permitted, owing to the coefficient of absorption of the rays being not constant for both healthy and diseased bone.

Some hard tumors situated in the soft parts may be located and examined to a certain extent; any attempt at differential diagnosis can not be made in these cases, however, until sufficient material has been collected on which to found opinion by contrast and experience. It seems quite possible that the rays may eventually be found to possess some value in this direction.

The X-rays furnish a most satisfactory means of examining the chest for various purposes. The heart can be very readily seen in outline, and the facts relative to its size, exact location and movements noted at once. Sight is a much more satisfactory agent of information than hearing or touch, and consequently the opinion derived from a visual examination is much more decided than that obtained by percussion or ascultation. Aneurysm of the aorta is frequently seen in shadow, though it may exist and, if small, not be detected by this means. Areas of solidification in the lungs cast shadows more dense than the surrounding lung tissue and are hence detected and exactly outlined; any change in their size or density may be noted, too, by repeated examinations.

The abdomen has thus far proved to be a less fruitful field of investigation; the liver, kidneys and occasionally the spleen may be outlined fairly well, and calculi, if of sufficient size, located; but the many obscure affections involving the intestinal canal have not, so far as I am aware, received any elucidation by means of the rays of Roentgen.

I have made some experiments tending to ascertain whether c[illegible] uterus can be differentiated from [illegible]ng pregnancy. The results are most encouraging. After the fourth month a skiagraph of the pelvis leaves no question of doubt in the diagnosis and I am inclined to believe that gestation may be confirmed or eliminated as early as the eighth week.

The claim has been made and refuted, with about equal weight *pro* and *con*, that these rays exercise a germicidal power upon sundry micro-organisms. The question must be regarded as still open, but it is certainly very doubtful that they will be found to have germicidal properties of any magnitude. Cases of tuberculosis pulmonalis have been reported as much benefited by repeated exposures to the radiations from the vacuum tube, but whether the benefit is purely psychologic, is due to the counter irritation of the dermatitis generally resulting or is indeed the direct result of the action of the X-rays, *per se*, has yet to be demonstrated.

Not the least unfortunate of the unfounded claims made for these new rays was that they exhibited some remedial properties in cases of blindness. Edison and some of his enthusiastic followers imagined that the rays produced an effect upon vision, but no other physicist in the world, so far as I am aware, has been able to observe the phenomenon suggested by Mr. Edison; and this failure can not be assigned to inefficient apparatus, for there are many laboratories in which more intense and profuse X-rays have been and are produced than in Mr. Edison's laboratory. The error seems to have originated in a misinterpretation of the phenomena encountered.

A certain depilatory action seems to be exhibited occasionally, due partly to, in all probability, the same causes that produce the dermatitis Roentgenii. This property has been made use of in several instances for removing hairs for cosmetic purposes. Unfortunately the fact soon developed that the condition became eventually as bad if not worse than before the treatment was employed, owing to at least a return of the hairs removed and oftentimes an increased growth.

In May or J[illegible] '96, [illegible] first o[illegible]at a more or less severe inflammation of the superficial tissues would occasionally result from an exposure to the emanations from the vacuum tube, and as the number of cases of this inflammatory process rapidly increased and as they all exhibited substantially the same symptoms, *i. e.*, a dermatitis of peculiar nature, the name dermatitis Roentgenii was coined. Gilchrist, in the *Johns Hopkins Hospital Bulletin*, for February, 1897, reports twenty-three cases gathered from various periodicals. Many cases have occurred and have not been reported, so that the conclusion he draws as to the infrequency of the dermatitis is hardly warranted. I have myself seen nine cases, none of which have been reported, and I have authentic information relative to several others. In some points these cases differ widely, while in other respects they are very similar. The inflammation may be mild or extremely severe, depending on the location, the length of exposure, the condition of the tube and personal idiosyncrasy. The least time of exposure that has resulted in dermatitis, so far as I know, is fifteen minutes; numerous short exposures or a single long exposure are the conditions reported as observed in most of the cases. There is usually no sensation at the time of exposure, and for from twenty-four hours to twenty-one days thereafter the skin remains apparently perfectly normal. After this period of "incubation" the skin over the area exposed to action from the tube becomes bright red, reddish brown, dark brown or almost black; the epidermis is raised from the true skin by a serous fluid (either *en masse* or in bullæ), the scarfskin separates and comes off, leaving a bright red, raw-looking surface with a profuse, sero-purulent, ill-smelling discharge. There is at this time, usually, a sense of burning pain and soreness at the seat of the inflammation, which has been preceded in many cases by a brief period of partial anesthesia. The condition grows worse for from ten days to three weeks and then spontaneously heals, in the ordinary cases. In the more severe cases the true skin may slough off leaving an ulcerative surface that is very difficult to heal. The more serious results seem to have followed prolonged exposures or fairly long exposures repeated at frequent short intervals.

Several theories have been advanced to explain this phenomenon: 1. That it is caused by ozone. 2. That it is caused by ultra violet rays (*i. e.*, ultra violet rays of known wave length). 3. That it is due to electric action by induction. 4. That it is caused by particles of matter projected from the tube. The really rational explanation seems to have been overlooked.

1. If caused by ozone, the sides and palmar surface of the fingers and hand would be affected as well as the dorsum, when the dorsum is exposed to the rays and subsequently becomes affected. Also in the experiment of Elihu Thomson, the entire area of the hand within the field of radiation of the tube would have been affected, and not merely a limited area on one finger, corresponding to a window of clear German glass in a tube of thick blue glass; the finger having been exposed to the rays from the window and it alone having been subsequently affected. Certainly in this experiment, the conditions in regard to ozone were the same for all parts of the hand. There are also many other circumstances impossible to reconcile with the ozone theory.

2. That it is caused by ultra violet rays of known wave length: the experiment of E. Thomson previously referred to would exclude this theory, for the blue glass of the tube would offer no more obstruction to such ultra violet rays than would the window of clear German glass.

3. That it is due to electric action is hardly tenable, for the reason that the electric induction is small in comparison with the electrification often induced for therapeutic or experimental purposes and that in the latter case no such effect is produced.

4. The theory that it is caused by particles of metal projected through the walls of the tube has been advanced as a result of Tesla's suggestion that the rays are themselves streams of projected particles; the theory is, however, without any evidence to support it, and indeed the mass of evidence is directly opposed to such an assumption. Certainly no "material particles" have been found outside the tube. To be sure there is no direct proof that the inflammation may not be produced in the way suggested, but Gilchrist was unable to find any trace of metal in the cast-off skin in his case of dermatitis.

The conditions entering into the production of this inflammation are: 1. An exposure of not less than fifteen minutes within a comparatively few inches of an electrically excited vacuum tube emitting X-rays; 2, the condition of the vacuum and excitation of the tube; 3, idiosyncrasy. The first and third factors are well recognized and need no explanation; the second is the factor which seems to offer a key to the solution of the problem.

The vacuum is not a constant quantity. After the current has passed through the tube a certain time, the phenomena change, the tube exhibits increased resistance and other indications of an increase in vacuum; this increase in vacuum may be due to actual loss of contained gas, as claimed by Tesla, or to a condensation of the gas upon the inner walls of the tube. The latter, for various reasons, seems the more probable theory. As the vacuum increases, the character of the emitted rays changes. Commencing with a low vacuum, the rays emitted are of comparatively long wave length and limited penetrability; with increasing vacuum, the wave length decreases and naturally the penetrability increases. In all probability the rays from the higher tubes are, however, somewhat akin to white light, in that they are made up of rays of various wave lengths. The rays of longer wave length and little penetration, are more easily absorbed and produce more markedly the effects of transformed energy than do the waves of shorter wave length and greater penetration. This may be observed by comparing the appearance of a fluorescent screen when excited by the two extremes; in the one case the screen is brilliantly lighted up, but the flesh, as well as the bones of the hand, is opaque and a shadow of the hand alone is seen; in the other case the screen is less bright, but the flesh and even, sometimes, the bones of the hand may be quite transparent; similar phenomena may be observed if the photographic plate is substituted for the screen. Absorption of radiant energy must produce some effect; we see that such is the case with the fluorescent crystals and with the photographic emulsions; I am inclined to think that the dermatitis Roentgenii is nothing more nor less than the result of this absorption of radiant energy by the cells of the skin, and is parallel to the changes effected in the photographic emulsion.

We know that radiant energy falling upon the unstable molecules of a silver bromid emulsion, produces a rearrangement of the atoms resulting in a less complex molecule. We also know that organic cells are made up of rather unstable molecules. I can not but think that we have here to do with such a change. The radiant energy of the X-rays which are of comparatively long wave length, would be absorbed by the molecules of the first substance coinciding with their absorption band encountered, and if these molecules were unstable, they would suffer rearrangement of their atomic structure. Such a rearrangement, it is more than likely, would be, if carried far, sufficient to greatly modify the cell function and produce cell death. Apparently this is the exact condition produced, for the dermatitis shows every indication of being a superficial gangrene, and the sloughing process continues until the dead material has been cast out, when healing is spontaneous.

I have observed that dermatitis is more apt to ensue from exposure to low vacuum tubes than to tubes of higher vacuum, and that a very long exposure may be safely made, when the tube is of excessively high vacuum and the rays emitted are of great penetration. In the former case the vast majority of rays are unquestionably absorbed by the skin, whereas in the latter case but few rays are absorbed.

We should also expect, if this theory is true, to see more or less disturbance of the subcutaneous tissues following excessive exposures; and such is the case, for we find that prolonged exposure has resulted in sloughing of the true skin and underlying tissue; and that pain and soreness in and of the bones and joints has been observed repeatedly; and that cases of miscarriage in the latter months of pregnancy have followed long exposure to these rays The evidence seems to me conclusive.

The possible danger of dermatitis or other inflammatory process, should not deter us from employing this diagnostic aid. In the vast majority of cases no untoward consequence need be anticipated, if a few precautions are borne in mind The tube should be carefully examined and not used for diagnostic purposes when the vacuum is low; the minimum exposure necessary to secure a satisfactory skiagraph, when the tube is not too low, and the distance of the tube from the surface of the part exceeds six inches, will almost never produce a dermatitis. When the case is one requiring a prolonged exposure, or several repeated exposures, it becomes a matter of judgment, whether the urgency of the examination is sufficient to warrant the dermatitis which may ensue.

803 Sutter Street.

THE FALLACIES OF X-RAY PICTURES.

BY EDWARD A. TRACY, M D.

FELLOW OF THE MASSACHUSETTS MEDICAL SOCIETY, MEMBER OF THE AMERICAN MEDICAL SOCIETY
BOSTON.

Roentgen's marvelous work on the properties of the X-rays (their nature is as yet unknown) has already been productive of much good in surgery and medicine—almost entirely in the field of diagnosis. The application of his discovery necessitates the rewriting of the text-books on fractures and dislocations. Facts, heretofore "smothered in surmise" are clearly set forth by the radiographs. For example, no writer, of which I am aware, on fractures, suspected the frequency with which fracture of the ulnar styloid process accompanies Colles' fracture; yet this frequency has been demonstrated by radiographs of Colles' fractures.

While much has been gained in accuracy of diagnosis by the aid of X-ray pictures, there is one branch of practical medicine where harm is threatened by their employment. I refer to medical jurisprudence. X-ray pictures have been already admitted as evidence in some courts. Their indiscriminate admission will hurt the cause of justice—because they can easily lead to fallacy or error. Their use as evidence of injury, is only safe when certain conditions have been fulfilled, in their taking and presentation. I shall briefly indicate further on what these conditions are.

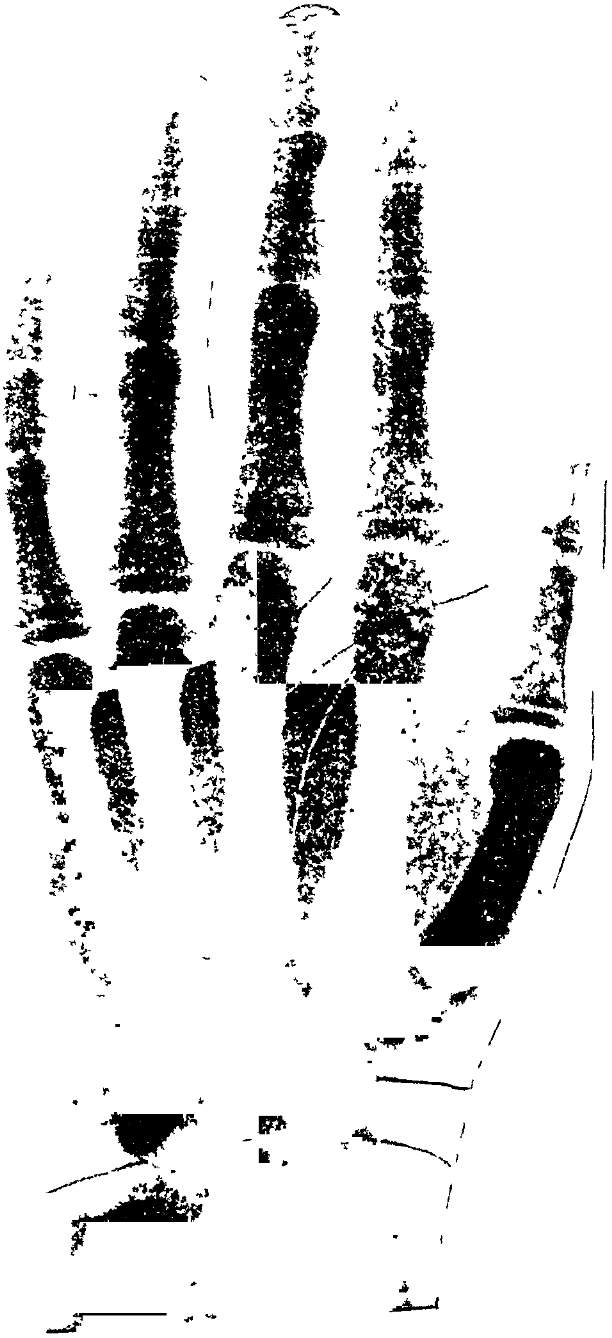

Figure 1

In all X-ray pictures there is distortion. The reason is X-rays emanate from a point, and are not parallel. Interference with these rays follow the ordinary physical and mathematical laws of rays emanating from a point. (Of course it is understood that there is neither reflection nor refraction of the X-ray.) Thus the nearer to their source is an obstruction to the rays, the larger will be the resultant shadow or picture; the size of the shadow depends also upon the nearness of the object to the surface upon which the shadow falls; the further the surface from the object, the larger the shadow. If we had for a source of X-rays a surface as large as the object to be pictured, there would be no distortion, for the X-rays would be parallel. X-ray pictures in that case would be easy of comprehension, and never misleading. To read correctly the lesson of an X-ray picture, the obliqueness of X-rays must be kept in mind, and mental correction made for the disproportion and distortion caused by this obliqueness.

To illustrate the foregoing remarks, I present Figs. 1 and 2. They are plates of radiographs of the same hand, the right, of a boy 13 years of age. Before taking them, I thought that the relations of the palm and wrist lines to the underlying bones could be accurately determined by radiography. My plan was this: I covered the palm and wrist lines with pieces of copper wire. The wire was attached to the skin by means of collodion and cotton fiber. The copper wire being resistant to penetration by the X-rays would cause dark lines upon the picture, and thus I hoped to have the palm and wrist lines represented with the bones, and their relations shown. The palm and wrist lines are represented but their relations are not accurately pictured. This is proven by the plates. Fig. 1 is from a radiograph of a hand with its palm toward the sensitized plate. Fig. 2 is of the same hand turned over so that its back was toward the plate. The relation of the palm and wrist lines to the bones had not actually changed by simply turning over the hand; the pictures represent these relations to have changed, and therefore are fallacious. If our source of X-rays was so large that the rays streaming through the object were parallel, such divergence would not exist, and the lines representing those of the palm and the wrist would coincide in both pictures.

Figure 2.

Besides the want of coincidence in the palm and wrist lines in both pictures, I invite attention to the difference in size of the thumb metacarpal in the pictures. In Fig. 2 the thumb metacarpal is pictured as thicker than in Fig. 1. The pictures represent a difference in size where none exists, as both are pictures of the same bone. Hence, again, X-ray pictures are fallacious. This difference in size is explained thus: In Fig. 1 the hand was palm against the sensitized surface of the plate, and therefore the thumb metacarpal bone was nearer to the plate, than when the hand was with its back against the plate as in Fig. 2. The thumb being nearer the plate in the first position than in the second, its shadow was smaller, so pictured in Fig. 1.

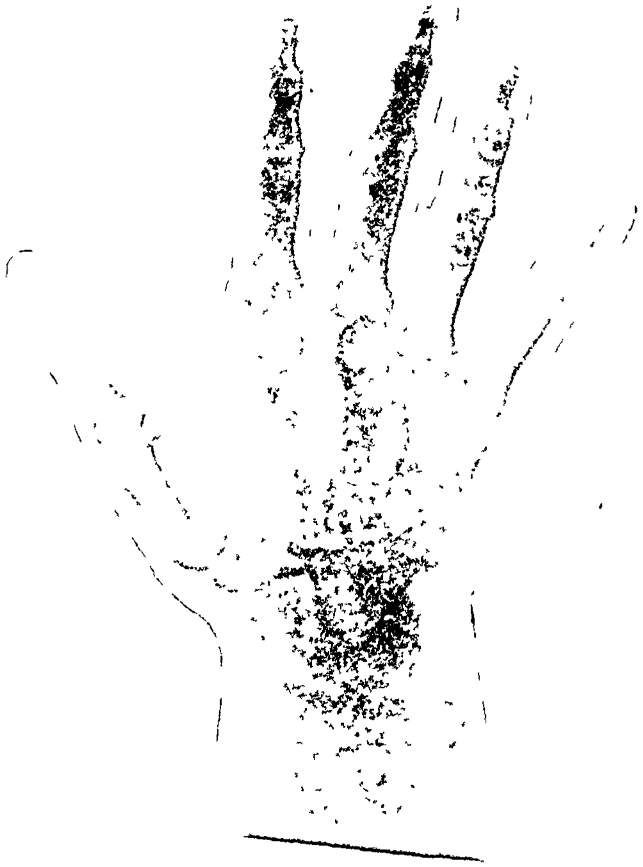
Figure 3.

Besides the variations in the picture caused by the distance of the object from the source of the X-rays, and the variations caused by the distance of the object radiographed from the sensitized plate, there are variations caused by the position of the object with relation to the direction in which the X-rays strike the object. This is shown by Figs. 3 and 4. In Fig. 3 we have the bones shown thicker than in Fig. 4 and with curious spur-like exostotic deposits upon the metacarpal bones. *Both are radiographs of the same* *hand.* The difference in the pictures was caused by the difference in position of the Crooke's tube when they were taken. In taking picture 3 the tube was more to the ulnar side of the hand than when taking picture 4.

In my possession is a plate in which the deformity caused by Colles' fracture is quite closely simulated by a similar change in the position of Crooke's tube. The plate is of a normal wrist. The importance of this from a medico-legal point of view need not be enlarged upon.

I have thus shown X-ray pictures to be fallacious and misleading—and described some of the causes of these fallacies.

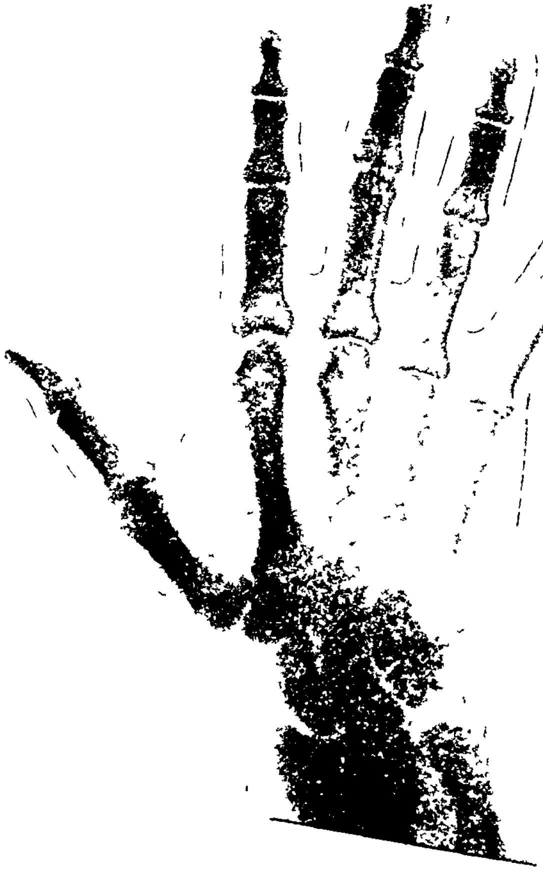

Figure 4.

Because X-ray pictures can be fallacious, should they be excluded from court as evidence? Certainly not. It is well to know their limitations, and to remember that appearances may deceive. X-rays, properly used, are as a search-light in the exposition of bone lesions. But the lesions must be pictured from different directions, and the resultant pictures compared with pictures of the normal opposite member. Moreover the pictures of the injured member and those of the opposite normal member, must be taken with the same relative positions of the Crook's tube, the limb and the sensitized plate. Then can truth be arrived at, and truth is essential for justice.

99 Broadway.

Salicylate of Methyl in Scarlet Fever Arthralgia.—Professor Roger has secured rapid and marked improvement in the arthralgia accompanying infective diseases and especially scarlet fever, by the use of salicylate of methyl. Twenty to forty drops are applied to the articulation morning and night, which is afterward wrapped in oiled silk.—*Semaine Méd.*, August 18.

CORNEAL BURNS FROM ACCIDENTS IN THE USE OF CURLING IRONS. REPORT OF SIX CASES.

JOHN O. McREYNOLDS, B.Sc., M.D.

DALLAS, TEXAS.

This unusual form of traumatism is worthy of mention, because of the severity of the pain, the grave apprehensions of the patient and the uniformly speedy and complete recovery. In the six cases that have recently come under my observation (Mrs. W., Miss L., Miss E , Miss M., Miss L. and Miss H.) the injury was received directly upon the cornea by dropping the hot curling-iron upon the open upturned eye. The extent of the injury has varied from three square millimeters in area to a third of the corneal surface.

In the severer cases the pain has been very intense unless continually relieved by local anesthetics. The seared superficial epithelium in a few hours exfoliates in a white opaque mass, leaving beneath a denuded corneal surface, which soon becomes, under favorable treatment, re-covered with normal epithelium and within a few days the eye is perfectly well. In corneal injuries in general I should object to the employment of cocain, because of its bad influence upon nutrition, but in this form of injury, in which the pain is so excruciating and the danger of subsequent ulceration so slight, I have considered it prudent to use a weak solution or ointment of cocain or eucain to secure rest for the patient. For this particular purpose the eucain has the advantage over cocain in that it increases rather than diminishes corneal nutrition and also is capable of being thoroughly sterilized by heat. The additional indications are the frequent use of mild antiseptic solutions, the moderate employment of a mydriatic and the application of a light bandage to obtain rest and protection for the wounded eye.

GENERAL IMPRESSIONS FROM SIX YEARS USE OF THE OLD TUBERCULIN.

Read before the British Medical Association at Montreal, Sept. 2, 1897.

BY JAMES T. WHITTAKER, M.D.

Robert Koch announced the discovery of tuberculin at the Tenth International Congress at Berlin, August, 1890.

The publicity of the occasion, the fame of the author, above all the defiance of the disease to all treatment hitherto, lent peculiar interest to the discovery. The suddenness of the announcement was another factor. No one had even an inkling of the work leading up to it.

The declaration of the discovery of the tubercle bacillus in 1882, though credited by many of the members of the critical audience in the Berlin Physiological Society to which it was presented, met with so much scepticism in the profession at large as to have been practically disbelieved. Most of the leading medical journals discredited it; many of them derided it. When the truth asserted itself the disbelievers found themselves punished for incredulity. So, although the problem was harder. belief was easier on this occasion. In fact, there was reaction to the other extreme and more was expected of the remedy than was expressed in the modest claims of the author. This was the reason why medical men, who represent the [illegible] au[illegible] and [illegible] branch of human [illegible] re[illegible] and began to experiment with it in a way and in cases in which the author, to use the mildest terms, had never advised it.

The disappointment which followed was intense and the expression of it was not without bitterness. In fact, we have just now reached a period when any renewed advocacy will be listened to at all.

One of my former students brought me directly from Berlin a small quantity of tuberculin, Jan. 15, 1891, as the very first importation into this country, and with this specimen I began the use of the remedy in the cases at the Good Samaritan Hospital at that time. These were four cases of tuberculosis pulmonum and one case of scrofula, to which I will allude again.

My first use of the remedy was entirely therapeutic and I did not begin to avail myself of the immediate action of it in diagnosis for two or three years. When it was used in this way the results were found. it is needless to say it, much more striking and satisfactory. The use of tuberculin should be studied, therefore, from the double standpoints of diagnosis and treatment.

The value of it in the disclosure of tuberculosis in man was not at once rightly recognized, on account of alleged dangers in the use of it; but in cattle it soon met its proper appreciation, and is perhaps nowhere more extensively and satisfactorily used than in the United States.

Aside from the objections urged by ignorant and prejudiced people, not worthy of notice, four apparently valid arguments accumulated in the course of time against the use of tuberculin in man.

1. That the reaction occurred in the absence of tuberculosis. This objection has been met by the demonstration of concealed depots.
2. That the reaction occurs in other diseases, syphilis, lepra, actinomycosis, etc. This objection has been met by the demonstration of tuberculosis coincident with or complicating these maladies.
3. That the reaction will occur in the most quiescent case even where the bacilli are not only concealed but encapsulated and depots are partly calcified. This is no objection at all, but a most striking confirmation.
4. That the use of it is dangerous; that it not only awakens the disease from latent sources but disseminates it over the body and thus leads to auto-infection and increases the danger of infection of others. This conclusion rests on a false premise and confounds the *post* with the *propter hoc.*

I will not take the time to further discuss theoretic objections but content myself with the repetition of a statement, made on another occasion, that I had used tuberculin every day in hospital and private practice for six years in now nearly one thousand cases and have never seen any kind of evil result beyond the characteristic reaction. Koch himself declares the fear of danger to be a "foolish prejudice." He says he has never seen "even the slightest intimation of any mobilization or transfusion of tubercle bacilli" in the use of tuberculin as a diagnostic agent in over one thousand cases, and this experience he thinks "should put the diagnostic value of it in man on the same plane as in animals." My own use of tuberculin has been nearly exclusively for therapeutic and only exceptionally for diagnostic purposes.

In a paper read before the Association of American Physicians in May and published in the "Transactions," I reported a number of cases, doubtful and obscure, in which the diagnosis, positive and negative, so far as tuberculosis was concerned, had been easily established and mostly after failure with other means, by a test dose of tuberculin; thus in cases of neurasthenia, nightsweats, joint disease, laryngitis, pulmonary tuberculosis, peritonitis, fistula, etc. Since this report I have had a striking illustration of the penalty which attaches to over-confidence in diagnosis and neglect of using the most approved method of study. This will be the only case which I will report. June 10 I was called in consultation by Dr. D., a good surgeon in Cincinnati, to aid in the diagnosis of a case of enlarged glands in the neck in a patient, a woman, aged 67. The glands had begun to grow three months before and now formed a good sized mass under the angle of the right jaw, extending down behind and below the sternomastoid muscle. There was some pain, and within the past few weeks there had been slight fever. The glands were deep-seated and hard. The patient had enjoyed good health hitherto and had no other discoverable disease. The rapidity of the growth, the presence of pain, the exemption of any affection of the lungs, above all the age of the patient, led us to declare a diagnosis of carcinoma, probably sarcoma of the cervical glands, and to advise immediate extirpation. The operation was tedious and bloody (as had been expected) and the patient succumbed in three weeks. I learned these things by letter from the surgeon, together with the fact that the glands upon microscopic and bacteriologic examination turned out to be tuberculous. Now, although extirpation is often the best treatment of an adenopathy of this kind, I should myself with a true knowledge of the disease have advised against an operation in this case at that time.

The mode of action of tuberculin, to which I allude merely from a clinical standpoint, has met with various explanations. Certain it is that together with leucocytosis and fever a sharp hyperemia is developed extending over the entire domain affected, and in this process toxins are formed or liberated which produce the characteristic reaction and give partial immunity to the poisonous products of the tubercle bacillus. The immediate benefit which nearly all patients feel is due to this immunity. The proper principle of treatment consists in pushing the development of this toxin as rapidly as possible this side of extreme reactions, before tolerance to the tuberculin itself is established in the body. Most of the protection of the body against the action of poisons is based, as we know, upon tolerance, which is probably secured by increasing the antitoxic action of serum of the blood. The patient affected with tuberculosis is not fatally poisoned by the products of the tubercle bacillus because of tolerance to the products of it begotten in this slow development. When these products are developed too rapidly the body is overwhelmed and succumbs. But the tolerance to tuberculosis as a rule is so great that individuals live for years and decades of years, and often recover entirely. The body becomes adjusted to the effects of the poison and sometimes shows in this process remarkable changes. Thus the disposition may be actually improved by it. It was Klebs, who makes anyhow such close and curious observations, who first spoke of the singular sweetness of disposition and loveliness of character sometimes seen, especially in women, the sufferers with slow phthisis. Men, it seems to me, are rather made more irritable. The true principle of treatment with tuberculin is to secure the action of it before tolerance to it is established, for so soon as it is tolerated it loses its effect. Unfortunately there is as a rule, not time to secure immunity to the products of the tubercle bacillus before this tolerance to tuberculin is established, and so the benefit experienced at first is lost in the later treatment. For with tolerance the toxin ceases to increase the antitoxic action of the blood, and any continued use of it after this time seems really to lessen it. So when the tuberculin fails to do good and the disease reasserts itself, the use of the remedy should be stopped. Time should then be allowed to lapse, several weeks being required in most cases, and then when the tolerance is lost the treatment should be begun again. Thus the successful treatment of tuberculosis takes time, a long time, months and years, about as long as does the successful treatment of syphilis, which is usually a matter of years. The physician who expects to cure a case of tuberculosis in a few weeks will soon become discouraged and will probably join the ranks of medical men who denounce and decry the means.

The first dose for the case of lightest infection (suspected) should be 5 mg., the second 10 mg. or one centigram, the third two centigrams. These doses may be given on succeeding days, or better, every other day, preferably in the evening that the temperature records may be properly observed on the following day. Failure to get reaction from three tests excludes concealed tuberculosis. The crude tuberculin diluted one hundred times preferably with a 0.5 per cent. solution of carbolic acid, makes a 1 per cent. solution of which one interspace of the Koch syringe represents one centigram. One interspace of this 1 per cent. solution diluted ten times makes a milligram. For therapeutic use I begin with one-tenth of a milligram.

In my first use of tuburculin I was able to adhere rigidly to the rules laid down by Koch, but I was not able to select the cases or to limit myself to the first stages of the disease, the phthisis incipiens. In fact, every one of the cases of lung disease was advanced to what is commonly called the second stage, phthisis confirmata, and one of them was so far advanced as to constitute a phthisis consumata. The remedy was used in this case in infinitesimal dose, simply *ut solaminis causa.* The case of scrofula ultimately, *i. e.* in the course of two years, made a good recovery, while the cases of phthisis pulmonum all died in from four to six months. It was impossible not to feel disappointed and somewhat discouraged at the result. But on comparing subsequently the course of similar cases treated with tuberculin with other cases, it was seen that the process of the disease was slower in the first cases; for, some improvement pretty much always sets in at first. We had however nearly uniform results to report in hospital practice, an improvement for a time with subsequent continued progress downward interrupted with many stages of quiescence and occasional temporary gain. In explanation of the temporary improvement it became plain to see, as cases multiplied, that after making all allowance for the all-powerful influence of suggestion, and some for the better hygiene of hospital life, there was still room for much to be granted to the specific treatment.

It was a long time before the reason of the continued progress of the disease was ascertained, but it became apparent at last, with continued examination of the sputum, that direct product and derivative of the disease, the closer examination of which had led to the discovery of the tubercle bacillus to constitute the luminous epoch in the history of the disease. But all attention had been directed to the detection of this bacillus in the sputum hitherto, to the neglect of other micro-organisms. As examinations multiplied in competent hands it was soon seen, or perhaps I should say, the facts already known became better appreciated, that the new advances or relapses marked by chills and sweats were due to invasions of other, especially of the pus-producing, micro-organisms, and that the disease had passed beyond the domain of tuberculosis into the wider realms of sepsis. It was at this time that the school of Koch proposed to call the seesaw temperature of hectic the streptococcus curve. The reason of the failure of tuberculin in the further course of the disease now became apparent. It was not to be expected that tuberculin, a product of the tubercle bacillus, would inhibit the growth of or destroy the influenza bacillus, the diplococcus or the pyogenic micro-organisms. The truth is, the great majority of cases in hospital practice are advanced beyond the stage of pure tuberculosis. They are cases of mixed infection or sometimes of secondary infection and belong not so much to tuberculosis as to septicemia.

The results of the use of tuberculin in private practice are more encouraging. In ordinary house practice cases are encountered in every stage, and the majority, because of the long duration of the disease, are advanced to the second stage, but the hygienic environment is better as a rule, that is, there is more breathing room, more outdoor life, including here the advantage of change of climate, more comfort in every way; as a rule to which there are many exceptions there is less auto-infection and less homesickness, and all that without saying goes with gregarious man. I had the influence of this factor impressed upon me once by the remark of a big, strong-looking man, who came back from Colorado too soon, with the apology: "Doctor, I am going to stay home; I had as leave be buried under the ground as on top of it."

But the advanced cases in private practice in the long run took the same course. The disease, after a temporary check, would reassert itself with chills, often of origin sudden and inexplicable, with hectic, night sweats and final dissolution. But every now and then there were agreeable surprises. The progress of the disease would be checked for a longer time, or the whole condition would be raised to a higher level, that of several months or several years before. In these cases the bacilli would diminish and sometimes disappear altogether and the gain in spirits, which is quick in phthisis, the *spes phthisica*, would exceed the gain in weight.

Just in which cases this gain would occur or in which it would fail to show itself could not be foretold. As in so many other things, it was necessary to try to find out. Sometimes it would be impossible to know whether the improvement was really due to the tuberculin or to conjoined treatment, but as time advanced and cases multiplied the feeling would grow that the cases treated with tuberculin off and on, more especially for a long time and judiciously, that is, with the same caution as in the use of any other agent in the materia medica, that these cases did the best. It was always easy enough to study control cases in patients who were themselves, or had been by their physicians, prejudiced against the use of it.

So that when the diagnosis was clear, as established in a plain case by the physical signs, in a doubtful case by the discovery of the tubercle bacillus, or in a still more doubtful case by a test injection of tuberculin, I made it a practice to use it tentatively in every case, with the consent of the patient, never without it, and then continue with it or abandon it according to the results.

Some of the differences in results could be pretty definitely attributed to the kind or degree of the mixed infection, some to the localizations elsewhere in the body and some to the site of the original deposit. For instance, influenza cases, *i.e.*, cases complicated by influenza, do badly as a rule. Caries of the vertebræ, of the tarsus or carpus make ugly complications, while deposits in the pulmonary veins or thoracic duct or irruption into these vessels inundate the body to produce phthisis florida and miliary tuberculosis. We recognize these cases often after a very short examination and appreciate at once their ominous character. The continued feeding of the body from these depots makes futile every kind of therapy until more exact localization may be effected, perhaps by some kind of penetrating light, and destruction or extirpation become possible by galvano-therapy or by the knife. At the present time they constitute the despair of medicine, and the use of tuberculin is actually contraindicated in them. I know of no other contraindications.

The best results are obtained in office practice; in the first place in the way of diagnosis. It is a great satisfaction to be able to clear up a concealed case and to declare an exact diagnosis of a disease treated hitherto without a diagnosis or for something else. Thus an obstinate or frequently recurring dyspepsia, an amenorrhea, a neurasthenia, an anemia, a rheumatism, an adenitis, a little low fever (to say nothing of acute cases of chills, night sweats, catarrhs and coughs), may have their true nature revealed in this way. These are the cases (aside from the chills and fever) in which treatment furnishes the best results. Tuberculin gives good results also in childhood. Children react favorably to tuberculin, much more so than adults, so that the so-called apex catarrh of childhood will often clear up and disappear in them within three weeks.

Aside from these cases the treatment must be persistent and good judgment must be used in dosage; rather too little than too much. I have never seen any bad results from the use of tuberculin, because I always endeavored to secure a slow tolerance, so that individuals who react at first to a few milligrams become later insensitive to one hundred times as much; in fact, at last to one thousand milligrams. The evils ascribed to it I believe to be due to the disease itself, for I have seen them oftener before the use of it. But it is easy to conceive that the patient would suffer under excessive reactions and that repeated excesses might do permanent harm. But, *ex abusu non arguitur ad usum.* It is a maxim of the law, good also in medicine, that we may not from abuse argue against use.

The highest value of tuberculin is the diagnostic value, which is supreme, and which enables us to distinguish the disease at the start as a tuberculosis before the development of sepsis or other complications which go to make up that composite picture we call phthisis.

THE PHYSIOLOGY AND THERAPEUTICS OF THE THYROID GLAND AND ITS CONGENERS.

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(*Continued from page 901.*)

After having tested all the materials used, as to their purity, familiarity with the method was obtained by adding to pure gelatin, known quantities of iodid of potassium and going through the process repeatedly. At first an open crucible was used and it was found to be impossible to regain more than one-half of the iodin. It is probable that in this case iodic acid compounds were formed in spite of the excess of the alkali, since this loss disappeared on the substitution of a covered silver crucible. (A platinum crucible can not be used since this metal is attacked by caustic alkalies.) Another source of loss occurs on the addition of the acid to the filtrate. This must be done in a flask with a small mouth and the acid added very gradually, otherwise there is loss through effervescence. By observing these points it was possible to obtain at least nine-tenths of the original amount, which was the same limit of accuracy that Baumann claimed to reach. During the fusing it is necessary to prevent the contents of the crucible coming in contact with the lid, since in these cases no matter how carefully the deposited material was removed, the loss was always greater than could be readily explained even by considering all that touched the lid as lost.

The first series of actual analyses was made on people who, according to the history sheets, had lived at least some years in this city, who had not received iodin for at least some time before death, and whose glands appeared to be in every way normal. Twenty such glands were analyzed, the results and the main features of each case being shown in the following table:

	Sex.	Age.	Cause of Death.	Weight of gland. Grams.	Iodin p'r gram. Mgrs.	Total mgr. Iodin.
1	M	45	Chronic nephritis	2 60	2 86	7 47
2	M	60	Brain tumor	4 39	2 61	11 75
3	M	60	Tubercular peritonitis	2 59	1 67	4 33
4	M	35	Pneumonia	3 88	2 58	10 00
5	M	35	Peritonitis	3 84	2 66	10 21
6	M	45	Pneumonia	10 59	0 99	10 47
7	M	44	Pneumonia	6.33	1 52	9 62
8	M	28	Endocarditis	3 71	2 74	10 17
9	M	26	Liver abscess	4 47	2 58	11 53
10	M	46	Chronic nephritis	5 16	1 82	9 41
11	M	50	Appendicitis	5 79	1 98	11 46
12	M	25	Pulmonary tuberculosis	4 88	2 28	11 15
13	M	49	Carcinoma of stomach	3 77	1 98	7 46
14	M	30	Multiple endotheliomata	9 68	1 82	17 62
15	M	35	Acute nephritis	6 66	1 52	10 12
16	M	41	Chronic nephritis	6 53	1 98	12 93
17	F	25	Syphilitic myelitis	5 14	1 82	9 36
18	M	26	Pneumonia	9 01	1 93	17 39
19	M	60	Meningitis	5 24	1 52	7 96
20	M	65	Pneumonia	4 10	1 22	5 00
			Average	5 37	2 10	10 79

We find here a most surprising difference from the results obtained by Baumann, especially in his Freiburg series. While each gland averages in weight less than two-thirds the weight of the Freiburg glands yet each gram contains just six times as much iodin, and the total amount in each gland is over four times as much. Even in comparison with the Berlin series the difference is still greatly in favor of the Chicago glands, which contain over twice as much iodin in each gram, and over one-half more in the entire gland.

In interpreting these results we must consider that, in natives of Chicago, goiter is an even less common affection than it is in Berlin. Accepting this fact, the figures bear out the belief that the amount of iodin is inversely proportional to the amount of goiter in any given district. The effect of chronic diseases in reducing the amount of iodin contained in the gland, which Baumann mentioned, is not corroborated by this table, for the cases of chronic diseases, Nos. 1, 8, 9, 10, 12, 13 and 16 show an amount of iodin fully up to the average. It will be noticed that the glands of people 60 years of age and over, Nos. 2, 3, 19 and 20, with one exception, are much below the average, and it would perhaps have been better not to have used glands from people past middle life. The lowest proportion of iodin obtained in any one gland was 0.99 mg. to each gram (case 6) but it was in the largest gland in the series, so that the total amount in the gland was almost exactly the average. In general it can be stated that the weight of the gland is inversely proportional to the amount of iodin in each gram, and this rule applies to most forms of goiter. Thus it would seem as though it were necessary to keep the total amount of iodin in the gland at a certain standard, and that lessening the proportion of the iodin in the gland caused an increase in the size of the organ to make up in quantity for the lack of quality.

Two glands were omitted from this series because of their exceptionally high iodin content, which made it impossible to consider them as normal. Neither of these people had taken iodin, at least during their last illness. They were:

1. Man, 45 years of age, dying from hypertrophy and dilatation of the heart. Gland contained 34.1 mg. of iodin, weighed 6.7 grams, and in each gram was 5.09 mg. of iodin, the largest proportion obtained in any gland.
2. Man, 33 years of age, dying from a tumor of the brain. The gland contained 30.28 mg. of iodin, weighed 8.65 grams, and contained in each gram 3.5 mg. of iodin.

The following table shows the result of the analyses of the glands from babies and children:

	Sex.	Age.	Cause of Death.	Weight of gland. Grams.	Iodin p'r gram. Mgrs.	Total iodin. Mgrs.
1	F	term	. . . .	0.135	traces.	traces.
2	M	term.	. . . .	0.465	traces.	traces.
3	F	term.	. . . .	0.73	traces.	traces.
4	M	4	. . . .	0.68	0.11	0.076
5	M	1	. . . . . .	0.18	0.12	0.076
6	M	1	. . . . .	0.58	0.92	0.532
7	F	7 yrs.	Phthisis.	1.61	1.98	3.19

This series is short because of lack of material, but it is still very significant. In the first place, even in stillborn children, traces of iodin, representing amounts not over 0.03 mg. were obtained in every case, while Baumann failed to find it in the great majority of Freiburg children who had lived even several months. The constant increase from traces in new-born children to estimable quantities in the children that had lived a month, and to relatively considerable amounts in children of four and seven years is also very interesting. The rather marked increase in the iodin, after but a few weeks existence, suggests the probability that the thyroid of the mother performs the functions both for herself and the child. In support of this idea are the facts that the thyroid increases in size during pregnancy, and also that up to the time of birth the gland of the child contains but little colloid; and also, Halsted has observed, in pregnant, partially-thyroidectomized bitches, the symptoms of athyreosis, when not present before, appear soon before parturition and disappear soon after.

A series of twelve normal glands from Boston and New York was also analyzed. As in the other series the analyses were all made in duplicate, and the results were not accepted unless they agreed closely. In this series one gland was not included. This was from a man 55 years of age, cause of death not known, weight of gland 5.99 grams, amount of iodin in each gram being 4.79 mg., total amount of iodin in the gland 28.69 mg. The other results were as follows:

	Sex.	Age.	Cause of Death.	Weight of gland. Grams.	Iodin p'r gram. Mgrs.	Total iodin. Mgrs.
1	M	30	Phosphorous poisoning . .	5.18	2.36	12·03
2	M	45	Suffocation.	3.65	4.94	18.03
3	F	40	Pneumonia.	4.43	1.90	8.42
4	F	25	Appendicitis	3.84	2.58	9.13
5	M	55	Pneumonia	4.77	1.90	9.06
6	F	40	Pneumonia	3.54	4.56	16.11
7	F	60	Chronic nephritis	3.81	2.13	8.12
8	M	60	Pneumonia	3.47	1.14	3.86
9	F	35	Mitral stenosis	6.37	2.20	14.01
10	M	17	Poisoning.	3.44	2.51	8.63
11	M	25	Pneumonia	4.65	2.71	12.74
12	M	55	Meningitis.	6.18	2.66	16.11
			Average	4.17	2.61	11.80

It will be observed that while the individual glands show much greater variations in their iodin content than do those in the Chicago series, yet the average amount for each gland is but a little higher. The average weight of each gland is about one gram less, but the amount of iodin in each gram is somewhat higher. In two of these cases the proportion of iodin is very large, approaching 5 mg. to each gram, while the largest amount in the Chicago series was but 2.86 mg.

On account of the great variations in the total and proportional amounts of iodin in the glands of this series, the writer does not believe that he is justified in drawing any conclusions from this table, beyond that, that in all probability the iodin content in Chicago is about as large as in glands from the seacoast. Fortunately there are on hand several more glands from the same source, and these will be analyzed and the results added to the same table. In the time available for this work it has not been possible to finish this series, nor even to touch the glands from other localities, for even with the colorimetric method quantitative determinations of iodin can not be made with great rapidity and be of value. However, the work on this subject will not be stopped with the completion of this paper, but the material on hand at least will be utilized, and if the results are of sufficient interest a paper on this feature of the work alone will be prepared.

Physiology.—Up to the time that Schiff and Horsley proved that the thyroid gland was an organ necessary to the well-being if not to the life of its possessor, many theories, mostly founded upon mere supposition and without any experimental basis whatever, had been advanced by physiologists to explain its purpose and part in the animal economy. These theories were generally discarded, however, after a brief investigation, as not completely meeting the indications. Since the time that the epoch-making discoveries referred to, pointed out the direction in which all further efforts should be directed to obtain results of value, a vast amount of experimental evidence has been produced from innumerable sources, which has thrown an entirely new light on the subject, yet has merely supplanted old theories with new. However, this difference does exist; the theories now under consideration are based upon facts obtained as the result of the work of careful investigators along the lines of experimental physiology.

Before considering these theories, it will be well to set down the chief facts that we now possess, and which must form the basis upon which we found our consideration of these ideas. Practically all our knowledge of the action of the thyroid gland is based upon the changes observed in man and animals when they are under one of two conditions, which are:

1. When the animal is receiving less than the usual amount of secretion from the thyroid, as in extirpation experiments.

2. When the amount of secretion in the body is above normal, as when the thyroid extract is being administered.

These two headings include not only the results obtained by experiments, but also those obtained from clinical observations, since here the symptoms are due to a hypo-activity, *e. g.*, myxedema and cretinism; or possibly sometimes to hyper-activity, *e. g.*, exopthalmic goiter.

In the first case, when the subject is not receiving the full influence of the thyroid gland, we observe a series of symptoms that can be classified as *a*, nutritional; and *b*, nervous.

a. The nutritional changes seem to be of such a nature that the metabolic changes throughout the tissues do not proceed to their full extent, and the power of reproduction of the cells is altered. As a result of the first the connective tissues stop in their metabolic processes just short of completion, leaving them, as Semon has suggested, in an embryonic condition, that is, in the form of myxomatous tissue which is their embryonal representative. From this cause occurs the peculiar condition of the skin observed in people suffering from loss of functional activity or from removal of the thyroid, which gives to this condition its name, myxedema. This change is not confined to the subcutaneous connective tissue, but is a general change, for Halliburton has shown that in the blood of monkeys which were in a myxedematous condition as a result of thyroidectomy there is demonstrable a considerable quantity of mucin. Because of the failure of complete reproduction, or through some alteration in the process, we observe a change in development in young animals, quite analogous to the condition in children that have not possessed an active thyroid, known under the name of cretinism. Besides this there seems to be some alteration in the gas exchange of the blood, since in thyroidectomized animals the amount of carbon dioxid is increased and the oxygen diminished until the arterial blood may be below the normal venous standard.

b. The nervous system is apparently greatly affected, the most marked symptoms from this source being those due to the excitation of the muscular fibers, viz., twitching, tremors and spasms. These undoubtedly proceed from the lowest centers, since Horsley has observed them in monkeys subjected to ablation of the motor cortex, and Munk found that they were not affected by division of the cord, while Schiff has proven that they are not of peripheral origin since they are completely arrested by section of the motor nerves. Later these symptoms are followed by a lessening of the power of a voluntary action, as well as loss of sensation, which result in the lethargic condition so well illustrated by the cretin. The thermotaxic apparatus is also affected, so that the body temperature falls to three or four degrees below normal. Lorrain Smith has observed that the reaction of thyroidectomized animals to changes of temperature is abnormally rapid, so that in such an animal exposed to cold an increased production of carbon dioxid begins immediately, instead of being delayed for some time as in normal animals. Moreover it is noticed that many of the symptoms of athyreosis are alleviated by artificial heat. These nervous symptoms may be due to alterations in nutrition, either directly affecting the nerve cells, or producing secondary changes in them through degeneration of the nerve centers.

In the second case, when the thyroid preparations are administered to animals experimentally, or to man therapeutically, effects are produced which are quite different from those described above, as would be expected, yet they can be separated into the same two classes.

a. Nutritional: The process of metabolism throughout the body undergoes a marked change, which is shown best by the urine. This is considerably increased in quantity, it contains a greater amount of urea, as well as chlorids and phosphates, as has been shown experimentally by Roos, and clinically by Napier and others. At the same time the weight of the subject diminishes, more particularly if it be above normal because of fat deposition. This decrease in weight is constant and considerable, and Wendelstadt has been able to demonstrate that but one-sixth of the loss can be attributed to the nitrogenous compounds as shown by the increased nitrogen content of the urine, the rest being due to loss of water and of the fat itself through increased oxidation.

b. Nervous: Of these the most prominent clinically is the palpitation of the heart, which is a certain indication that the dosage has been carried too far. With it come headache, nausea and vomiting, and if the remedy be pushed still farther the pulse and heart weaken to a dangerous degree. Sometimes glycosuria is produced, which can be attributed to some action on the diabetic center since it may develop into a true diabetes mellitus. Schäfer has also shown that if thyroid extract be injected into the veins of healthy dogs there follows an immediate fall of blood pressure without any considerable change in the rate or force of the heart beat, due to dilatation of the vessels throughout the body.

With these facts as a basis the theories that may be found in text-books and articles on the subject may be critically considered. They may be enumerated as follows: 1. An adventitious organ without function. 2. To give form to the neck. 3. Having mechanically some influence on the voice. 4. Acting as a cushion to prevent injury to the structures of the neck. 5. Regulator of the blood supply of the brain. 6. Having a controlling influence over sleep. 7. Having some connection with the sexual apparatus. 8. Having control over respiration. 9. A blood-building or blood-destroying organ. 10. Influencing the quantity of mucin in the body. 11. Having some connection with senile changes. 12. Producing some substance neutralizing the toxic materials in the system. 13. Producing some substance necessary for the metabolism of the body.

The first four of these theories will be found only in some of the older text-books, and of course are only attempts to account for the presence of this mass of tissue in the neck without any obvious function.

The fifth and sixth are practically the same, it having been supposed that the gland by its swelling produced pressure on the carotids (Maignien), or that the vessels in the gland became greatly dilated on certain occasions, and so the blood instead of going to the brain became side-tracked, as it were, and so regulated the cerebral supply. This theory also received a supposed confirmation in the fact that in exophthalmic goiter, in which the vascularity of the gland is greatly increased, there are many cerebral symptoms. These theories, however, are entirely negatived by the results of removal of the gland.

The seventh theory is founded on the following observations: The thyroid gland becomes greatly enlarged during menstruation; it also enlarges during sexual excitement; goiter most often develops at puberty and at the menopause; goiters increase in size at delivery and decrease a few days after; exophthalmic goiter improves after delivery; the thyroid gland atrophies at the climacteric. Still the writer has failed to find any references to loss of sexual appetite or change in the sexual conditions in diseases of the thyroid or after its removal. Also a case of pregnancy in a cretin has recently been reported by Townsend. It may be here remarked that diseases of the thyroid gland show a special predilection for the female sex. Fischer has collected statistics showing that from 80 to 90 per cent. of all cases of goiter and 86 per cent. of the cases of myxedema, occur in women, while exophthalmic goiter seems to attack the same sex chiefly. Halsted has three times observed pregnancy in bitches that had lost portions of their thyroid glands, impregnated by dogs in the same condition. These bitches showed none of the symptoms of athyreosis (not having lost a sufficiently large part of their glands) until just before giving birth to their litters. Then the symptoms became very marked, but disappeared soon after parturition. What is especially remarkable is that in every case the pups had thyroid glands many times the normal size observed in pups of the same weight.

The eighth hypothesis is also an old one based upon the increase in size of the gland noticed during forced expiration, as in asphyxia, and also in animals when breathing rapidly, as dogs returning from the chase. The dyspnea of goiter, which could not always be explained as due to pressure, was considered as offering corroboration to this theory. It is probable that the increased respiratory movements observed in thyroid diseases and in thyroidectomized animals are due to the fact alluded to previously, that the gas exchange is so altered that the oxygen standard is reduced to below normal, so producing an asphyxiated condition of the respiratory center, and resulting in a stimulation of the respiratory muscles. That this is the probable explanation has been demonstrated by Schiff, who was able to reduce these symptoms by artificial oxygenation of the blood. The increase in size can readily be explained by the increased blood pressure that is always produced by the high intra-thoracic pressure during forced respiration.

In confirmation of the ninth theory we have the experiments of Horsley, who found that in thyroidectomized monkeys the red blood corpuscles diminished steadily until they reached an oligemic equilibrium, which was maintained until death, and also that in the thyroid veins the leucocytes were more numerous than in the arteries passing to the gland, or in the vessels of the limbs. In regard to this last fact it is to be remembered that lymphatic tissue is constantly found in the thyroid, and often-times thymus rests. The anemic condition observed in athyreosis can be best explained by the theories to be described later. In the acini of the gland red corpuscles are often found imbedded in the colloid substance, but they seem to be in a state of degeneration, although Bozzi observes that they retain their form and size for a longer time than is usual in extravasated blood. The increase in mucin in the blood after removal of the thyroid, observed by Halliburton, is probably due indirectly to the thyroid through its effects on the connective tissues. The increased venosity before mentioned may be ascribed to a change in the respiratory function, or to a change in the chemic condition of the hemoglobin so that oxygen is less readily taken up.

As to the tenth theory there can be no doubt that the removal of the thyroid gland does increase the amount of mucin in the body, and it has been suggested that the gland forms some ferment which is able to break up the mucin into some other bodies, a lack of this ferment in myxedema causing an accumulation of mucin in the tissues. However, all attempts to isolate such a ferment from the gland have failed, and all attempts at demonstration of this theory have been unsuccessful.

It is a constant observation that the thyroid gland is greatly atrophied in advanced years, and on this the next theory is based. As was shown in the writer's cases the weight of the gland in people over 45 years of age was but two-thirds of what it was in those under that age. While this theory becomes absurd if we take it as meaning that if senile changes are due solely to a lessened capacity of the thyroid, one might escape old age forever by taking thyroid extract, yet it has some weight. In the first place perhaps the most serious change in senility is arterio-sclerosis, and a thickening of the intima very similar to that in the above pathologic condition has been described as occurring constantly in the vessels of the thyroid gland of young and healthy people. And again, the most marked changes observed in athyreosis are due to alterations in nutrition, in which function this organ seems to play a great part, and it is probable through failures in nutrition that the body reaches the wasted condition accompanying old age.

We now reach two theories that have grown out of exhaustive studies of the thyroid during the last few years, each with its advocates and much evidence in its favor. The first of these is in direct relation to the modern theories of auto-intoxication. It presumes that constantly during life the tissues are producing substances as a result of their metabolism, lower chemical forms derived from the complex proteid molecule and which accumulating in too large quantities through some failure of excretion, destruction or neutralization, are poisonous to the organism and produce symptoms of various kinds. With these substances may possibly be included toxic materials produced by fermentative processes in the alimentary canal and taken into the system. To meet these undesirable materials it is presumed that the gland produces the thyroiodin which is circulated through the system and meeting the toxic substances as soon as formed neutralizes them, perhaps by causing their decomposition in a ferment-like manner, perhaps by uniting with them and producing innocuous compounds. It is very easy to imagine the thyroiodin playing such a role as this, especially when we consider the general precipitating action of iodin on all alkaloids and alkaloid-like bodies, in which condition we generally consider the toxic substances as existing in the body. Or again it may be supposed that this action merely occurs in the cells of the gland itself while the blood is circulating through it, and independently of any true secretory action. The gland failing in the performance of its function, these noxious substances accumulate until they cause disturbances in the organism, resulting in the condition known as athyreosis. In confirmation of this view it has been shown that if the blood of an animal suffering the symptoms following thyroidectomy be injected in another animal, especially if it has previously had its own thyroid removed, that it is toxic to this second animal and all the classical symptoms of athyreosis are immediately produced even if there were no indications of them previously. On the other hand we have the effect of thyroid extract on blood pressure, which is unquestionably due to a specific effect of the extract itself since it is produced in animals having a perfectly healthy and active thyroid, and so can not be attributed to any neutralization of other substances. However it may be that this action is due to the extractives of the gland outside of its fundamental principle, Schäfer having used ordinary glycerin and aqueous extracts in his experiments upon this point. Still it seems to the writer that the symptoms of thyroid deprivation are of too definite a nature to be produced by the action of the tissue toxins which must necessarily, judging from our knowledge of the complexity of the chemistry of cell metabolism, be many and varied. And again the manifestations of myxedema and cretinism, and the athyreotic conditions generally seem to reach a certain degree of intensity and there remain, rather than progress as one would expect from a constant accumulation of the substances causing them, which must occur if they be non-neutralized products of tissue metabolism. It might be argued that some other organ takes up the role of the absent or functionless thyroid adventitiously after these conditions reach a certain intensity, yet if such be the case why does it not entirely obviate them, or why do they so often progress even to a fatal termination without compensation.

The second of these last two theories is entirely different from the first. for it relates to the conditions producing normal metabolism and entirely disregards the noxious products of cell activity. It suggests that for the proper performance of their function the cells must receive in addition to the ordinary food materials carried in the blood and with which we are familiar, a certain body or bodies without which their action is perverted or abortive, just as it is necessary for the production of a clot that calcium salts be present. As a result of this in the young and developing animal when the cells fail to receive their full complement of thyroiodin, if this be the essential substance, some of them, at least, do not multiply exactly as they would have done otherwise, and we get the condition seen in cretinism. Similarly in the adult the connective tissue cells in their reproduction do not get beyond the embryonal or myxomatous condition, and the tissues are left as we see them in myxedema. Following out the same line of reasoning the increased amount of excretion by the urine and the dimunition in the weight of fleshy subjects can be explained by the statement that not only is the thyroid principle necessary to metabolism, but an increased supply results in an increase in metabolism, which naturally causes the described changes. And further this overstimulation results eventually in the palpitation of the heart and the other symptoms accompanying it, while a lack of stimulation produces a lessened or altered nervous activity with the changes resulting therefrom, notably the ultimate loss of sensation and control of voluntary motion, as well as the failure of the thermotaxic apparatus. While it must be admitted that the last statements are rather broad, still they are hard to gainsay, and they serve well to cover the ground until further experiments give us more definite information. It must also be mentioned that they do not explain the vaso-dilator effect, which would seem to be too rapid and transitory to be the result of cell metabolism. Neither is the change in the ability of the blood to exchange oxygen for carbon dioxid explained satisfactorily by this theory.

Acting on the basis of the last two theories we can consider that the changes observed in the thyroid gland during pregnancy, at menstruation, etc., are due to hyperactivity in an attempt either to neutralize an unusual amount of toxic substances or to furnish the stimulus necessary for a general increase in metabolism occurring at this time. They explain the changes in the blood in athyreosis as due to the destruction of its elements by poisons, or to a lessened activity in the blood-forming tissues. The myxomatous condition can be ascribed to Semon's theory of incomplete metabolic changes or to a mucoid degeneration due to saturation of the tissues with the injurious products of metabolism. So it is apparent that one may work from either theory and explain the facts upon which all the others are based, and still leave it an open question as to which of the accepted hypotheses is the nearer correct.

Therapeutics.—In the beginning of this article the history of the therapeutic use of the thyroid was followed up to the time that Mackenzie and Fox introduced the method of administration, by the mouth, of gland extracts or of the gland itself. At this time the the practitioner in treating a case with the thyroid was obliged to rely on the nearest butcher for glands which were given to the patient fresh, partly cooked, or a glycerin extract was made that could be kept for a short time. Soon it was found that the glands could be desiccated and a powder made which retained the full activity of the gland, and from this it was but a step to the preparation and marketing of tablets made from the desiccated glands, in which form it is now almost exclusively used, in this country at least, on account of the greater convenience. The great disadvantage of the tablets is their extreme variation in activity, since by chemic analysis it is seen that one gland may contain in an equal bulk fully five times as much of the active principle as another. Also there is the ingestion of the residual animal material, of which there is no gaurantee as to purity or freedom from disease germs, since to prevent injury to the active principle the gland is not heated to over 30 or 35 degrees C., in the preparation of the tablets. To obviate these defects preparations of the thyroiodin itself in the form of a milk sugar triturate are now produced, and have been quite widely used in Germany. This permits accuracy in the dosage and does not require the administration of doubtful extraneous materials along with the drug, while all the effects of the other preparations seem to be obtained.

The ordinary dose is from one to three tablets, each representing five grains of the gland. A few large doses seem to have no bad effect, a case having been reported where a child two and one-half years old took at one time ninety tablets without any noticeable effects. Buschan took, in a short time, 250 tablets, up to twenty a day, and noticed only slight symptoms of the heart and diuresis. If the large doses are continued, however, there will appear serious symptoms, the most marked of which are palpitation of the heart and headache, nor do they seem to have more effect upon the diseased conditions than do the ordinary doses, which do not generally produce subjective symptoms. During the administration considerable diuresis and a loss of weight without impairment of strength and vigor are generally noticed. The thyroiodin is apparently absorbed as such, and produces its effects very quickly, indications of its action being often observed in a few hours. What its ultimate destination and fate may be are unknown. The statement of Roos, that the thyroiodin acts more rapidly when administered in the free state than do the extracts, is not borne out by clinical experience.

The conditions in which the thyroid therapy has met its greatest successes are naturally the two athyreotic diseases, myxedema and cretinism. At first the thyroid extract was exhibited only in these two affections, but as more was learned of its effects its use was extended until now there is hardly a diseased condition in which it has not been tried and, as with every new remedy, it has at least a few advocates for its use in each of them. Only those diseases, however, in which there is some logical reason for its use or in which it has met with a certain degree of success, will be considered, and they will be taken up approximately in the order of their value of this method of treatment.

Myxedema.—The relation of this disease to the thyroid gland was first pointed out by Ord in 1878, and its identity with the condition resulting from operative removal of the thyroid was shown by Reverdin in 1883. The experimental production of the same symptoms in animals and their prevention by transplantation of glands into other parts of the body by Schiff and Horsley led to the suggestion by the latter, in 1890, that sheep's thyroids be transplanted into people with this disease, and was the beginning of thyroid therapy. As myxedema is due simply to a lack of thyroid secretion, because of an atrophy of the gland, varying from a marked reduction in size to a complete replacement of the secreting structures by fibrous tissue, the administration of thyroid extract produces an absolutely certain cure. If the disease is correctly diagnosed and an active preparation of the gland used, there can be but this one result. Since, however, the gland can not be restored to its normal condition the cure lasts only as long as the remedy is being administered. Therefore the treatment is in two stages: In the first the dose is large—up to ten or fifteen grains per day, until the patient reaches a normal condition; the second consists in the administration of smaller doses at regular intervals to prevent the return of the symptoms, the amount necessary varying with different cases, but this can be determined in a short time by the reduction of the dose until the minimum amount is ascertained, generally one or two five-grain tablets a week being sufficient. If in the first stage of the treatment the dose is pushed too high, it will be shown by the appearance of palpitation of the heart, headache, itching of the skin, and sometimes even delirium and spasms are produced. All these symptoms can be obviated by diminishing the dose.

Under this treatment the swelling of the skin disappears, and it becomes moist, soft and flexible. The pulse rate increases, there is a return of vigor, and the patient loses the mental torpor and apathy. All these changes occur to completion in a few weeks, and improvement is often noticed in twenty-four hours. Occasionally glycosuria and albuminuria have been noticed during the treatment, but these cases are not common and the condition is usually transitory. Serious effects are sometimes produced in cases where heart lesions already existed, two or three patients having died while under the treatment, and in such cases great care must be taken to avoid overdosing.

Cretinism.—This disease is fortunately very rare in the United States. Osler, in 1893, was able to collect but eleven well authenticated cases occurring in this country, but since that time, on account of the general interest in this disease because of its connection with and cure by the thyroid gland, many more have been reported. One occurring in Chicago was reported a year ago by Dr. J. B. Herrick, and Dr. D. L. Shaw has now a case in his practice. Since cretinism is a congenital athyreosis, the cure by the thyroid extract is just as certain as in myxedema, while the changes are even more marked. A dwarfed, misshapen, repulsive creature, devoid of intellect, and but a source of disgust and care to those about him, is transformed in a few weeks or months, at the most, to a child with at least ordinary sightliness, which runs about and plays with as much vivacity and vigor as any of its mates—one of the lowest forms of animal existence has been changed to a human being. This power of the drug alone entitles it to a place among the specifics. However, it is not probable that the cure in these cases will often be complete, since, as a usual thing, before the trouble is recognized changes have taken place in the skeletal and cerebral structures that can not be fully repaired; but nevertheless the treatment is of inestimable value and it may be that some means of early diagnosis may make possible perfect results. As in myxedema the treatment must be continued throughout the life of the individual. Fortunately there is no such thing as an acquired tolerance of the drug, Murray's original patient being now living in good health, but still taking the thyroid.

Simple Goiter.—The writer has collected, from the literature, 584 cases of simple goiter treated with the thyroid extract, and of these, 475 or about 82 per cent. have been improved. Bruns, who has treated about 350 cases in this manner, sums up the results as follows:

1. The greater proportion of goiters are amenable to treatment with the thyroid, both the swelling and accompanying troubles being relieved. Only about one-fourth remain uninfluenced.

2. A complete cure of goiter only occurs in about 8 per cent. of the cases: in one third there is a considerable decrease in the swelli [illegible]

obviation of the symptoms; and in another third there is only a moderate diminution.

3. Age has great influence, the beneficial results being greatest in children and diminishing with age. The less time the goiter has existed the sooner its cure is resulted.

4. Immediately on administration the results begin to appear, and after four to six days the size of the neck is measurably diminished, and the breathing freer. In 300 cases the diminution was reached in two weeks in 60 per cent.; in 40 per cent. after three or four weeks.

5. Of the different forms of goiter only one, the simple hyperplastic struma, is accessible to this treatment, but here the action is certain and prompt.

6. In more than three fourths of the cases, after stopping the treatment the goiter again grows, generally beginning in from one to four months after the cessation. However, small doses at stated intervals are sufficient to prevent the recurrence.

The improvement in simple hyperplastic goiters is explained readily enough if we consider that the hypertrophy is simply an attempt on the part of the gland to meet an increased demand from the system for thyroiodin. This increased demand may be considered as due, either to some change in the metabolism of the body requiring an unusual amount of thyroiodin, or to a deficiency in the supply of iodin brought to the body by the food and drink, which requires unusual activity on the part of the gland to accumulate enough iodin from the blood to produce thyroiodin for the requirements of the organism. Whichever is the case the object is apparently attained, for in ordinary goiter there are no symptoms due to lack of gland secretion. If the first of these suppositions is correct we would expect that the gland would contain an increased amount of iodin, although the amount in each gram would not necessarily be increased over the normal. In the second case we would expect to find the total amount for the enlarged gland very much the same as in a normal gland, and therefore the amount in each gram would be much below the normal.

Baumann found, in a series of twelve cases of goiter in which the average dry weight was 32 grams, that the total amount of iodin in each gram was but 0.09 mg., which gave as a total 2.6 mg. of iodin to each gland, or practically the same as he had found to be the usual amount in Freiburg glands. These results, therefore, point to the second of these hypotheses as being more probably correct. The writer has analyzed a smaller number of glands, which, however, have led to different conclusions, namely: That goiters due to a simple increase in the gland tissue, so that they consist structurally of masses and strings of cells or epithelial lined vesicles, which may or may not contain colloid (struma hyperplastica parenchymatosa), do agree with the second hypothesis; but that colloid goiters in which the increase in size is due to a production of colloid-filled spaces with little inter-vesicular tissue, agrees with the first hypothesis. These conclusions are based on the analysis of five goitrous glands.

Two were of the hyperplastic variety, consisting structurally of masses of tubules closely packed together, with few colloid-containing vesicles, and many masses of epithelial cells with no definite arrangement, together with a considerable increase in the connective tissue. Of these:

No. 1 was from a woman of German birth, 69 years of age, a resident of this country for twenty years. The dried gland weighed 27.07 grams, each gram containing 0.304 mg. of iodin, which gives as a total 8.23 mg. of iodin. No. 2 was from a man, 40 years old, of Irish birth, but probably a resident of this country for many years. The dry gland weighed 16.24 grams, contained 0.511 mg. of iodin in each gram, with a total amount of 8.3 mg. in the entire gland. Both of these results are close to the average amount found in normal glands in this country, while the amount in each gram is in one case but one-fourth, in the other but one-sixth the normal proportion.

Two others were diffuse colloid goiters, consisting throughout their entire substance of greatly dilated vesicles lined with flattened epithelium and distended with colloid. No. 1, from a woman, recently come to this country from Bohemia. The gland weighed 13.19 grams, each gram contained 4.03 mg. of iodin, the total amount being 53.16 mg. No. 2, from a woman of English birth, 30 years of age, whose dried gland weighed 12.42 grams, each gram containing 1.98 mg., the total content being 24.59 mg. of iodin. These glands would seem to indicate, therefore, that the proportion of iodin in colloid goiters is at least as high as normal with the result that the total amount is very large. This is especially well shown by the fifth gland, which was also from a Bohemian woman, and which contained a nodule that was composed of tissue nearly identical with the colloid goiters in structure, but which seemed to be a benign neoplasm. This nodule was surrounded by a distinct fibrous capsule, so that it could be removed without disturbing the rest of the gland, and it was then analyzed separately. The nodule was found to contain in each gram 1.98 mg. of iodin, while the remainder of the gland contained but 0.8 mg. in each gram. The total amount in the entire gland was 9.26 mg., or about the normal quantity. Therefore it would seem that the colloid new growth had so met the demands of the body, that the remainder of the gland had lessened its activity in proportion.

The writer would also call attention to the fact that Baumann found two goiters containing large amounts of iodin in his series; in one there was 17.5 mg., in the other 31.5 mg., which are especially large quantities when compared with the low normal content of the German glands. It seems very probable these were colloid goiters. Since the number of goiters available to the writer was so small, the statements based on the results of these investigations are not made as positive, further than that they agree with the facts at hand. The possibilty that more statistics may show these cases to have been exceptional is fully appreciated.

An interesting suggestion coming from the analyses of the goitrous glands is, that not only does the normal American gland contain a much greater amount of iodin than does the German gland, but also that this amount is necessary to inhabitants of this country, so that the gland will hypertrophy to keep the iodin content up to the standard, as shown in the first two goiters.

(To be continued.)

Inconveniences of Airol in the Treatment of Soft Chancre.—O. Goldfarb reports several patients treated with airol for soft chancres, on whom it produced blisters, etc., resembling a burn of the second degree.—*Semaine Méd.*, August 11.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

XV.—DISEASES OF THE BONES, JOINTS AND MUSCLES.

(Continued from page 911.)

As to the diseases of the muscles, we emphasize that after W. Cooper (in 1694) first described a *muscular luxation* of the long head of the biceps, Bromfield and Pouteau likewise mentioned it, but the symptoms collected do not make the diagnosis sufficiently certain. It is evident that hitherto no verifying postmortems for isolated dislocation of the biceps tendon, not combined with luxation of the ball of the joint, are at hand. One saw *muscular lacations* of the biceps completely healed (Duchenim, 1786). J. L. Petit has noticed a case of *rupture of the tendon of Achilles* of a juggler, who in an attempt to jump upon a high table with both feet at once sustained this injury of both tendons. For the treatment, wherein the principal point lies in extending the foot and bending the knee, he and Ravaton constructed so-called slippers. Perhaps the circumstance that two so illustrious men as J. Hunter and Alexander Monro, senior, each suffered a laceration of this tendon contributed to the fact that the injury hitherto little known became a veritable mine of inventions of new bandages. (Our time experienced something similar when Garibaldi's injury to his foot drew after it every possible and impossible invention.) Hunter condemned the exaggerated carefulness of treatment, but fell into the opposite error when after a few days he arose and went about with a shoe which had a high heel; in his case the intersubstance is said to have become ossified. As regards bandages, we notice that Monro left the point of the slipper open in order not to hurt the toes. Just on this account and because after healing, walking in the slippers was difficult for the patient, Desault invented a new bandage; he placed at the back of the limb a long compress reaching from the foot to above the knee-joint, filled out the hollows at the sides of the tendon with graduated compresses and made a circular envelopment from the joint of the foot to the knee. Wardenburg modified this bandage and had hollow splints of metal adjusted to the knee and ankle-joints. Richter recommended his pupil's method, when one could not by the position of the limb alone, always the best treatment, bring about a contact of the ends of the tendon. Very simple, too, was Schneider's bandage, which bound the leg, with the foot extended as much as possible, to a hollow splint reaching from the toes to the knee (1787). The suture of the tendon recommended by Heister, Garengest and others was soon discarded on account of inflammation and suppuration of the tendon and of the tearing out of the suture (Richter). Acrel reported a cure by this method, but after a few years the tendon tore apart again in the same place by a quick upward step.

Caput obstipum was supposed to arise from scars, the contraction of the sterno-cleido-mastoid muscle in consequence of a metastasis of an irritating morbid matter to the clavical muscles or from paralysis of them, or muscular cramp. It is well known that today a few surgeons deny the so-called congenital form, which is said to arise only from the laceration of the sterno-cleido-mastoid at birth. On the other hand, it is to be remembered that Bündell, in the year 1762 (R. A. Vogels "Neue med. Bibl.," V. Bd., S. 189), demonstrated as the cause, at that time still unknown, of congenital caput obstipum, "that the M. mastoideus upon one side was only a tendon," and Hensinger (1839) found the contracted sternal portion of a child a few days old, was composed not of muscle substance but of white tendinous tissue. Only the wry-neck from muscular contraction demands an operation, when the internal and external application of anti-dyscrasia remedies are without avail (Richter). Shard deserves the credit for the method of operation; he had the sterno-cleido-mastoid strained, cut across the skin, inserted under the muscle a probing knife devised by himself and severed the muscle from within outward. His treatment was the most used until the time of the subcutaneous methed. B. Bell, for fear of injuring the vessels and nerves, advised separating the muscle gradually by small incisions from without inward. As a rule the separation of the sternal portion satisfied Richter, who considered an inch above the sternum as the best place for the incision, but he also cut through the clavicular portion if it was strained, and afterward held the head straight by means of bandages until the wound was healed. For that purpose a leather cap, devised by Köhler of Jena, was very much used (1796). It has been previously mentioned that Gooch first observed a wry-neck caused by the contraction of the platysma myoides, which he cured by cutting the entire breadth of this muscle underneath the skin (1759).

Orthopedia as a science was born in the eighteenth century and was first cultivated upon Swiss and German soil. They who claim a French origin for it because Andry, the originator of the word orthopedia, published the work "L'orthopédie ou l'art de prevénir et de corriger dans les enfants les deformités du corps" (Paris, 1741), should reflect that in this work many other diseases, as chilblains, harelip, red nose and itch, are treated. Crooked limbs were regarded by the great mass of surgeons as incurable; the patients were left to the physicians of the Jahrmarkt and so-called "regulators" (Einrichter). *Johann Andreas Venel* (1740–1791) of Yverdun came forward to dedicate himself entirely to this neglected branch of surgery. The successful cure of a clubfoot induced him in his 39th year to go to Montpellier for the second time, in order to study anatomy again. He then had a hospital of his own built, where in special work-rooms in connection with it, apparatus and bandages were prepared under his supervision. Soon the number of his patients grew, and they came to him from Switzerland, Germany and other countries; but he accepted only children who had not passed their eighth year, and treated their curvatures of the feet and knees, and probably also of the spine. At their entrance, and again after they were fully cured, he made in each case a plaster cast of the deformed limb and published drawings upon eight plates. Within twelve years of tireless activity, during which he had to contend against poverty, misfortune and many difficulties, he accomplished about a hundred successful cures; his method was about to be made public when he died. Dr. Ehrmann of Frankfort on the Main was the first who imitated Venel's treatment in Germany, and he imparted it to Brückner of Gotha, [illegible] then like[illegible] took up this specialty and published a work on it ("Ueber die Natur, Ursachen und Behandlung der einwärts gekrümmten Füsse oder der sog. Klumpfüsse," Gotha, 1796). The works following, by the two Germans Naumburg and Wanzel, were unimportant, while abroad, Sheldrake (1794) and especially Scarpa ("Mem. chir. sui piedi torti congeniti dei fanciulli." Pavia, 1803) deserved some credit for their work on clubfoot. Portal's work ("Obs. sur la nature et la traitement der Rachitisme, ou des courbures de la colonne vertébrale et de celles des extrémités," Paris, 1797), and in Germany Feiler's work ("De spinæ dorsi curvationibus," Altdorf, 1798), were of importance for curvatures of the spine. Orthopedics was wrested from the quacks and elevated to an independent surgical doctrine.

It was known that clubfoot was as a rule congenital, and the cause was supposed to be an unnatural position of the foot in the uterus, it being pressed inward, which resulted in a contraction of the m. tibialis ant. and post. and of the gastrocnemius. It is well known that Eschricht (1851) first taught that that position of the fetus was not unnatural and that congenital clubfoot could be explained as the persistence of the normal curvature of the fetus at a certain stage. To correct the contraction was the object of the treatment, which offered a better prospect of success the earlier after birth it was undertaken. In order to relax and distend the muscles, the German surgeons, according to the example of Brückner, first had emollient remedies rubbed in, gave foot-baths and continually kneaded and stretched the foot with the hand according to prescribed manipulations, but never allowed the patient to walk on his feet. Only when after a few weeks a greater flexibility was reported, were bandages or apparatus applied and that treatment continued. Among the great mass of newly invented appliances those of Cheselden, White, Van der Haar, Bell, Brünninghausen and others, were the best known. Venel's sabot and Brückner's boot were the two principal types of apparatus for clubfoot and were older than Scarpa's boot, which has become celebrated. For newborn children they were usually satisfied with Brückner's bandage. When walking was again permitted they had the patient wear a laced boot which reached to the middle of the lower part of the thigh and had no heel, but a heel-cap of stiff leather. The most important advancement was due to the German physician Thilenius, who in 1781, in the case of a clubfoot of a girl 17 years old, which neither bandages nor apparatus helped, in spite of the traditions of antiquity as to the danger of tendinal wounds, showed the great courage to have, for the first time, the tendon of Achilles severed, after it had been laid bare and made free by an extensive cut. He was not understood by his contemporaries. Even in the year 1792, C. C. von Siebold regarded the straightening of a clubfoot by severing the ligaments and tendons as dangerous to life on account of gangrene and caries; and he recalled with horror how a country surgeon had the knife in his hand, ready to straighten the foot of a newborn baby!

XVI. DISEASES OF THE BLOOD VESSELS, NERVES AND SKIN. NEOPLASMS.

Aneurysms; Phlebitis, wounds of the veins; Lymphangitis; Anæsthetics; Tetanus, compression of the carotid, facial pains; Ulcers; Furuncle, carbuncles, erysipelas; Burns, chilblains, whitlow; Warts, corns; Neoplasms, scirrhus and cancers; Breast, lip and chimney sweep's cancer; Encysted tumors; Ganglion, teleangiectasis.

If, in Germany, nature was sparing of *aneurysms*, yet art replaced this lack with sufficiency by the lancet of the barbers and of the barber journeymen. Within five months four cases of aneurysm from blood-letting came under the treatment of Professor Leber of Vienna. There existed at that time great confusion in nomenclature, as is the case even yet to some extent; they threw true and false aneurysms together promiscuously. While a few called the aneurysm arising from a blood-letting a true aneurysm (Leber and Plenk), others applied this designation only when the sac consisted of strong annular muscle fibers (A. Monro); again, others called the cylindric form, caused by the distension of the entire arterial wall, a true aneurysm, and, on the other hand, called the sac formation, which arises from the laceration of the inner membrane and the distension of the outer, a false aneurysm (Morgagni). In Germany those classifications were the most current which came from England, the country in which aneurysms were most frequent, where the two Hunters, D. Monro and J. Bell devoted themselves especially to this disease. In the second half of the century, they designated those swellings in which the artery was at any place unnaturally enlarged or distended as aneur. verum, and distinguished them as aneur. verum circumspectum and diffusum, according as the distension was found in only a small place or to a greater length of the artery. On the other hand, the swelling in which the blood entered the cellular tissue through an unnatural opening of the artery, and, as Heister would say, flowed between the skin and the flesh and formed a sac there, was named aneur. spurium. Donald Monro applied this name especially to the traumatic hematoma of the present day. The false aneurysm was also either circumspect or diffuse, and was most excellently described by John Bell. As a third main division, Hunter introduced the aneur. mixtum, in which the external coat of the artery was lacerated by an injury and the internal uninjured coat was in consequence distended as a sac through the opening (an. mixt. int.), or *vice versa;* after laceration of the inner coat, the outer is enlarged (an. mixt. ext.) The first form was later declared to be impossible, as J. Hunter's experiments had demonstrated that the inner coat does not bulge out after the removal of the outer. He had removed the outer and a part of the other coats of the carotid and crural in dogs, so that through the thin walls one could clearly see the blood as it flowed; but the artery was never distended. An an. mixtum was also supposed to arise from the bursting of a true aneurysm. W. Hunter discovered (1762) the communication between arteries and veins resulting from blood-letting; *in this way the anterior wall of the vein* is closed while the *posterior* wall and the wound in the artery remain open, so that the arterial blood presses into the vein and distends it. He named this, varix aneurysmaticus. Park described an aneurysm from blood-letting, as large as the fist, in the bottom of which he found, after opening the sac, an orifice into which he inserted a probe to the depth of an inch, but could move it neither upward nor further downward. The orifice led *into a small sac*, the size of a nutmeg; lying underneath, and at the bottom of this sac, was an aperture through which one could penetrate into the artery. After that these swellings were separated into kinds, the aneur. varicosum and the varix aneurysmaticus. The confusion became greater when W. Hunter, to some extent, confounded the so-called an. cirsoideum with those two forms, and a few surgeons began to designate them as an. per anastomosin. J. Bell gave this name only to those blood tumors, which, distinct from congenital teleangiectasis, in consequence of an injury, arise from the enlargement of previously existing anastomosis of smaller arteries and veins. Finally, in the beginning of the century, Scarpa threw them all aside and declared that there is no true aneurysm in the old sense, since none ever arises from an equal extension of all the arterial coats, but from the destruction of the inner and middle coats and the escape of arterial blood into the cellular sheath or tissue enveloping the artery. A weakness of the arterial wall, as a result of bruising, sudden wrenching, or forcible movements, or most frequently a disease of the arterial system, were regarded as the causes of true aneurysms. A. Monro, senior, knew the bony and stony concretions of the inner coat very well, and considered them a frequent cause of arterial disease. Donald Monro also often found all the arteries extraordinarily fragile and brittle; sometimes, on the other hand, unnaturally hard, almost bony (1771), and Baillie observed frequent ossifications with increasing years (1793); but no one saw clearly the atheromatic process as the cause of aneurysms. They believed, indeed, in a general cause, because sometimes several swellings appeared at the same time on various parts of the body; for example, Donald Monro saw on one patient four aneurysms on the right arteria cruralis and two on the left. Our forefathers described the symptoms very accurately. Donald Monro advised against feeling of the swelling too often and too vigorously in examination, because in so doing one might easily loosen a bit of coagulated blood, which, being carried away, might occasion an obstruction in one of the other arteries, whereupon unexpected conditions might ensue. What Monro wished to avoid, Ferguson in our day recommends in treatment; but his kneading method has had no success on account of its danger. Ford and Desault described spontaneous healing. The latter had decided to operate in a case of true aneurysm of the popliteal when he suddenly noticed that the swelling had diminished about two-thirds in twenty-four hours, no longer pulsated, and had become quite hard, while above the swelling the cruralis with the side branches pulsated much more strongly. When the patient died of apoplexy they found the arteria poplitea, close above the aneurysm for a length of three inches and also below it as far as the division in the tibialis, was entirely obstructed by a clot of blood. According to Heister, false aneurysms gave a worse prognosis than the true, and he regarded aneurysms of the carotid, subclavian, axillary and of the crural near the trunk as incurable, because in an operation for them one could not stop the blood and had to fear inflammation.

In the first half of the century the treatment was mainly directed to the size of the swelling. Besides Valsalva's method, which was supplemented with local applications of ice (first mentioned by Donald Monro), they recommended compression for the small swellings and incisions for the large ones. The compression was at that time direct. Heister constructed a truss-like instrument, whose pelotte was pressed against the swelling by means of a screw. This was supplanted by the compressorium of the Berlin physician, Senff, which consisted of a cushion of a doubly decussated feathers and found many applications (Platner, Richter and Acrel). The number of compressoria and compression bandages grew to infinity, but they added nothing to the favorable results. Then there appeared as the next advancement the indirect compression, which, as a rule, was applied together with direct compression, but was not yet applied by itself. It came from the German surgeons.

History unjustly ascribes the priority in the introduction of indirect compression to Guattani (1772). but in the year 1770 Leber made public some cures by compression in connection with indirect. He laid a hollowed cork on the swelling and pressed together the upper part of the artery by graduated compresses. Theden, moreover, made public his methodic envelopment of the whole limb, with long narrow compresses the thickness of a finger, on the trunk of the artery (1771), and in this way he cured traumatic aneurysms. These German observations were known, therefore, two years before Guattani's work appeared. To him direct compression on the swelling was the main point, and he used the indirect in the form of long narrow compresses and bandages only as a means to weaken the pressure of blood at the swelling. Leber also deserves the priority in attempting indirect compression alone, without direct, although his treatment failed in the case of an aneurysm from blood-letting, and he did not properly estimate the value of this method. The honor should remain with Desault of having first attempted indirect compression alone in a case of "true" aneurysm (1785), when, according to Camper's clever idea, he compressed the subclavian against the clavicle, in a case of aneur. of the axillaris; the patient would not submit to a continuance of the treatment. J. Hunter first accomplished a cure (as E. Home related in 1793) by means of indirect compression in the case of an aneurysm of the cruralis in the middle of the leg, by the application of a tourniquet to the artery a little below the lig. Poupartii. The pressure became so painful that the instrument had to be taken away, but after threatened inflammation and swelling of the aneurysm the pulsations ceased and the sac became quite small and hard. Hunter, indeed, seemed to have some curiosity to further prove indirect compression, but as in the next case also the pressure caused by the tourniquet could not be borne, he discarded the method. Then Brückner of Gotha accomplished a cure (1797) with indirect compression, in a very large true aneurysm of the popliteal, in the belief that this treatment was the principal remedy. He used an annular tourniquet; laid on the other side of the limb a long, stiff splint, and carried the compression of the art. femoralis only so far that the pulsations in the sac became weaker but did not entirely cease. (My historic notice in the Deutschen Klinik, 1868, Nr. 13.)

The methods of operating for true aneurysms consisted almost universally in the splitting of the sac with a double ligature (Antyllus) or in extirpation after the trunk of the artery had been fastened above and below the swelling. These old operations were for the most part fatal, insomuch that many surgeons abandoned them and amputated the limb (J. L. Petit), a passage out of the rain into the gutter. The idea of using the ligature for its own sake, without opening the sac, was an extraordinary advancement. It arose in Paré's time; for his pupil, Guillemeau, wrote as early as 1649, "Si en quelques autres parties extérieures il se présente au chirurgien pareil aneurysme, il peut seurement découvrir le corps de l'artère vers sa racine et partie supérieure, et la lier de mesme façon sans autre cérémonie." Anel made the earliest known operation of this kind on Jan. 30, 1710, in an aneurysm of the elbow curve, in which he bound the art. brachialis tightly above the sac. What were his thanks? His colleagues attacked him bitterly, and ascribed the cure to accident. Seventy years passed before Anel's idea came to the front. In the year 1781 Assalini saw this operation performed by the physician and surgeon of the Duke of Modena, Hercules van Este Spezzani. Desault convinced himself, by injections and experiments upon animals, that a ligature of the femoralis does not disturb the circulation in the lower parts of the limb, and in June, 1785, in an aneurysm of the popliteal he bound the femoralis close under the fork of the abductor magnus with success. But John Hunter first taught the true value of this operation. He also had formerly applied ligatures above and below the sac, and observed that death always resulted through hemorrhage or suppuration. Indeed, in September, 1785, he declared a thigh aneurysm of the size of an orange as not amenable to operation. Nevertheless, on December 12, he accomplished, whether with or without the knowledge of Desault's success, can not now be readily decided, his first celebrated ligature, which, instead of being applied close above the aneurysm, according to Anel's method, was placed at a greater distance from the sac. In view of the fact that the artery in the neighborhood of the sac was diseased, so that the threads of the ligature might easily cut through it at this point and cause a fresh hemorrhage, he bound the artery higher up, where it was presumably healthy, and the cutting through of the thread therefore not so much to be feared. It appeared to him sufficient to merely retard the flow of arterial blood by means of the ligature and by a gradual narrowing of the passage of the artery to moderate the flow of the blood toward the point of ligature whereby the blood in the sac coagulated and the sac shriveled up. Therefore he considered it unnecessary to open or to extirpate it. Hunter operated on a large aneurysm of the poplitea in the following manner: He made an incision into the front and inner side of the upper thigh somewhat above the middle, obliquely over the inner wall of the sartorious, laid bare the artery, isolated it with the spatula, introduced four threads under it, and so bound it in four places separated a little way from each other. Of these so-called reserve ligatures he bound up the thread farthest from the heart entirely tight: the one nearest to the heart remained lying under the artery as loose threads; the two other threads, as loose nooses, gradually narrowed the arterial passage. In case suppuration cut through the actual ligature too soon the loose threads should serve to quickly close the bleeding vessel again. The patient survived an after hemorrhage, and was cured only after seven months. This fortunate result convinced him that it was by no means entirely necessary to exclude arterial blood from the sac insomuch that he asked himself if the ligature was on the whole necessary, and if indirect compression would not suffice to keep the blood out of the sac until that remaining within it had been coagulated. He therefore undertook the above mentioned experiments in compression. He very quickly gave up the idea that it was better to bind the artery loosely in several places than strongly at a single point, and in his later operations always applied but one ligature, and drew it tightly together. He first recognized also the great importance of the coagulum in the sac which had hitherto been always regarded as an obstacle to healing and also the significance of collateral circulation. Hunter first established the principles of continuous ligature and introduced into practice his method of operation, which then, as today, bore his name, whereby, as Scarpa said, he erected an eternal monument to his renown.

In order to establish the method it was necesssary to demonstrate that the ligature of the trunk does not destroy the nourishment of the limb. Heister was very uncertain as to this point, and wished to have the question cleared up by dissections. Before the operation, compression of the main trunk was always recommended in order to drive the blood more into the collaterals to enlarge them, so that after the operation they could at once maintain the circulation in the limb (W. Hunter). This enlargement of the collaterals, by which sufficient blood was conveyed to the underlying parts, removed every danger from the stricture of the main trunk. They began to paint the great dangers of the old method of stricture according to Antyllus with vivid colors (Guattani and Deschamps), and Hunter's operation was soon copied by Blizard, Lyon, Birch and Cline. E. Home extolled it as very simple and safe, insomuch that it won the precedence over all other methods. At first Pott's authority stood somewhat in the way, unfortunately. Pott and also J. Hunter had observed that the artery almost always became diseased for a considerable distance above the sac, hence a ligature at that point is ineffective; he had also always observed a fatal result in operations according to Antyllus, and he regarded amputation as the only possibility of saving life, which Bromfield, on the contrary, opposed entirely. In the year 1786 Pott, in an aneurysm of the poplitea, made still another attempt to bind the artery on the posterior side of the thigh, and to the question as to what he would have done if he had found the artery diseased, he answered that in that case Hunter's method might perhaps be followed. But he could not easily decide to adopt this method because the oblique incision would sever most of the lymph vessels on the inner side of the thigh. Once he applied the ligature a very little distance above the sac, but the artery did not appear to be constricted at all, and he amputated the limb. Richter was cautious in his judgment of Hunter's operation. He did not comprehend the excellence of it; he could only condemn the four loosely applied ligatures as questionable, since Guattani had cured large aneurysms by direct pressure. In France, Hunter's reserve ligatures found favorable acceptance; Boyer and also Lisfranc applied four, sometimes even twice as many "ligatures d'attente." But Abernethy condemned this practice, since, in the multiplication of ligatures, one must separate the artery from its natural surrounding for too great a distance.

There remained certain large aneurysms (iliaca ext. and axillaris) in which a ligature above the sac, in short, every means of saving the patient, seemed impossible. Then Brasdor originated the ingenious idea of binding the artery just underneath the sac, leaving the latter itself, that the stagnating blood might coagulate and be absorbed, and the sac be obliterated. This operation, approved by Desault, Deschamps first performed (1798) in an aneurysm of the femoralis in the groin, but with fatal results. We can disregard the various other suggestions of that time for the cure of aneurysms, for example Lambert's arterial suture.

The discovery of *phlebitis* by John Hunter (1793) was the most important advancement in the realm of venous diseases. Could a vein become inflamed? The Germans theorized over this question *pro* and *contra.* Hitherto the doctrine, which even Z. Platner advanced, that venous inflammation could not occur, was accepted. His son first admitted (1793) that "the obstructions and inflammations, which it is believed are found in the arteries, as a rule, apparently have their seat in the veins. But he doubted whether in venous inflammation the blood exuded into the cellular tissue; when this is not observed, and, much more, when only the gorged blood vessels protrude, inflammation of the veins and not of the arteries is present." All empty froth; not a word of observations and dissection reports! Hunter taught that the inner coat might be the seat of inflammation and suppuration, especially in the larger veins, when, in case of severe inflammation of the cellular tissue, they run through the inflamed part, whether the inflammation arises spontaneously or after an injury. He could sometimes show actual accumulation of pus in the vein, and, after blood-letting, many small abscesses in the entire course of the vessel; in dissections the vein was frequently stuck together in several places and ulcerated. The result of large collections of pus is the obstruction of the vein. He believed that phlebitis was especially to be feared if the inner cavity of the vessel is exposed to the outer air, and he therefore advised, in bleeding, that the wound in the coat be well drawn together and covered with a compress. He distinguished an adhesive, suppurative and ulcerative phlebitis. The first form was said to proceed from the extravasation of coagulable lymph; in the second, pus arises in the inside of the blood vessel, which is mingled with coagulated components of the blood; in the last, abscesses are formed whose evacuation by the action of the heart is often prevented by adhesive inflammation. Large venous wounds were treated by pressure, or, if this was not sufficient, by stricture; this latter method was not avoided since the anastamosis maintained the circulation.

J. Hunter also described the symptoms of *lymphangitis* with the streaks running upward, the painful glandular swellings, chills, etc., and traced the phenomena to an irritation spreading along the lymph vessels. Theden groped in darkness, when, in his own case, after an injury, a "panaritium followed by boils on the inner condyle of the upper arm" developed, from which the pain became so great that he had almost determined upon amputation. He said that the disease was indeed very similar to a panaritium, "but was still something of another kind, and proceeded from an absorption of putrid matter." There was even some question as to lymphangitis with suppuration of the lymphatic glands.

As regards the *nerves*, we have already mentioned the experiments of the Göttingen surgeons, Arnemann and Michaelis, in regeneration of the nerves, and also the discovery of the motor and sensory nerves by Charles Bell. What the English surgeon first proved absolutely by striking physiologic experiments, the Frenchman, Pouteau, had previously anticipated (1783), in that, from the fact that with patients sometimes a part of the sensation is entirely lost while the power of movement is not affected, he concluded that there must be different nerves for the two functions. He thought that the sensory nerves proceed from the cerebrum, the motor nerves from the cerebellum.

For centuries opium has been given in order *to make surgical operations as painless as possible.* But it is not of much use if it is not given in very large doses; then it is injurious. An early propagation of anesthesia we find in a wonderful way in Spain, where the physician, Theodorico, afterward Bishop of Cervi, had already described it accurately (1498). The Spaniard, Don Juan Fragoso, gave the following directions (1581): Take the juice of henbane, cicuta, mandragora and poppy, saturate a new sponge with the mixture, let it dry in the sun, then soften it again with hot water and have the patient inhale the vapor until he falls asleep. To waken him, he must be made to inhale warm vinegar vapor. Hans von Gersdorf had already given similar directions (1540). To avoid the injury of opium, James Moore of London suggested (1784) that the main nerves be compressed by means of a tourniquet, which must continue half an hour, until complete insensibility ensues. His observations were not sufficiently convincing; the continued and unavoidable pressure upon the blood vessels was also feared, therefore his suggestion did not prevail.

(*To be continued.*)

PRACTICAL NOTES.

Turpentine in Scarlet Fever.—The announcement of the specific action of turpentine in mumps (p. 595 JOURNAL), is now supplemented by a communication from Pujador y Fauva stating that he has cured 120 cases of scarlet fever with turpentine, children and adults, who were out of doors before three weeks, and none showed traces of albumin in the urine. Several malignant cases, ataxic, were cured by two hypodermic injections of 1 gram of essence of turpentine.—*Gaz. Méd. de Liége,* September 2.

Improved Local Treatment of Tuberculous Laryngitis.—According to M. R. Botey, the following formula combines in one remedy the advantages of cauterizing with lactic acid and painting with phenicated glycerin. The laryngeal mucosa is first rendered anesthetic with a 10 per cent. solution of cocain and then touched with the mixture, commencing with a small amount of phenic and lactic acid in the glycerin, and gradually increasing until the following limit is reached: Phenic acid, 1 to 5 grams; lactic acid, 2 to 15 grams; neutral glycerin, 20 grams. For external use.—*Semaine Méd.,* August 11.

Treatment for Whooping Cough.—Leuriaux, who has made whooping cough a special study, has addressed a paper on the subject to the Paris Academy of Medicine. The result of his researches shows that the treatment should be purely local and antiseptic. He recommends nasopharyngeal insufflations of a powder composed of sulphate of quinin (1 parts), resorcin (1 part), and white powdered sugar (25 parts). Insufflations should be taken five or six times a day, *preferably after a fit of coughing.* The Academy referred the paper to a committee to study the question.

By Combining Eucain with Cocain we secure a valuable anesthetic with the advantages of both and none of the inconveniences of either, according to the *Journ. de Méd. de Paris* of September 12. Eucain is the methyl ether of methyl-benzo-tetramethyl-γ-oxypiperidin-carbonic acid, and is a white crystal substance soluble in water, alcohol, ether, chloroform and benzine; melts at 104 degrees C; is not decomposed by boiling like cocain. Its solutions are consequently not affected by sterilization. Its anesthetic action [illegible] more [illegible]ble than that of cocain, while it is not toxic. Its effect on the pulse is to retard it while cocain accelerates it. A good formula for the combination is: Hydrochlorate of eucain, hydrochlorate of cocain, aa 20 centigrams; boiled distilled water, 20 grams. For hypodermic injection 1 c.c.

Success of Dittel's Elastic Ligature for Hemorrhoidal Nodules.—Recovery followed in every one of the 269 cases that have been treated in Dittel's service; twelve days the average. No anesthesia is used except Schleich's local infiltration. The curved polypus forceps are guided by a finger of the left hand inserted into the rectum. By turning the forceps ninety degrees the nodule is brought up out of the anus and with the surrounding mucosa is then ligated with an elastic cord stretched to its utmost. The nodules lose their vitality in eight to ten days and drop off, leaving a clean granulating surface. The external anal skin must not be included in the ligature, as this is very painful.—*Memorabilien*, August 23.

To Arrest Inflammation Subsequent to Vaccination.—Dr. Clement Lucas writes to the *British Medical Journal* that the use of bovine lymph has, in his practice, been more often followed by sore arms than when he relied upon the arm-to-arm method. He believes that he has found an easy and safe method by which to stay the inflammation in short order. His recommendation is the following: "Should, then, the vaccination pustules on the twelfth or fourteenth day tend to become confluent, while the inflammatory areola tends to spread beyond the usual limits, the glands in the axilla to enlarge and the arm, perhaps, to become edematous, the author suggests that the area of the pustules should be powdered over with iodoform and a sterilized dry pad be applied to keep the powder in position and the pustules from friction. In this way the process is completely checked in twenty-four hours. The pustules dry into a cake, the redness subsides, the glands decrease and the edema of the arm rapidly disappears. This is in every way preferable to hot fomentations or antiseptic moist applications, which, apart from the difficulty of applying them to an infant, involve the healing of open wounds." The British practitioner still continues to make five insertions of the vaccine material, whether it be of bovine or human origin, a number of wounds that is seldom, if ever, made by an official American vaccinator. When the latter is persuaded that he is in possession of a bovine lymph of good quality he is ordinarily, at least in some parts of the country, content with a single and not large insertion-surface. Whether the British practitioner will readily recede from his old five-insertion method or not, we think it will be for the interest of himself and his clients to have this subject officially investigated by the very careful men who are now at work in endeavoring to replace arm-to-arm methods with the glycerinated calf lymph. Sir Richard Thorne-Thorne, M.D., and Dr. M. Copeman are the intelligent subcommittee of the Local Government Board who are conducting this part of the official investigation on vaccination. The special report of the former member, quite fully illustrated, is before us, as is also a summary of that report as published in the *Lancet*.

Chronic Urticaria Treated with Sodium Nitrite.—Last summer I was consulted by a young lady for a chronic urticaria, in whose case the urticarial development was pronounced, the itching was great and at times the patient was so tormented that ordinary amusements were completely out of the question. Wherever clothing fitted snugly or any pressure brought to bear there speedily arose the large wheals and welts which persisted for hours. This had been her experience in summer seasons for many years and none of the many measures undertaken had brought relief. I could discover no intrinsic cause for the condition and knowing that much had been tried, I felt justified in attempting an experimental remedy. Regarding urticaria as an angioneurosis, I prescribed sodium nitrite in small doses, one grain three times daily. I was gratified the following day to be assured by the patient that she had experienced her first complete relief from the difficulty. And so through several weeks of hot weather, in which season she had been particularly subject to the difficulty, there was practically complete freedom from the annoyance before experienced, provided the remedy was continued in occasional doses. If it was discontinued for any period of time, the urticarial development would promptly reappear. Encouraged by this case, I took occasion to give the same remedy a few weeks later when, consulted by another young woman for the same trouble, whose history had been much the same of many repeated failures of various methods. In this case, also, the relief was immediate and complete, and the occasional use for two or three days of the remedy sufficed to render the patient practically free from the annoyance which through years had been in each heated season of very great degree. In each of these cases the withdrawal of the remedy was followed shortly by the reappearance of the urticuria. After each reappearance the phenomena entirely disappeared on the administration of the drug. No other influences were brought to bear or known to exist. The conditions, therefore, amount to control tests in two cases whose histories had been of failure in repeated trials of many measures.—J. P. Sawyer, M.D., in the *Cleveland Journal of Medicine*.

Deligation Results Found Two Years After a Major Operation Upon the Neck.—Dr. Thomas reports the necropsy in the case of a man 65 years old who, two and one-quarter years previously, had cut the internal, external and anterior jugular veins, as well as the common carotid artery, in an attempt at suicide. At the time, hemorrhage was controlled by clamping and ligation; secondary hemorrhage occurring, it became necessary to ligate the internal and external carotids. The patient recovered and resumed his occupation as a house painter. This he followed for nearly two years, when he came under observation again on account of severe cough and pain in the right chest. The temperature was high and expectoration copious. Rapid failure took place and death ensued. Upon postmortem examination, the blood vessels forming the circle of Willis appeared normal. The last half inch of the internal carotid artery was hollow, while the portion in the cavernous groove was represented by a fibrous cord. Upon the left side, the sterno-mastoid muscle was entirely replaced by cicatricial tissue. The common carotid was small and terminated abruptly five inches from the arch of the aorta in a mass of scar tissue, there mingling with the cut ends of the pneumogastric, sympathetic and some cervical nerves. Above this fusion, nothing but the two nerves, vagus and sympathetic, and a small artery could be found. This artery, not so large as a normal facial, came down from above and gave off the small facial, lingual and superior thyroid, and was the sole representative of the external carotid. No trace of the internal carotid or of the internal jugular as far as the base of the skull could be found. The inferior thyroid artery was smaller on this side, but the left vertebral was half as large again as its fellow. This, in fact, appeared to be the only special provision made for collateral circulation. The deep cervical artery was much smaller on this side. The left lung was normal, and therefore had not suffered from interference with the pneumogastric and sympathetic nerve. Upon the right side the common carotid artery seemed slightly larger than normal, but the superior thyroid, the lingual, the facial and the inferior thyroid were apparently not enlarged. In the right lung pathologic changes, with a collection of pus, had caused death. The conditions present illustrate how little reliance can be placed upon the theoretic collateral circulation laid down in the text-books, based on ordinary anatomic anastomosis, for with the exception of the enlarged left vertebral artery and some little enlargement of the right common carotid, all the other arteries were not only no larger, but were actually smaller; even the deep cervical artery was considerably smaller than its fellow of the opposite side.—*British Medical Journal.*

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SATURDAY, NOVEMBER 6, 1897.

THE DEPARTMENT OF PUBLIC HEALTH.

It is with pleasure that we inform the members of the ASSOCIATION that the ASSOCIATION Bill to establish a Department of Public Health, and define its duties, has been approved in its entirety by the American Public Health Association at its last meeting at Philadelphia, and that body will co-operate with the ASSOCIATION and endeavor to have it placed upon the statute books.

There is some misapprehension in regard to the Bill, as appears by comments in certain newspapers, which should be relieved. In the first place, the ASSOCIATION yielded to the inevitable, no longer insisting that the head of the new Department should be a member of the Cabinet, to which position it heretofore found there were insuperable objections; objections which would indeed prevent the passage of the Bill should it be presented. The committee, therefore, have wisely framed their Bill on the lines of the Department of Agriculture, and there is little question but that in time the objections which now seem so unsurmountable will fade before the pressure of public opinion. However, the present proposition establishes the foundation and paves the way, but whether the period of trial will be long or short is of comparatively little consequence to the establishment and equipment of the new Department itself, which can run just as well if its head does not have that full measure of civic honor that the friends of the Department would like to see him have. At present, so far as the public is concerned, it is the efficiency of the service, and the thoroughness with which the new service shall cover the sanitary field, that they look to.

Some misapprehension has been felt and indeed expressed in some of the daily papers, to the effect that this measure was simply a revival of the old National Board of Health; that it was the establishing of a National Quarantine with greater powers; and to such we must reply that these misapprehensions are not founded on fact. In the first place, this Bill for the first time provides for thorough correspondence or conference to secure the co-operation of State, municipal and local boards of health "in establishing and maintaining an efficient and accurate system of notification of the existence and progress of contagious and infectious diseases and of vital statistics in the United States." While the proposed Bill goes further than any existing law in regard to the investigation of the cause of disease and the best means of its prevention, it makes no new regulation regarding quarantine. It takes quarantine as it finds it and simply transfers from the Secretary of the Treasury, a purely financial and commercial officer, the duties and supervision of so much of the work of the Marine Hospital Service as is included in this law, and so far as the service itself is concerned—an organization which, we are informed, attempted vainly to stem the tide of public opinion at Philadelphia by opposing the adoption of the measure—we have to say that it will make no difference to the officers of the service, so far as their duties are concerned, except that the head of the service, instead of reporting to the Secretary of the Treasury, will report to the Commissioner of Public Health, that is to say, that he will in future, if this Bill establishing a Department of Public Health shall become a law, report to some one presumably competent to give him advice and instruction—a position sadly needed when we consider the mismanagement of the present epidemic. The existing Quarantine laws then are transferred bodily from the Treasury Department to the Department of Public Health, a transfer which every dictate of humanity and of good government seems to suggest. The Bill goes further than any existing law in its utilization of the machinery of the present departments of government, and the great skill and adroitness with which the committee of the ASSOCIATION have prepared it, leaves all the departments and bureaus of the government in the same departments where they are now found. It simply provides for the better utilization of the information at their disposal, and affords a place for its collation and dissemination. The Bill also codifies all existing laws. That it is perfect in all details, we suppose is not to be expected so long as human nature itself is not perfect, but it is as near perfection as possible without further trial to secure it. We shall not only sincerely hope that every member of the ASSOCIATION will use his utmost influence to secure the passage of this wise, salutary and beneficent law, but that he will immediately write to his Member of Congress, and his [illegible] ivi [illegible] n the facts in regard to it, pointing out that the Bill, as already stated, differs from the old National Board of Health Act, inasmuch as it provides for a representative for every State Board of Health in the Union; that it consolidates the existing United States statutes; that it maintains all good and effective laws now in force, including the National Quarantine Act, and the Interstate Quarantine Act, and that it provides for the utilization of all information in the hands of the various departments, and affords a proper and suitable place for dissemination and promulgation. The Bill unloads the overloaded Treasury Department from duties which, under the existing state of affairs, were only nominal, and places them where care and supervision can be exercised. As the Marine Hospital Service is not interfered with, except as to the officer to whom the chief of the bureau shall report, it is seen that the opposition to the measure is not only gratuitous and unnecessary, but unwise and unscientific. We, however, are of opinion that this alleged opposition is confined to a limited number of officers who are compelled to act under the instruction of the present chief, who is said to view any change of whatever character in the existing régime as a bad one. Write us for a copy of the bill.

THE PHYSIOLOGY OF THE THYROID GLAND.

The physiology of the thyroid gland is a subject that has been largely worked out within the past five or six years; that is, what we know of it with any degree of certainty. Theories had, of course, been offered and some of them have been confirmed; the brilliant therapeutic results following the physiologic investigations of Schiff, Horsley, Vassale and Gley and their practical application in myxedema are, as has already been stated in the Journal, one of the most important of recent medical acquisitions and the one, perhaps more than any other, that illustrates the close relationship between physiologic research and rational therapeutics. The still more recent isolation of thyroiodin, which seems to be at least the chief of the active principles of the gland, has thrown additional light upon the subject. The old notion that the gland acts as an apparatus for regulating the cerebral blood supply and which was held as a possible truth as late as the 1892 edition of "Landois and Stirling's Physiology," is almost forgotten and thrown aside with the revelations of the secretory functions, previously suggested by Rogowitsch and so fully demonstrated by Vassale, Gley, Baumann and others within the past few years.

It is possible, however, that like some other glandular organs, it may have other functions than that of supplying to the organism some useful secretion or of disposing of some deleterious substance, and that there may be some truth still in the older hypothesis. In June of the present year, Professor Cyon reported to the Paris Academy of Sciences that his experimental studies had led him to the opinion that all the chief phenomena of Graves's disease, the goiter, exophthalmus and the tachycardia, as well as the visceral disturbances, were explainable by the action on the heart and the thyroid of the sympathetic system influenced by the depressor nerve. In a still later communication to the same body (Sept. 12, 1897), he further reported that he had ascertained that the thyroiodin produced by the thyroid is a stimulant of the nerve centers that govern the heart and the circulation, and that the toxic substance removed from the blood by the gland is the iodin salts it contains, which have in their natural state a directly paralysant action on the depressor and pneumogastric nerves. It thus transforms a dangerous poison into a directly beneficial substance, the good effects of which he claims are not dependent upon the iodin contained.

The heart reciprocally acts upon the thyroid through the nerve filaments passing to the laryngeal nerves and thus controls the production of thyroiodin, which in turn is indispensable to its own normal function.

This secretory function, however, is not, according to Professor Cyon, the only one possessed by the thyroid gland. He revives the old and neglected regulator theory of the thyroid function, and holds that, situated as it is near to the point where the carotid enters the cranium, it may act as a safeguard to the circulation, forming "a kind of secondary circuit of feeble resistance," and that this action is also presided over by the heart. This causing dilatation of the gland acts in two ways, 1, by opening the flood gates, so to speak, in cases of sudden danger; 2, by increasing the secretion of thyroiodin in case of permanent danger, and in either case the action is beneficial. The briefly reported communication does not give many details that might be desirable, but the above is its substance, and it certainly affords suggestions that can come into play in considering some of the facts already ascertained in regard to the functions and properties of the organ. The bearing of these ideas on the treatment of Graves's disease is pointed out by Cyon, especially as regards the indications for the use of thyroiodin and the very recently recommended section of the sympathetics. In cases of the vascular or ordinary hyperemic type of the disease the use of thyroiodin is counterindicated, and Cyon recommends the internal administration of iodin, and in cases of imminent danger the section of the depressor nerves may be tried. The relation of the heart's condition to the varying thyroiodin contents of the gland is also suggested by these views, as a possible subject worthy of investigation and other questions bearing upon the commonly received and recent views of the physiology or functions of the thyroid gland will readily occur to the reader. If, for example, its function is to transform and neutralize iodin as a toxic agent in the blood, how will this fact bear upon that other view recently advanced and claimed to be supported by good evidence, that its goitrous hypertrophy is associated with a deficiency of that substance. Professor CYON's views are certainly suggestive of some modification of recent physiologic theories and his communication ought to be an incitant of further studies on some of these points.

He does not confine the regulatory action in the circulation to the thyroid alone, but suggests as possible that the thymus, situated near the entrance of the vertebrals into the cranium, the accessory glands situated near vital organs firmly enclosed in sheaths like the kidneys and testicles, and the pituitary body may also have this office to some extent as well as that of furnishing an internal secretion. In the course of time the substance of his investigations should appear in a more elaborated form and we can better estimate the validity of his conclusions.

FAITH-CURE AND HYSTERIA IN THE NINETEENTH CENTURY.

A recent discussion, before the Chicago Physicians' Club, of faith-cure, by several clergymen, led to assertions monotonously familiar to students of the fetichic side of medicine. The Club likes to amuse itself, and sometimes at its own expense. One of the gentlemen present reported two miracles at Lourdes. The gentleman conscientiously believed himself free from a bias to which his training as an ecclesiastic however strongly predisposed him. Moreover, his surroundings at Lourdes further biased him in the belief that miracles could be there performed. He was therefore in no judicial frame of mind when he saw in the midst of an enthusiastic crowd of fanatics, a " woman with a cancer extending from the lip to the breast cured in an instant." The case, as seen during the enthusiasm of a crowd, with no opportunity for calm investigation, could have been a pure suggestion. Its occurrence has been repeatedly denied by other more judicial investigators. ZOLA (preface to "Lourdes") thus sums up the evidence as to a precisely similar case which took the place of the first after its novelty had worn off.

"I interviewed a number of people at Lourdes and could not find one who would declare that he had witnessed a miracle. All the cases which I describe in my book are real cases in which I have only changed the names of the persons concerned. In none of these instances was I able to discover any real proof for or against the miraculous nature of the cure. Thus in the case of Clementine Trouve (who figures in my story as Sophie) the patient, who, after suffering for a long time from a horrid open sore on her foot, was suddenly cured, according to current report, by bathing her foot in the piscina, where the bandages fell off and her foot was entirely restored to a healthy condition. I investigated the case thoroughly. I was told that there were three or four ladies living in Lourdes who could guarantee the facts as stated by little Clementine. I looked up those ladies. The first said no, she could not vouch for anything. She had seen nothing. I had better consult somebody else. The next answered the same way, and nowhere was I able to find any corroboration of the girl's story. Yet the little girl did not look like a liar and I believed that she was fully convinced of the miraculous nature of her cure. It is the 'facts,' which of themselves lie. Lourdes, the grotto, the cures, the miracle, are indeed the creation of the need of the occult, that necessity for credulity which is a characteristic of human nature."

The case which came under the gentleman's own observation, and for which his evidence must be accepted, was one of hysteria from utero-ovarian disorders. Certain surgeons and physicians assumed that the hysteric symptoms were due to the utero-ovarian condition and proposed operation. This was not consented to, and the patient went to Lourdes, where she recovered from her hysteric symptoms, albeit the utero-ovarian state remained unchanged. This case recalls the very similar "miracle" of JOHN ELIOT, the Apostle to the Indians, of which Dr. OLIVER WENDELL HOLMES gave the following characteristic explanation:

"I do not want to say anything against MARY CHASE, but I suppose that getting nervous and tired and hysteric she got into bed, which she found rather agreeable after too much housework and perhaps too much going to meeting, liked it better, curled herself up into a bunch which made her look as if her back was really distorted, found she was cosseted and posseted and prayed over and made much of, and so lay quiet until false paralysis caught hold of her legs and held her there. If some one had hollered fire it is not unlikely that she would have jumped out of bed as many other paralytics have done under such circumstances. She probably could have moved enough if any one could have made her believe that she had the power of doing it. *Possumus quia posse videmur.* She had played possum so long that at last it became non-possum."

The epidemic of faith-cure just now prevailing takes its root in the old fetich practices of Shaman priests when medicine and theology were one. Great as have been the claims for Lourdes they do not exceed those made for that self-deluded faith-curer, VALENTINE GREATRAKES. He was a man of considerable culture for the seventeenth century. An officer in CROMWELL's army, a pious puritan, he never molested other religionists over whom he was placed in Ireland. After the Restoration, VALENTINE GREATRAKES, according to JEAFFERSON, lost his office and was reduced ("Stories About Doctors") to a private gentleman. On his small estate he labored on with good results, introducing into his neighborhood a more scientific system of agriculture giving an unprecedented amount of employment to the poor. He missed the excitement of public business, and his energies deprived of the vent they had for years enjoyed made him the victim of his imagination, which acting on a mind educa [illegible] sel [illegible] f fanatic introspection led to a series [illegible] usions.

He first had attacks of pensiveness and dejection; ere long he had a "strange persuasion" in his own mind, of which he was not able to give rational account, that he could cure the "king's evil." Patients afflicted therewith were in due course brought before him and on his touch they recovered. When the royal touch was believed in as a cure for scrofula the distinction between strumous and other swellings was by no means clear even to physicians of repute. Many who underwent the manipulation of "annointed rulers" suffered only from swellings, from which as a matter of course nature would in a few weeks have relieved them. Many of VALENTINE'S patients were evidently suffering not under scrofulous affections but comparatively innocent tumors. A second impulse gave him the power of curing ague. A third inspiration, or "celestial aura," imparted to him the command, under certain conditions, over all human disease. His methods of operation were various. When an afflicted person was laid before him he usually offered up a prayer to God to make him the humble instrument of divine mercy. Invariably, when a patient derived benefit from his treatment he exhorted the patient to offer up thanks to God. After the initiatory supplication the operator passed his hands over the affected part of the sick person, sometimes over the skin itself and sometimes over the clothes. The manipulations varied from delicate tickling to violent rubbing, according to the nature of the demon by which the diseased people were tormented. GREATRAKE'S theory of disease was the scriptural one. The morbific power was a devil, which had to be expelled from the frame in which it had taken shelter. Sometimes the demon was exorcised by a few gentle passes; occasionally it fled at the verbal command of the physician, or retreated on being gazed at through the eyes of the mortal it tormented, but frequently the victory was not gained till the healer rubbed himself into a copious perspiration. Dr. HENRY STUBBE, a famous physician in Stratford-upon-Avon ("Miraculous Conformist," 1666), gives the following testimony to GREATRAKES:

> "Proofs that he revives the ferment of the blood.—Mr. BROMLEY'S brother of the Upton-upon Severne, after a long quartane ague had by a metastasis of the disease such a chillness in the habit of the body that no clothes could possibly warm him; he wore upon his head many spiced caps and tenne pounds weight of linnen on his head. Mr. GREATRAKES stripped him and rubbed him all over, so that the bath never heated him up as did the hand of Mr. GREATRAKES; this was his own expression. But Mr. GREATRAKES, causing him to cast off all that multitude of caps and cloths, it was supposed that it frustrated the happy effect, for he felt the recourse of his disease in some parts, which rendered the cure suspicious. But as often as Mr. GREATRAKES came and rubbed him he would be all in a flame againe for half an hour. The experiment whereof was frequently practiced for five or six days at Ragly."

GREATRAKES himself speaks of his more violent curative exertions making him very hot. But only occasionally had he to labor so vehemently. His eye (the glance of which had a fascinating effect on people of a nervous organization) and his fantastic ticklings usually sufficed to produce the results required.

The fame of the healer spread far and wide. Not only from the most secluded parts of Ireland, but from England, the lame and blind, the deaf, dumb and diseased made pilgrimages to the Squire of Affane. His stable, barn and malthouse were crowded with wretches imploring his aid. The demands upon his time were so many and so great that he set apart three days in the week for the reception of patients and on those days from six in the morning till six in the evening he ministered to his wretched clients. He took no fee.

He did not profess to be able to cure everyone. An adverse influence such as the sins of a patient or his want of faith sufficed to counteract the healing power. GREATRAKES could affect only those who were susceptible. The people of Warwickshire crowded by thousands to him and he touched, prayed over and blessed them and sent them away rejoicing. From Rugby he went to Worcester, at the request of the lord mayor and aldermen of Worcester, and from Worcester he was carried up to London. Lord ARLINGTON commanded him "to appear at Whitehall and tumble in his particular fashion" for the amusement of CHARLES II. A man who could cure gout by a touch would have been an acquisition to the court which then ruined English manners. Fashion and wary opulence laid their offerings at his feet. For a time he ruled from Soho to Wapping. Justice GODFREY gave him rooms for the reception of patients in his mansion in Lincoln's Inn Fields, and thither flocked the mob of the indigent and the mob of the wealthy to pay him homage. Mr. BOYLE (the brother of the Earl of Orrery), Sir WILLIAM SMITH, Dr. DENTON, Dr. FAIRCLOUGH, Dr. FABER, Sir NATHANIEL HOBART, Sir JOHN GODOLPHIN, Dr. WILKINS, Dr. WHICHCOT and Dr. CUDWORTH were among his most vehement supporters of the sterner sex. But the majority of his admirers were women. VALENTINE GREATRAKES, as the lion of the season, performed with wondrous results on the prettiest or most hysteric of the ladies present. His intimate friends held that the curative property that came from him was a subtle aura effulgent and of an exquisitely sweet smell that could only be termed the divine breath. According to Dr. HENRY STUBBE:

> God had bestowed upon Mr. GREATRAKES a peculiar temperament or composed his body of some particular ferments, the effluvia whereof being introduced, sometimes by a light, sometimes by a violent friction, should restore the temperament of the debilitated parts, reinvigorate the blood and dissipate all heterogenous ferments out of the bodies of the diseased by the eyes, nose, mouth, hands and feet. I place the

gift of healing in the temperament or composure of his body because I see it is necessary that he touch them. Besides, the Right Honorable Lord CONWAY observed one morning, as he came into his lordship's presence, a smell strangely pleasant as if it had been of sundry flowers, and demanded of his man what sweet water he had brought into his room he answered none, whereupon his lordship smelled upon the hand of Mr. GREATRAKES and found the fragrancy to issue thence, and examining his bosom he found the like scent there also. Dean RUST gave similar testimony, and "Sir AMOS MEREDITH, who had been Mr. GREATRAKES' bedfellow, did the like,"

VALENTINE GREATRAKES' triumph was, however, of short duration. His professors were made the butt of ridicule, to which his presence of mind and volubility was unable to respond with effect. His enemies asserted that his system was only a cloak under which he offended the delicacy of virtuous women and roused the passions of the unchaste. His conversation was represented as compounded of the blasphemy of the religious lunatic and the blasphemy of the obscene profligate. His boast that he never received for his remedial services was met by a flat contradiction to the effect that he received £500 at a time from one individual. The last accusation was never absolutely disproved. The tide of slander was too strong for him. He retired to his native country. Of his sincerity at the outset of his career as a "healer" there can be little doubt. In many respects GREATRAKES resembled the paranoiac "SCHLATTER the Healer," who died a victim to a self-imposed journey during a forty-day fast and was later personated in Chicago by "Rattlesnake Dick," whom Dr. RAUCH more than once drove from Illinois.

What is to be regretted in the Chicago Physicians, Club discussion is that men without medical education and judicial training as to the value of evidence were permitted to speak with authority on a subject as to whose merits experience has demonstrated evidence like theirs to be totally valueless. The invitation, even though rescinded, to a "healer" (notoriously driven from Omaha on excellent legal grounds, by the health authorities) was especially to be regretted. Every newspaper in Chicago exploited this invitation in a way that can not fail to add to this man's dupes.

THE EVILS OF TEA-DRINKING.

In these days of Tea-worship it is well to call attention occasionally to the deleterious effects of the excessive use of this beverage. In their ardent advocacy of the "cup that cheers but not inebriates," the apostles of temperance are too prone to forget that there are other intemperances than alcoholic ones, and of these none is more vicious than the pet vice of refined and polite society, tea-debauchery.

In former years the tea-drinkers were usually to be found among nervous old persons. The association of the fidgety old maid and her cup of tea is proverbial. In the present day the temptation of tea-tippling is persistently offered to us from childhood, and nearly every one is more or less addicted to its use. The fashionable afternoon tea has done much to extend and perpetuate the vice. Otherwise sensible and temperate men and women will actually indulge in tea-debauchery to the extent of as much as a dozen cups during the social duties of a single afternoon. Such excess is not generally the result of wilfulness or pernicious desire, but is due to the innocence of the baneful results of the practice, and is thus capable of correction by a campaign of education.

The manner in which the tea-habit has increased is alarming; it is fast becoming universal. It almost seems that soon only those already addicted to some other form of intemperance will form the abstemious class. Tea is drunk at all hours, with food and without, and is taken hot and cold. There is some excuse for the popularity of the hot infusion. In common with other hot beverages it is very acceptable as a stomachic and general stimulant, but it is the heat and not the infusion that stimulates. A cup of hot bouillon will always prove as agreeable and more nourishing and stimulating. No excuse can be found for the senseless habit of drinking the usually harmful iced tea. It is simply an expression of the natural perversity of human nature when given up to a pernicious habit; unsatisfied with the excess in its ordinary form, some new means, without reason or advantage, are devised for its more elaborate practice. In warm weather many other cold beverages are better. Unless excessively sweetened, lemonade, orangeade, etc., are vastly more palatable and certainly harmless. Another folly of the tea-drinker is dilution of the infusion with milk, and further perversion with sugar. The ill effects of tea-drinking are sufficiently plenteous without the addition of the large amount of sugar taken daily, cup by cup, by a tea devotee, in itself quite sufficient to cause obstinate gastric derangements and their manifold complications.

Tea leaves contain from 2 to 4 per cent. of an active principle variously called thein, caffein and guaranin, a volatile oil giving odor and flavor, and tannin or tannic acid in the proportion of about 15 per cent. The alkaloid is found in combination with the tannic acid. Fortunately, since the establishment of rigid tea inspection, metallic adulterants, such as lead, formerly used to color black tea, need not be considered. Ordinary tea-drinkers simply infuse the leaves with hot water for a short time and in this manner the alkaloid and the aromatic elements are extracted without any undue proportion of tannin. In many households, however, tea is allowed to stand in the pot, either on the table or on the stove, or is actually boiled; in such a case a large proportion of the harmful tannin is taken up by the infusion. The least injurious beverage is that prepared by infusing the leaves with boiling water for a very short time and immediately pouring the prepared infusion away from the leaves and sediment.

The deleterious effects of tea are in some degree due to the alkaloids, which when taken in constant or excessive doses produce insomnia, restlessness, mental depression and general nervous derangement. Occasional small doses act as cerebral stimulants; poisonous doses may produce great prostration and death. However, the greatest injury of tea-drinking is due to the astringent action of the tannin ingested; what may be called a tanning of the sensitive mucous membrane and its contained glands along the whole gastrointestinal tract is gradually effected. This leads to a loss of sensibility to food stimuli, imperfect secretion of the digestive elements and insufficiency of intestinal movements, resulting at first in flatulence and chronic constipation and ultimately in obstinate indigestion and its associate and consequent evils. It is true that occasionally a cup of hot tea does stimulate digestion, but it is the heat that stimulates and not the alkaloid.

Excessive coffee-drinking is also an obnoxious habit, although in a less degree than tea-drinking. Dyspepsia, insomnia, cardiac derangements and other ills are laid at its door. On account of the identity of their alkaloids there has been a general disposition to consider tea and coffee the same in their physiologic effect. This idea is erroneous, as the alkaloids are not the only constituents of these substances. Exclusive of its alkaloids, coffee contains aromatic and other agents which render it a stimulant to the whole digestive tract—sialogogic, stomachic, carminative, deodorant, and mildly laxative. Tea has no such auxiliary effect on the digestion, and in constant and excessive quantities impedes and destroys it. In addition coffee has been proven to be a more prompt and efficacious nerve restorant.

While protesting against the pernicious use of either substance as a daily beverage, from a medical standpoint, our preference is emphatically for coffee. Contrast the vigorous, refreshing odor and flavor of a good cup of coffee with the delicate fragrance and insipid taste of even a high grade tea; contrast the clear complexion and general physical aspect of the individual whose morning meal is a bowl of diluted coffee and who takes his after-dinner cup, with the nervous, emaciated, habitually constipated dyspeptic whose "eye opener" and "night cap" is tea, and all reason for argument as to our preference ends.

CORRESPONDENCE.

Medical Law in Wisconsin.

Milwaukee, Oct. 26, 1897.

To the Editor:—In the article on "National Medical Legislation," by Dr. Greeley, in the Journal, October 23, the Secretary of the Wisconsin State Society is quoted to the effect that we have no efficient medical law in the State. That was undoubtedly true when Dr. Greeley got his information, but it is not true now. We have a law which has been in operation several months and is working well. The law established a State Board of Medical Examiners. A diploma from a recognized medical school or satisfactory examination before the Board is required.

My impression is that Dr. Greeley's article is incorrect as regards Indiana. I am quite sure that this State also has recently enacted a very efficient law.

Very truly yours, Gilbert E. Seaman, M.D.

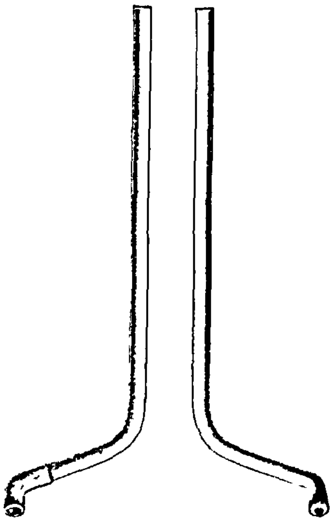
NEW INSTRUMENTS.

ORAL RIGHT AND LEFT EUSTACHIAN CATHETERS AND TENT HOLDERS.

BY EPHRAIM CUTTER, M.D.
NEW YORK.

Experiment has shown that the Eustachian tubes have three angles each of 45 degrees, viz.: 1. Upward from the horizontal pharyngeal plane. 2. Outward right and left from a vertical antero posterior medium pharyngeal plane. 3. Backward from a medium transverse pharyngeal plane.

It is evident that if these angular measurements are correct for the average Eustachian tubes, the catheters for them must conform to these angles. Again, the access through the mouth behind the soft palate is freer and easier than through the narrow nares with sensitive cavernous erectile tissues on the turbinated bones and with a vomer, all which often are irregularly formed, placed and twisted, hindering facile movements to the catheters, Eustachian.



1. Oral catheter for left Eustachian tube. 2. Oral tent holder for right Eustachian tube.

Again, if the aurists are rhinologists, the mirror will allow "them" (him or her) to see the catheter enter or entered into the Eustachian tube, so that its penetration is proved by sight. With these contrivances it is hoped that operators will find access to the Eustachian opening better than with the conventional catheter which does indeed turn upward and outward but not backward.

Prof. J. Solis Cohen, of Philadelphia, recommends that patients have their own oral catheters. The material is silver or German silver.

Of course these angles will not suit all cases, as it has been found that the Eustachian orifices vary. But when the catheters are introduced *per os* it is easy to adjust them to these variations, which adjustment is impossible when the catheter enters through the nares.

Some years ago the writer made oral Eustachian catheters somewhat on these angles but they were defective because they did not have in addition the upward 45 degree angle which the present models submitted possess.

A New Transportable Medical Illuminator is described in the *Jour. Méd. de Paris*, which is merely a piece of platinum "moss" set in the center of a reflector and attached to the ordinary Paquelin thermocautery in the place of the knife. The illumination produced is said to equal that of quite a strong electric light. The thermocautery apparatus can be substituted by a still simpler contrivance, a tube containing a sponge moistened with kerosene, connected with a Richardson bulb and cock.

Pendulum Apparatus for Stiff Fingers and Wrists.—It has been six years since Krukenberg first suggested applying the principle of the pendulum to an apparatus to correct stiff articulations. Nebel has now perfected a small instrument for the purpose which accomplishes the desired result with astonishing rapidity and ease. It is attached to a small board clamped to the edge of a table, on which the hand rests, with the pendulum swinging freely below. It can be adjusted to any size and to any part of the hand or wrist. It is described in full with four cuts in the *Ztschrft. f. Orthop. Chir.*, Vol. v, No. 1. Nebel states that patients who used to resist and scream at all his manual attempts to mobilize their joints, now accomplish it alone, with this simple little apparatus, in an incredibly short time.

The Wire Saw in Trephining.—The JOURNAL quoted an article in the issue of September 5, on the advantages of Gigli's wire saw, which stated that for all bone sections except those of the skull, it seems to be an ideal instrument. The next foreign mail brought an article in the *Cbl. f. Chir.* of August 14, by Prof. A. Obalinsky on the technique of trephining based on a wide experience, and the instruments recommended are Collin's crown perforator and Gigli's wire saw. A tongue-shaped flap is cut in the soft parts and raised. Five to seven holes are then made with the perforator, through the entire thickness of the skull down to the hard membrane, two at the base of the flap and one at the tip, with the rest regularly arranged along the sides. The membrane is detached from the skull with a fine elevator and the wire saw introduced at one hole and passed through and out at the next, held in a Deschamps needle, a curved canula or an ear sound. There is no jar, no traumatism, and the bone is cut clean and exactly where required close to the root of the broad flap, which rapidly heals into the tissues when replaced.

PUBLIC HEALTH.

Bicycle Accidents 10 per cent.—Out of 4,000 claims reported by the Ætna Life, 981 were due to falls, 481 carriage and wagon accidents, 413 bicycle accidents, 264 cuts, 194 falling of heavy articles.

Health Association Names Officers.—The American Public Health Protective Association elected the following officers: President, Charles A. Linsley of New Haven; vice-presidents, Benjamin Lee, Philadelphia, and John C. Schrader, Iowa City, Iowa; secretary, Henry C. Probst, Columbus, Ohio; treasurer, Henry C. Holton, Brattleboro, Vt. Ottawa was chosen for the convention of 1898, and Knoxville has put in a claim for 1899.

Instruction in State Medicine.—Hamline University of Minneapolis, Minn., as per catalogue for 1896-7, has established a chair of preventive and legal medicine and medical insurance. C. A. McCollom, M.D., head physician Modern Woodmen of America, is the lecturer. The medical branch of the above university is known as the College of Medicine (Minneapolis College of Physicians and Surgeons). We congratulate the institution on this advanced movement.

On Noise Nuisances Dangerous and Detrimental to Health.—Several letters have lately appeared in the daily newspapers, one of which made remarks as follows: The nerves of the ear are the most sensitive of the whole body, except those of the eye. Every harsh sound which strikes the ear throws the particles of the brain into commotion. This incessant vibration caused by the incessant discords of a city like New York does much to impair health. It may not be noticed by many who have grown used to it, or as Josh Billings would have said "become manured to it," but whether they notice it or not their brain matter is vibrating in unison with every harsh noise that strikes their ears. In many diseases, especially the diseases incident to brain work, discordant noises are not merely disagreeable. They are deadly. The Board of Health knows this. It also knows that a very large part of the population of New York is doing indoor work and is liable to the nervous troubles incident to it.—*Public Health Journal.*

On the Milk Supply of Cities.—Among the papers read before the National Conference of Mayors and Councilmen, held at Columbus, Ohio, during the last week of September, was one on "The Influence of a Pure Milk Supply on the Death Rate of Children," by Nathan Strauss, of New York, the founder of the depots for the supply of sterilized milk to the poor. In the course of it, he said: "There is practically no milk delivered for general consumption in cities that is fit to be fed in its natural state to young children." After having given a large number of mortality statistics and outlined the work done by him in establishing pure-milk stations in the City of New York, he went on to say: "I think I have fairly demonstrated the proposition that many thousands of infant lives are annually sacrificed by the neglect to supply, for the nutriment of children, milk which has been sterilized. I hold that neglect to be criminal, and I leave it to you to fix the responsibility for it. We punish murder with the penalty of death, and yet we allow murder to be committed by the wholesale in every populous community of this land, with no thought of its punishment and little thought of its prevention."

Violent Deaths in Great Britain in 1896.—Some interesting statistics have recently been printed in London relative to deaths by accident in Great Britain. From these figures it appears that while 824 deaths were attributed to railroads in one year, there were no less than 1,054 people killed by vehicles other than railway. Of these, 236 deaths were caused by vans and wagons and 372 by carts. Besides these, 273 deaths are put down as being attributed to horses. The destructiveness of water appears in the item of 2,172 deaths caused by drowning. Lightning killed 15 people and sunstroke 41, while 91 died from exposure to cold. No less than 348 of the male sex were sent to their final account by falling down stairs, and 50 met their doom by tumbling out of open windows. Sixteen people died from football, while the game of cricket is responsible for the demise of three. Two deaths are ascribed to tight boots and one to barbed wire. In the cases of burns, scalds and explosions, English women are more unfortunate than the men. From this source 1,186 females met their death, as against 1,005 men; but when it comes to suicide the men have the call, as 2,052 males shuffled off the mortal coil by their own hands, while only 677 women committed self-destruction.—*Indemnity.*

Sanitation of Dairies.—To make good butter one must have good milk, and this comes only from healthy cows, fed on good sweet pasture or on good sweet grain and other forage, and which have pure water to drink and pure air to breathe. Certain obnoxious weeds, leeks, wild onions, ragweed and others, give the milk and the butter made from it a decidedly bad flavor; so also does damaged, rotten silage, moldy corn fodder or hay, and musty, damaged grain. Impure water has its effect, both on the health of the animals and the quality of the milk. In many pastures are some small [illegible] in which the cows stand during the heat of the day to rid themselves of flies. The water in these becomes filthy and is kept stirred up by the movements of the cattle, and where, as is often the case, it is the only water obtainable, the cows are compelled to drink it. This can usually be avoided by fencing the pond and keeping the cattle out. If this water is needed for the cattle it can be drawn out in a pipe laid on the lower side in trough from which the cows can drink. In a close, crowded and ill-ventilated stable, where there is too little air space for each animal, the air becomes foul from the exhalations, and this affects the milk as well as the health of the animals. The remedy in this case is to provide more room for the stock and better ventilation. The stable should be kept as clean as possible and the cows well bedded and clean. The utmost cleanliness should be observed in milking. All dirt should be brushed from the cow before beginning to milk, and it is best to dampen the udder and flank of the cow to as to prevent the dust and fine dirt from falling into the milk. The milk should be strained immediately after milking and not allowed to stand in the cow stable any longer than absolutely necessary.—*Bulletin United States Department of Agriculture.*

The Opinion of the Quarantine Officer of the Louisiana Board of Health.—Dr. C. P. Wilkinson, formerly President of the Louisiana Board of Health, and at present Resident Physician at the Mississippi Quarantine Station, writes the *Times-Democrat* as follows. His opinion is not only valuable, as being the deliberate judgment of an officer of many years' experience, but from a historic standpoint:

HOW THE FEVER GOT IN.

[From the New Orleans Times-Democrat, Oct. 25, 1897.]

Mississippi River Quarantine Station,
Oct. 23, 1897.

To the Editor of the Times-Democrat.

In the summer of 1874 yellow fever broke out at Fort Barrancas, Fla., on the west shore of the entrance to Pensacola Bay. The disease rapidly spread in the garrison. Dr. Sternberg, post surgeon of the fort and now Surgeon General of the Army, having a very severe attack. Rigid investigation into the source of the disease failed to locate its origin. Some time after the subsidence of the epidemic at that post it was learned that a bark sailed into the entrance to the bay one summer evening and at dusk cast anchor at no great distance from the fort. After dark two soldiers from the garrison clandestinely visited this bark, making some purchases, remaining on board some hours. At daylight in the morning the bark sailed on to the quarantine station, further up the bay. This bark was from Havana, and had on board at the time several of the crew ill with yellow fever. The two soldiers who had gone on board were the first taken ill with yellow fever at the fort.

In 1886 yellow fever appeared at Biloxi, Miss. The origin of the case was undeniably traced to communication with infected vessels at the Ship Island Quarantine Station. These two incidents are cited to show how easily contagious diseases may be carried from infected premises, and also to show that notwithstanding the discipline of the army and of the national quarantine service how easily either or both may be evaded.

In 1887 the citizens of Biloxi and of other points on the Mississippi Sound urged upon their Congressmen the request that the Ship Island Quarantine Station should be removed to some other more remote locality. The reasons that this removal should be caused were patent to all, the principal one being the impossibility of preserving isolation of vessels in quarantine at that place. To one familiar with the Sound coast this argument was insuperable. The Mississippi Congressmen in their efforts to secure the passage of the act of Congress necessary were wisely and ably seconded by the then Surgeon General of the Marine-Hospital Service, Dr. John B. Hamilton, who readily saw the necessity of such removal. Congress passed the act in 1888. Surgeon General Hamilton appointed a commission to select a better site for the station. He appointed Surgeon W. H. Hutton, after whom the mechanics' detention camp at Avondale is now named. Assistant Surgeon H. R. Carter, now in New Orleans, both of the Marine-Hospital Service; Capt. Parker of the coast revenue cutter; and, to show his deference to the people and the interests of the vicinity, invited the people of Biloxi to name the fourth, and the Louisiana Board of Health to name the fifth member of the commission. Dr. Maybin was named by Bilox and I was named by our Board of Health. After carefu examination of the various possible locations for a quarantin station the northern end of Chandeleur Islands was unani mously selected by this commission as being admirably adapte to the purpose. The location was accepted. A quarantin plant was there erected.

Ship Island Quarantine Station was abandoned, and th buildings being considered infected, were burned. In 1893 terrible storm swept across lower Louisiana and Mississippi The Louisiana Quarantine Station, erected at about the sam time as the Chandeleur Island station, because of superior con struction, passed through the hurricane without loss of lif and with little damage to property, and was at work disinfect ing vessels the next day; whereas the Chandeleur Island Sta tion, because of inferior construction, for which the nationa government is responsible, was demolished, and the next da nurses, patients and stewards were floating about the Gulf o Mexico, drowned and killed in the wreck.

The following year the Marine-Hospital Service moved th quarantine station back to Ship Island, in spite of the wishe and in defiance of the protests of the inhabitants of the Soun coast, and with amazing and fatal disregard of the elementar principle necessary for a properly located quarantine station *i. e.*, the possibility of isolation.

From Ship Island Quarantine Station has come to th Southern country this visitation of yellow fever. Dr. Guitera states that this visitation, like all our visitations, has com from Cuba. It is a matter of record that the widespread ep demic of 1847 was brought from Vera Cruz by our returnin soldiers from the Mexican war. The fever of 1867 was brough from Mexico to Indianola and thence to New Orleans.

The following showing the arrival of vessels at Ship Islan Quarantine Station from June 11 to August 4 of this year wil furnish much food for reflection. I have excluded the arrival *previous to* and *subsequent to* the *first* and *latter, respectively* of the above dates, and I have also excluded all arrivals excep those from badly infected ports:

ARRIVALS AT SHIP ISLAND QUARANTINE FROM CUBAN PORTS.

June 11.—Schooner Oscar G., from Havana.

June 12.—Brig Estella, from Havana; one case yellow feve in quarantine.

June 12.—Schooner Eleanor, from Havana; five cases inter mittent fever in quarantine.

June 14.—Schooner Iolanthe, from Cienfuegos.

July 7.—Schooner H. J. Powell, from Havana.

July 11.—Schooner Florence and Lillian, from Sagua.

July 14.—Schooner James Slater, from Sagua.

July 19.—Schooner Pickup, from Cardenas.

July 20.—Schooner Charles Fowler, from Calbarien.

August 4.—Schooner Eleanor, from Havana.

The sanitary inspector, United States Marine-Hospital Service, stationed at Havana, writes under date of June 19, 1897, to the Surgeon General:

"American schooners laden with lumber from the ports in the South still continue to come to this port and they invariably go to Talapiedra wharf, where they remain seven to ten days. There are two such vessels at that wharf at present writing."

All summer long the above is repeated from Havana nearly every week to the Surgeon General. Talapiedra wharf has long been considered the most dangerously infected place in all Havana. All the officers of the quarantine service on the lower Mississippi are very keenly alive to this fact, and pay very particular attention to vessels from that locality. All practical quarantine officers know very well that vessels from that wharf are always very dangerously infected, and that isolation and disinfection must be extreme to treat them successfully. Now, where do these American schooners, laden with lumber, going to Havana, sail from? Ocean Springs, Scranton, Ship Island, the Mississippi Sound coast! Who are they manned and officered by? Residents of the Sound coast! That the men on board these vessels and their friends from the shore hold liberal communication both before and after disinfection is a foregone conclusion to everyone who knows the number of boatmen, fishermen and pilots along the Sound coast, and also knows of the quantity of smuggled goods, and of the rumors of organizations of smugglers who sail in and about the shipping in Ship Island harbor. Isolation is essential to the success of any quarantine station. Isolation can not be and has not been maintained at Ship Island quarantine.

Another port very highly infected, Colon, has sent infected schooners to Ship Island Quarantine Station. Arrivals at Ship Island Quarantine from Colon:

July 13.—Schooner Aloha, two cases malarial fever; in quarantine.

July 25.—Lena R. Storer, two cases malarial fever; in quarantine.

August 7.—Schooner Palos, three cases malarial fever; in quarantine.

It will be observed that everyone of these schooners had two cases of fever on board while in quarantine. If the doctor at Ship Island made a mistake in diagnosis, the disease may have been yellow fever, and the germs may have reached the coast from the Palos, the Storer and the Aloha.

The yellow fever prevailing at Colon this summer is of a very highly contagious nature. It came originally from Guayaquil to Panama, infected nearly every vessel trading at Panama; crossed to Colon and spread from there to Bocas del Toro, Port Limon, to Kingston, Jamaica, to Ship Island and to the Southern States. Early in the summer, vessels at Colon began losing passengers and men from yellow fever. Cases were dropped from vessels sailing away from Colon at Barbadoes, at Tortugas, at New York. Vessels coming here reported the loss of passengers at sea who had been on shore at Colon, with symptoms which left no possible doubt in my mind they had died of yellow fever. How many other cases occurred of which I know nothing I can not say; they are probably numerous.

From every quarantine station reporting sickness on vessels from Colon, all save one reported yellow fever. The sole exception was the Ship Island Quarantine Station. Three vessels at that station from Colon, a highly infected place, with seven cases of fever on board! Three of those lumber-laden schooners laying seven and ten days in port and everybody on shore! It is almost certain that these seven were yellow fever. I say this with no uncharitable feeling for my brother physician in charge of that station; but the logic of facts points almost inevitably to that conclusion. Ask any practical seaman, any observer of human nature, if the friends and relatives of crews of vessels in quarantine, only ten miles away, will seek an interchange of visits! Visits to home, to loved ones, for gain in barter and trade; visits arranged by the grape vine telegraph or a code of signals; but visits which have brought to our Southern country countless cost in money and untold misery and woe and death. Respectfully,

C. P. Wilkinson, Resident Physician.

The Quarantine Methods a Constant Menace to the Mainland.—Dr. J. W. Belden of New Orleans, a homeopath practitioner of good standing, sends the following statement to the *Daily Picayune*, which, if true, throws a side light on the methods of quarantine at Ship Island:

"I did go over to Ship Island during the month of May last and contracted a case of yellow fever. I usually spend my vacations every summer over at Biloxi and a place over there. I am fond of piscatorial sports and as the fishing in Ship Island harbor is fine, I usually go over there to fish Spanish mackerel. During the month of May I made four excursions over to Ship Island and on the occasion of my last visit, late in the month of May, I met two of the nurses from the quarantine hospital and they informed me that they had several yellow fever cases in the hospital. I asked them if they did not fear spreading the disease among the people who were present on the wharf where the bumboat from Biloxi usually landed. The nurses laughed and said there was no fear as they had had a bath just before they joined the party of excursionists, but I was at the time of the opinion that this was not sufficient, as their clothing had not been disinfected. I said nothing at the time and a day or two afterward came to this city.

"Within nine days after this episode I was taken suddenly with a chill, my head ached and I suffered from severe pains in the back accompanied with nausea, although just before this I had been in perfect health. My temperature went up to 104 degrees and I sent for Dr. Charles R. Mayer. I had never had any experience in yellow fever cases, and neither had Dr. Mayer, but for two days I had a very high fever. After that terrible prostration followed and there was a total collapse.

"Six days after I was taken sick I returned to Biloxi, and, meeting Dr. Mayer, he remarked that my eyes were very yellow and said that my liver was in a fearful state and advised me to take a remedy. Since then I have had experience in yellow fever cases, and I am convinced that I had a Simon-pure case of yellow fever, and that I received the infection at Ship Island. I had all the symptoms, the headache, the backache, the high temperature, the gastric disturbance and the prostration which invariably follows an attack of yellow fever."

Dr. Belden said that the quarantine regulations at Ship Island had been very lax and that there was free communication with the mainland. On one visit which the doctor made to Ship Island, there were fifty-two vessels lying in the harbor waiting to load lumber, and the tug or bumboat made three trips daily from the mainland to the island, carrying a large number of passengers each trip. On the wharf where the tug landed its passengers, the nurses from the hospital as well as the employes, and ofttimes the crews of the vessels, resorted to hear the news of the day or to enter into conversation with the people from the mainland.

Dr. Belden said that he was a very sick man, and, although not being able to diagnose his own case, yet he thought the attack a very peculiar one. Recently he met Dr. Matas and described his symptoms accurately, and then gave him a brief history of the case. Dr. Matas immediately pronounced it a case of genuine yellow fever, and asked Dr. Belden to write up a history of the case and give it to him, which he promised to do. Subsequently he met Dr. E. S. Lewis and made a similar statement to him, and Dr. Lewis concurred in the opinion of Dr. Matas. He thought it was outrageous to put the pesthouse on Ship Island. It was infamous. Vessels come within a mile of the island and the place is frequented by fishermen and visitors from the mainland. There are no restrictions regarding communication with the nurses or employes of the pesthouse, nor yet of the crews of vessels, which, coming possibly from the foreign infected ports, can, and do, spread the disease. He was of the opinion also that the infection was carried in currents of air and would be dangerous even if the nurses did not have any communication with the people.

At the present time he felt better than he had felt in years, and, although he had tended many yellow fever cases since the prevailing fever was declared to be yellow fever, yet he had not been taken sick. He was convinced that he is now immune, for if he had not had yellow fever early in the season, he says he feels satisfied that he would have taken it from one or the other of the patients whom he attended. He says that he had patients who had the black vomit and he was covered with the vomit, yet he had not taken the fever, which corroborated his opinion as to the nature of the disease which he had in June last.

The only thing about it that was strange was that none of his family caught the infection from him. He said that he was very liable to catch fevers or any other prevailing disease and is usually among the first to take any sickness going around, hence he feels sure that he had the yellow fever and as far as he knows it was the first case in this city this year.

He earnestly advocates the removal of the quarantine from Ship Island to some more remote locality, and one not so easily accessible as is Ship Island.—*New Orleans Daily Picayune.*

Yellow Fever.—Our record last week closed with October 26. Since that date the dispatches have reported as follows: October 27, New Orleans, 52 new cases and 11 deaths; Biloxi, Miss., 12 new cases and 1 "suspicious" case; Scranton, 9 new cases and 1 death; Atlanta, Ga., 1 new case; Memphis, Tenn., 5 new cases and 2 deaths; Cayuga, Miss., 2 new cases, and 1 new case near Raymond. October 28, New Orleans, 65 new cases and 8 deaths; Clinton, Miss., 1 new case and 1 death; Edwards, Miss., 5 new cases; Cayuga, 1 new case: Mobile, Ala., 6 new cases and 4 deaths; Whistler, Ala., 1 death; Flomaton, 4 new cases; Montgomery, 9 new cases; Lapine, 1 death; Baton Rouge, La., 1 new case; Bay St. Louis, Miss., 12 new cases; Memphis, Tenn., 8 new cases and 2 deaths. October 29, New Orleans, 5 new cases and 5 deaths: Jackson, Miss., 10 new cases and 1 death; Mobile, Ala., 5 new cases and 3 deaths. October 30, New Orleans, 31 new cases and 6 deaths; Edwards, Miss., 1 new case: Nittayuma, 1 new case; Mobile, 9 new cases and 2 deaths. Heavy frosts are reported in Mississippi, but none at New Orleans. October 31, New Orleans, 35 new cases and 5 deaths, making a total of 1,706 cases with 170 deaths in that city; Montgomery, Ala., 6 new cases; Mobile, 11 new cases; Jackson, Miss., 2 new cases; Clinton, 2 new cases; Biloxi, 3 new cases; Memphis, Tenn., 3 new cases. November 1, New Orleans, 38 new cases, 12 deaths; Mobile, Ala, 9 new cases; Montgomery, 1 new case, 1 death; Bay St. Louis, 6 new cases; Biloxi, 6 new cases, 1 death; Durant, 1 death; Edwards, 1 new case; Memphis, Tenn., 2 new cases, 1 death; Nittayuma, Miss., 3 new cases, 1 death; Pascagoula, 3 new cases: Scranton, 3 new cases, 1 death. November 2, New Orleans, more hopeful on account of prevailing cooler weather. 33 new cases. 6 deaths; Montgomery, Ala., 2 new cases; Greensboro, 2 deaths; Speigners, 1 suspicious case among the State prisoners; Memphis, Tenn., 3 new cases, 2 deaths.

A Plea for a Department of Public Health.—At a meeting of the board of trade and transportation, held in this city on October 13, Dr. Warren E. Anderson of Pensacola, formerly a member of the Florida State Board of Health, read a paper advocating the creation of a United States Department of Public Health independent of the treasury, war, navy or any other department of the national government. He said that "uniformity of quarantine laws and regulations can be obtained only through federal control. This is greatly to be desired, as it alone can prevent the wild, reckless and absurd shotgun quarantines, allay panics, restore confidence and prevent commercial rivalry of seaports, in their greed for trade, from endangering the public health of the entire country. The State should be represented in the national health councils, and the laws there made should be executed through this representative. All sanitary or quarantine officials should be residents of the State whose health interests they are to protect, and no official should be appointed in the way of political preferment, but only upon personal qualifications approved by commercial organizations, where such exist. The foreign tonnage tax should be applied to the purposes of quarantine, and thus relieve the people and the commerce of the country from the heavy and unjust burdens laid upon them by the present system of health protection. The marine-hospital service should be remanded to the performance of that duty which it has so faithfully done for the past one hundred years—the care of sick and disabled American seamen. A failure upon the part of the Federal Congress to provide the citizen with adequate protection against the invasion of imported disease and the prevention of the recurrence of such scenes as are being enacted along the lower Mississippi Valley and the gulf coast, will be regarded as a national calamity."—*Medical Record*, October 30.

National Bureau of Health.—According to the *Medical Record*, Dr. A. Jacobi made the following motion at the recent meeting of the New York Academy of Medicine, October 21, which was carried unanimously:

"That the New York Academy of Medicine authorizes its president to call the committee appointed years ago, and never discharged, and direct it to resume its interrupted labors and to report to the Academy of Medicine, for presentation to the Congress of the United States for adoption, the old bill, or a new bill, or to support a proper bill offered by great medical or commercial bodies, contemplating the centralization under the National government of the means to protect efficiently the health of the American people against the importation and dissemination of contagious diseases."

SOCIETY NEWS.

The Sixth International Congress against the abuse of alcohol completed its labors at Brussels, September 3. Addresses were presented by Forel, Lejeune, L. Frank, Miss Gray, Destrees, Mahaim and others, all leaders in the struggle against the abuse of alcohol. The importance of an active propaganda was strongly emphasized as the first stage in the work, arousing and educating public opinion. The second stage is legislation providing for compulsory official education in regard to the evils of alcoholism, and the third stage is legislation dictated by an enlightened and convinced public opinion. Certain nations (Norway), after passing through all these stages, are now completely freed from the scourge. Others (Switzerland, Germany), are entering the legislative stage, to which Belgium is also aspiring. The advisability of a constant literature on the subject was recognized, and the suggestion made that, instead of founding new organs, special editions of some established organ might be issued as demanded. The paralyzing effect of alcohol, demonstrated by new instrumental tests, was presented in a forcible light. A colored African bishop portrayed the frightful ravages caused among his compatriots by the impure alcohols sold to them by certain European nations. At the banquet wine, cider and beer without alcohol were served as beverages and extolled for their extremely nutritive properties and agreeable flavor, although too sweet, perhaps, to suit the general taste. The complete report of the proceedings can be obtained from the Secretary, Dr. de Vaucleroy, 290 Avenue Louise, Brussels. The next Congress will convene at Paris in 1899.

The New York State Association of Railway Surgeons will hold its seventh annual meeting, New York City, November 16. The following papers are announced: "Neuropsychic Manifestations Subsequent to Fractures or Dislocations," by Thomas H. Manley, New York; "A Review of So-called Traumatic Neuroses," by W. B. Outten, St. Louis; "Alleged Injuries," by W. J. Herdman, Ann Arbor; "Medico-Legal Features," by Hon. L. L. Gilbert, Pittsburg; An Address, by Hon W. H. Baldwin, Jr., Pres. L. I. R. R.; "Medical Expert Testimony," by Clark Bell, New York; "Internal Injuries," by C. B. Herrick, Troy; "Primary Dressings," by C. S. Parkhill, Hornellsville; "Primary Hospital Treatment of Those Injured *en Masse*, by John F. Burns, Brooklyn; "Asepsis in Emergencies," by W. C. Wood, Gloversville; "Some Newer Antiseptics, Their Uses in Railway Surgery," by F. A. Palmer, Mechanicsville; "Intestinal Toxemia as a Factor in Retarding the Healing of Wounds," by Harvey P. Jack, Canisteo; "Injuries to the Nervous System in Railway Accidents," by Charles R. Phillips, Hornellsville.

BOOK NOTICES.

Bulletin of the Harvard Medical Alumni Association, No. 11. Paper, 76 pages. Boston: 1897.

This volume is a report of the seventh annual meeting, held in Boston June 29, 1897. The typography and workmanship, with the excellent paper, combine to make this a very attractive number.

Transactions of the Michigan State Medical Society for the year 1897. Cloth, 528 pages. Grand Rapids: 1897.

This is Vol. xxi of the "Transactions" and contains various reports, addresses on surgery, gynecology and medicine, the constitution, list of members and list of the medical societies in Michigan. In the Section on Medicine and Obstetrics there are fourteen papers; in the Section on Gynecology and Abdominal Surgery, eight, and in the Section on Surgery, fifteen papers, printed in full, in many cases with discussion. The volume is a credit to the Society, both in contents and workmanship, and the various papers contain much of value to the practitioner.

Seventeenth Report of the State Board of Health of Wisconsin. Paper, 52 pages. Madison: 1897.

The report contains the laws relating to vital statistics, transportation of the dead, adulteration of foods, drugs, bakeries, etc. The secretary, U. O. B. Wingate, M.D., contributes "Some Thoughts Relative to Sanitary Legislation." "Formaldehyde as a Disinfectant" is also considered and a "Report of the Committee of the American Public Health Association on the Cause and Prevention of Diphtheria."

The Vital Statistics of Massachusetts, 1856-95. Paper, 811 pages.

This is from the "Twenty-eighth Annual Report of the State Board of Health of Massachusetts" for 1896 and contains much of value concerning vital statistics and in handy form.

NECROLOGY.

Lyman T. Collar, M.D., Hingham, Wis., October 22, aged 52 years.——Jacob Hay, M.D., York, Pa., October 18, aged 54 years.——John May, M.D., New Holland, Ohio, October 20, aged 82 years.——A. M. Ross, M.D,, Montreal, October 27, aged 65 years, one of the founders of the Society for the Discussion of Physiologic Knowledge in 1881.——George F. Mather, M.D., Shenandoah, Pa., October 22, aged 57 years.

MISCELLANY.

Bureau of Clinical Medicine and Surgery.—There has been established in Philadelphia, at the northeast corner Thirteenth and Locust Streets, a bureau of clinical medicine and surgery, with telephone connection, in charge of a clerk, whose duty it shall be to receive and post notices of the daily work in the branches of surgery and medicine taking place at the different hospitals. This can be accomplished by notice to the bureau by postal card or telephone. By this means it is hoped that the numerous physicians who visit the city may be able to take advantage of the great clinical facilities afforded by the hospitals of Philadelphia. A physician calling at the central bureau is thus able to ascertain what medical or surgical work may be going on during that day in any one of the different hospitals. Physicians visiting Philadelphia are cordially invited to use these facilities.

The Iodin Reaction in the Blood has a differential value, according to M. Goldberger and S. Weiss, who have demonstrated that it indicates a suppurating process. In case of progressing or active suppuration the leucocytes stain brown with the Ehrlich iodin mucilage test: Iodi subl. 1; potass. iodi., 3; aq. dest., 100; gumm. arab., q. s. ad consist. syrup. The polynuclear neutrophilous cells are almost exclusively affected, and the intensity depends upon the rapidity of the abscess formation. The reaction disappears after incision and as the abscess becomes cold. The test is not reliable when there is concomitant pneumonic infiltration or after prolonged narcosis.—*Wien. Klin. Woch.*, June 24.

Hot Air Cauterization.—Holländer of Berlin applies hot air at 300 degrees C., directly to the skin, in the treatment of lupus, using a small apparatus which he can regulate at will. The effect is not mechanical, like the Paquelin, and there are no contractions in the scar. As the heat is applied the sound tissue contracts in complete ischemia, while the lupus tissue, in which the vessels are destroyed, is unable to contract and thus receives the full effect of the heat. In the scab formation circulation is restored in the sound tissue, while the necrosed lupus tissue is thrown off. He has been successful in many old, chronic cases with patches on the face as large as a hand, and no relapses in the year since, and he recommended at the Moscow Congress this treatment in high terms, with an interesting demonstration, especially in old and extensive cases.

Railway Accidents.—The statistics submitted show that the number of railway employes killed during the year ending June 30, 1896, was 1,861, and number injured was 29,969. These figures indicate an increase of 50 in the number killed and of 4,273 in the number injured, as compared with the preceding year. The number of passengers killed was 181 and the number of passengers injured 2,873, being an increase of 11 in the number killed and of 498 in the number injured. The number of persons other than employes and passengers killed was 4,406 and the number injured 5,845. These figures include casualties to persons reported as trespassers, of whom 3,811 were killed and 4,468 were injured. From summaries showing the ratio of casualties it is found that for every 444 men employed on railways 1 was killed, and for every 28 men employed 1 was injured. A similar comparison as to trainmen shows that 1 trainman was killed for each 152 trainmen employed and that 1 trainman was injured for each 10 trainmen employed. The number of passengers carried for 1 passenger killed was 2,827,474 and the number of passengers carried for one passenger injured was 178,132. As showing in another way the immunity of passengers from accidents, the report gives ratios based upon the number of miles traveled, from which it appears that 72,093,963 passenger-miles were accomplished for every passenger killed and 4,541,945 passenger-miles for every passenger injured.—*Interstate Commerce Com. Report.*

Hospital Abuses in St. Louis.—It has been stated in the *American Journal of Surgery and Gynecology* that 400 well-qualified physicians in St. Louis are practically destitute. A committee from the St. Louis Medical Society appointed to examine into the abuses of medical charity, reported that the dispensary of the St. Louis Medical College is guilty of treating free applicants who are well able to pay. This dispensary treats over 2,000 cases a week. The committee also found that the dispensary of the Missouri Medical College is the greatest offender against the well being of the medical profession and the community in general by treating free a large number of patients who are well able to pay. It is also stated that many of the members of the faculties of these two colleges are upon staffs of hospitals which employ "runners" to increase their business. It is to be hoped that the exposure by this committee will be followed by some changes for the better in the city, which, next to New York, seems to be the greatest sufferer in this regard.

Treatment of Yellow Fever with Chlorin Water.—Dr. A. Simoes announces that he has reduced the mortality from yellow fever to 8 per cent. in his private practice, and 15 per cent. in hospital cases, by treating the disease with chlorin water, for which he claims marvelous virtues. He asserts that it is the best gastro-intestinal disinfectant, not only destroying the germs but rendering the organism an unfavorable soil for their further virulent development or neutralizing the ptomains. It has a marked tonic effect on the heart and kidneys and acts as an astringent and hemostatic, but its principal value is its specific effect on "black vomit," which is arrested by the first doses. He administers a purgative, then sodium salicylate combined with aconite or antipyrin, followed by quinin, resorting to the chlorin water in the second or third stages and supplementing it with artificial serum in certain cases of anuria. *O Brazil Medico* (September 15) comments rather incredulously on this therapeutic apotheosis of chlorin water, mentioning incidentally that Simoes is a zealous convert to Freire's discovery of the microbe of yellow fever.—"Tratamento da febbre amarella pela agua chlorada," Angelo Simoes, M.D., Campinas. Typ. Besnard Freres; 1897, pp. 101.

Elimination of Bacteria through the Kidneys.—The results of former research (Biedl, Kraus, et al.) demonstrated that microorganisms (staph. py. aur., bact. coli, anthrax bac.), introduced into the veins were eliminated through normal kidneys, commencing to appear in the urine in a few minutes. Also that stimulation of the urinary secretion favored the elimination. Klecki confirms the former statement, but in a series of experiments with smaller amounts of cultures than hitherto used, corresponding more to the natural processes, he failed to discover any favorable effect of increased diuresis on the elimination of the bacteria, even with caffein, theobromin, or 500 c.c. normal salt solution. The beneficial effect of salt solution in infections must therefore be due to attenuation and increased elimination of the toxins. He adds that the kidneys only eliminate a fraction of the total number of bacteria; they may still be circulating in the blood after all renal elimination has ceased. —*Wien. klin. Woch.*, August 26.

The Value of Vibratory and Tremolo Massage should be impressed on every practitioner and student, as Gambara remarks in an article on the subject in the *Gazz. degli Osp. e delle Clin.* of August 1. The indications are the same as for electrotherapeutics in all acute or chronic diseases of the nervous and peripheral system, whenever massage could be applied to advantage. It is remarkable in its curative effect in affections of the ears, of the mucous membrane, nasal, gastric, intestinal, and of the genito-urinary system; also in chronic cutaneous troubles. It is not an empiric treatment, but is based on rational and physiologic grounds, as it acts on the anatomic elements, and promotes the transformations of matter better than any other therapeutic measure, while removing the morbid refuse. He recommends especially Professor Boschetti's small hand apparatus, which transmits a rapid and almost silent rotary movement to an articulated metal rod or flexible cord producing from 4,000 revolutions a minute upward. It can be connected with a gas or electric motor if desired. An eccentric changes the motion from a rotary to a tremolo at will. The rotary or vibratory movement is transmitted to the tissues in parallel planes like waves of sound, and is communicated onward in the same way, while the tremolo affects them like the concentric ripples that spread when a stone is thrown into a quiet pool. The tissues thus feel the effect in every direction, and the massage is much more effective.

A New Centrifuge for Medical Purposes.—There has recently been perfected a centrifugal machine for the rapid examination of urine, blood, sputum, milk, water, etc. The fluids are contained in glass tubes which are rotated horizontally by means of a set of hardened bronze gears having spirally cut teeth. The speeds required vary from 2,000 to 12,000 per minute, hence the spirally cut teeth are a great advantage, as they very materially reduce the friction and noise generated by the rapid rotation and thus increase the speed attainable, also the wearing qualities. The reason for the saving effected, lies in the fact that three teeth always come in contact at once and in a shearing manner, so as to prevent all back lash, etc. The gearing and axles are contained in a circular metal case four inches in diameter and one inch thick. In use the instrument is clamped to the table by a screw clamp. For the precipitation of sediments in urine, the urine is contained in two glass tubes, each having a capacity of 15 c.c. of fluid. One of the tubes is plain and is intended for the collection of sediment for microscopic examination. The other tube has the first 10 c.c. graduated into 100 parts, the 15 c.c. point being also indicated by a graduation. In this tube 10 c.c. of the urine to be examined are placed and 5 c.c. of the proper re-agent to cause the precipitation of the substance which it is desired to determine, is then added. After centrifugation, the substance (chlorids, phosphates, sulphates, albumin, etc.) will be found collected in the distal end of the tube and the per cent. may be read direct from the scale. A neat manual of "Centrifugal Analysis" minutely describing the various methods employed in the examination of blood, urine, sputum, milk, water, etc., is sent free upon request by the Bausch & Lomb Optical Co., Rochester, N. Y.

How to Maintain the Balance of Nitrogen in Nephritis.—In an article in the *Gaz. d. Osp e d. Clin.*, July 25, Prof. E. Maragliano emphasizes the importance of resting the kidneys by reducing the nitrogenous substances ingested, to the lowest amount compatible with non-consumption of the organic tissues. Many have endeavored to determine this minimum, but their failures should not discredit the principle, which is vital. He has solved the problem by individualizing, with careful tests. He begins by limiting the patient to a half liter of milk a day. If the amount of nitrogen eliminated is more than the amount that corresponds to the albuminoids ingested, which is usually the case, it signifies that there has been consumption of organic albuminoids. The quantity of milk allowed should then be increased to add the amount of albumin corresponding to the excess in the nitrogen eliminated. Five days at least, are required for the test, passing from a richer to a poorer alimentation, but two or three are enough when the change is from a poorer to a richer. He supplies the necessary amount of calories (considering 25 calories per kilog. a low average), by adding sugar and rice cooked in milk or in water with fat in the sauce. Every effort must be made to keep the nitrogen ingested within the limits indicated by the test. This minimum represents the maximum of rest that can be conceded to the kidney; it can not be mathematically fixed, but varies from time to time, requires a repetition of the test at least once a month, with daily determination of the density of the urine as a slight guide in the meantime. It is wise to note the fecal with the urinary elimination, but when not practicable it can be approximated by remembering that in normal persons it varies from one-half to one and one-half in twenty-four hours, and the larger amount is more apt to be correct in nephritis. In all acute cases of nephritis the physician will not err if, even without testing, he limits the patient to one-half to one liter of milk a day with 200 grams of rice and 25 to 50 grams of sugar until the acute stage is past. In addition to the above, Maragliano restricts the diet one day in every eight, to a scant liter of milk, and has the patient drink one and if possible two liters of alkalin mineral water, obtaining by this means the combustion of accumulated nitrogenous residue and its elimination, and obviating auto-intoxication, which is usually the cause of death in nephritis.

Infection Through the Air.—C. Flügge reports (*Ztft. f. Hyg. u. Infect.*, Vol. 25, No. 1), the results of much research in regard to the transmission of germs through the air. Dust from matter containing bacteria always consists partially of fragments so minute that they float in the air of a quiet room for more than four hours, and the slightest current of air will waft them about. He also states that tiny drops of moisture containing bacteria pass into the air even in closed rooms from the ordinary manipulations and float for five hours, and are transported by a current no stronger than 0.07 m.m. for a horizontal draught or 0.1 m.m. for an upward current. The dissemination of these transportable drops is of great importance in regard to the secretions of the mouth and nose, especially in case of tuberculosis, influenza, diphtheria, etc. He found by repeated tests that plates of agar become covered with colonies of bacteria at a distance of several yards, from persons speaking loudly and energetically. Coughing produced a still more rapid and abundant colonization, while the plates showed no growth when the person spoke low and quietly. He does not consider dry particles floating as dry dust in the air a serious menace for the infection of wounds during operations, as the staphylococcus aureus and albus in these conditions are not sufficiently virulent to colonize agar plates; all his experiments in this line were negative. But he emphasizes the danger to be apprehended from the drops of moisture disseminated from the secretions of the mouth and nose of the persons present at the operation, as they speak, sneeze or cough. The pyogenic bacteria are frequently found in the mouth of perfectly healthy persons, and decayed teeth are a mine of all sorts of bacteria. These microbes have not been attenuated by drying, but are moist and often extremely virulent. Distance from the operating table does not prevent the germ-laden drops of moisture from reaching the patient or some following case or alighting on the instruments. The patient himself may infect the field by heavy breathing, etc. Mikulicz's "Transcendental Surgery," described page 201 of the Journal (gloves and mouth screens), was inspired principally by these experiments of Flügge, with which he was familiar.—*Cbl. f. Chir.*, October 2.

The Dixon Case.—The decision of the Illinois supreme court in the Dixon case will be disappointing in the extreme, but as it is held to be law, we suppose we will have to make the best of it until the statutes shall afford relief. In the supreme court of Illinois a decision was handed down which is of great interest to physicians and others who may be called upon to give expert testimony in court. It is held by many professional men that they can not be compelled to give a professional opinion without a reasonable compensation, and in support of this they quote that portion of the constitution which declares that no person shall be deprived of property without due process of law. The case in which the decision was handed down is an appeal of Dr. J. Norman Dixon from a judgment rendered against him by Judge Creighton, of the Sangamon circuit court, some time ago, in which it was agreed a test should be made. Dr. Dixon was called to give expert testimony in a damage suit for personal injury against the city of Springfield. He refused to testify unless he was paid a professional fee of $10. Judge Creighton fined him $25 for contempt of court and the case was appealed to the appellate court, where Judge Creighton's judgment was affirmed. The case then went to the supreme court, where the judgment was again affirmed. The briefs in the case were prepared by State's Attorney James M. Graham, and the ground taken was that professional knowledge of the kind required in expert testimony is not properly within the meaning of the constitutional provision, as it can not be given away nor alienated from the person possessing it, and that in the exercise of the right of the court to summon witnesses and compel them to testify no distinction can be made between kinds of knowledge without endangering the ends of justice. This view of the case was upheld by the appellate court, and now the supreme court affirms it. Judge Creighton's decision attracted general attention when it was announced and called forth the strongest condemnation from members of the medical profession. However, he is now upheld by the highest judicial tribunal in the State.

Deaths from Gangrenous Varicella.—An annotation in the London *Lancet* for October 9, adverts to two fatal cases of varicella that have been reported by two American physicians in the *Archives of Pediatrics*, September; one case having been described by Dr. Silver of New York City and the second by Dr. Lockwood of Baltimore. The case of the latter was a well-nourished female child two years of age which when first seen exhibited a well-marked varicellous eruption. On the next day a wide zone of dusky red dermatitis occupied nearly the whole surface of the trunk. Rapid ulceration of the spots within this area ensued. The contents of many of the vesicles became hemorrhagic. Bleeding from the mouth and nose occurred and blood was extravasated in the skin over the pubes and about the genitals. The gangrenous spots varied in depth, and in size from a pea to a surface measuring one inch by two inches. They often occurred where there were no varicella vesicles. On the trunk were large patches where the epidermis only was removed, exposing purplish dry surfaces. These were due to the dermatitis, and did not radiate from the chicken-pox vesicles. The deeper spots showed a dry, hard, black eschar in the center, an ulcerating border, and an elevated inflamed edge. The left eye was closed from swelling and ulceration of the upper lid, and there was free purulent discharge from between the lids. The child emitted an extremely fetid odor. Death took place on the eighth day, apparently from bronchopneumonia; but satisfactory examination of the chest was not possible. The other case was that of a boy in good health, two years of age. The illness began with diarrhea, which was followed by a temperature of 103 degrees F., lethargy, and a convulsion. On the fourth day the body was covered with the characteristic rash of varicella. The mucous membranes of the mouth and conjunctiva were congested. On the third day of the eruption circles of congestion from one-fourth to one-half inch in width were noticed around several of the spots, which had become black and depressed in the center. Next day three gangrenous areas, measuring from one to two and one-half inches across, appeared on the neck. On the following day both eyelids were so much swollen that they could not be opened and there was a profuse discharge of blood and serum from the mouth and nose. The urine contained abundant albumin and numerous granular casts. The child died in the evening soon after a convulsion. It is curious that varicella, the mildest of all the infectious diseases, should present such a grave complication. Mr. Hutchinson, who first described the disease, attributed the occurrence of the gangrene to idiosyncrasy, as it usually occurred in healthy children. Mr. Barlow, however, denies this and asserts that in none of his cases were the children healthy. A second infection by some microbe supervening on the varicella has also been offered as an explanation, but evidence on this point is wanting.

The Chemistry of Bacterial Disinfection.—The *Cbl. f. Chir.* (October 20) reviews the recent important work of B. Krönig and T. Paul in this line. They state that: 1. Comparative tests should be made with equimolecular quantities, as a "percentage" is unreliable in précise research. Among their conclusions we note that the disinfecting power of solutions of the metallic salts depends on the specific properties of the salts and of the dissolving medium as well as on the concentration of the metal. 2. The effect of the halogenous combinations of mercury varies in proportion to their degree of dissociation. 3. The disinfecting power of aqueous solutions of mercuric chlorid is diminished by the addition of the halogenous combinations of the metals and hydrochloric acid, probably due to the retarded electrolytic dissociation. 4. The disinfecting power of mercuric nitrate, mercuric sulphate and mercuric acetate is materially increased by the addition of a moderate amount of sodium chlorid. 5. Acids disinfect in proportion to their electrolytic dissociation, that is, in proportion to the concentration of the hydrogen ions contained in the solution. 6. The bases, potassium, sodium, lithium and ammonium hydroxyds disinfect in proportion to the concentration of the hydroxyl ions contained in the solution. Hydrogen ions are more powerfully toxic for anthrax spores and the staph. pyog. aur. than hydroxyl ions at the same concentration. 7. The disinfecting power of the halogens, chlorin, bromin, iodin, decreases in proportion to increasing atomic weight. 8. Nitric acid, dichromic acid, chloric acid, hypersulphate and permanganate disinfect in proportion to their rank in the series of oxidating elements arranged according to their electric properties. Chlorin has a very strong specific disinfecting effect. 9. The disinfecting power of various oxidating elements is materially increased by the addition of halogen-hydrogen-acids, such as hydrochloric acid added to potassium permanganate. 10. Their experiments confirm Scheurlen's announcement that solutions of phenol disinfect better when salts are added. Also that substances dissolved in alcohol, methyl alcohol and ethyl ether have scarcely any effect upon anthrax spores. 11. The disinfecting power of aqueous solutions of silver nitrate and mercuric chlorid is materially increased by the addition of certain definite amounts of ethyl alcohol (50 per cent. for arg. nitric.; 25 per cent. for sublimate), methyl alcohol and acetone. 12. The disinfecting power of aqueous solutions of phenol and formaldehyde decreases with any addition of ethyl or methyl alcohol. Bouillon, gelatin, organic fluids, also diminish the disinfecting power of aqueous solutions of the metallic salts. 13. Conclusions in regard to the power to prevent the development of bacteria drawn from bactericidal power of a substance are unreliable.

Societies.

The *following meetings are noted*:

Connecticut.—New Haven County Medical Association, New Haven, October 21.

Indiana.—Vanderburgh Medical Society, Evansville, October 19.

Kansas.—Eastern Kansas Medical Society, Bonner Springs October 30.

Maryland.—Baltimore County Medical Association, Towson, October 21.

New York.—Binghamton Academy of Medicine, October 19; Medico-Legal Society, New York City, October 20.

Ohio.—Cleveland Medical Society, October 22; Lorain County Medical Society, Lorain, October 26. Northern Ohio District Medical Society, Sandusky, October 28.

Wisconsin.—Fox River Valley Medical Society, Oshkosh, October 16.

Washington.

Health of the District.—The report of Health Officer Woodward, for the week ended October 23, shows the total number of deaths to have been 91, of which number 51 were white and 40 colored. Among the principal causes of death were 12 of the nervous system, 7 of circulatory; 19 from consumption. There were 2 fatal cases of typhoid fever and 2 of diphtheria.

Medical Society.—At the meeting of the Medical Society, held on October 27, a number of cases and specimens were presented, as follows: Dr. Allen, fibrinous bronchitis; Dr. Walter Reed, splenic leukemia; Dr. Tompkins, tumor of the cerebellum; Dr. Behrend, sarcoma of the uterus, and Dr. Acker, specimens from general tuberculosis.

Detroit.

Wayne County Medical Society.—At the regular meeting of this Society, October 21, Hal C. Wyman, M.D., read a paper on the subject of "Appendicitis." His theory of its etiology is that it is caused by a special bacillus which accepts the soil of the appendix for its ravages, as certain bacilli accept certain localities and produce typic diseases, for example, the typhoid bacilli, which attack Peyer's patches, etc. The inflammation of the appendix begins in the mucosa and may end there, or the disease may go on to inflammation with its necessarily serious results, indicated by an increase of pain, tenderness and rigidity of the region involved. Symptoms have been known to be absent until death was imminent, therefore early operation is indicated. The case often comes too late to the surgeon. As a rule it is the complication which kills the patient, and not simply the sloughing appendix. The most serious complication is obstruction of the bowel. It is a fact that no death occurs from appendicitis in which there is not an obstruction of the bowel. This complication should be treated by an enterostomy. Loss of heat to the body of the patient from prolonged operation is another serious complication which should be combated by the application of dry heat to the trunk. The practice of applying towels wrung out of hot water to the exposed intestine is harmful, for the reason that the water so applied evaporates rapidly and so causes a rapid loss of heat. Diagnosis is easy and simple. When in doubt, and the patient's condition is serious, incision should be made to find cause.

CHANGE OF ADDRESS.

Borck, E., from St. Louis, Mo., to Red Bud, Ill.

Cole, A. M., from 173 North Pa. Avenue to 24 East Ohio, Indianapolis, Ind.; Calvin, J. P., from New Castle to Eureka, Ala.; Craig, W. H., from Glendora to North Ontario, Cal.

Eastman, C. A., from Exeter, N. H., to Danvers, Mass.

Frank, J., from Ozark, to Carondelet, Ill.; Foreman, J. M., from 4126 Easton Avenue to 2867 Easton Avenue, St. Louis, Mo.; Fletcher, W. B., from 713 Fletcher Avenue to 218 North Avenue, Indianapolis, Ind.

Hollnger, J., from 1373 N. Clark Street, to 311 Sedgwick Street, Chicago, Ill.; Harmison, D. C., from Bath to Havana, Ill.

Jump, E. D., 1251 So. 47th Street to 1631 Chester Avenue, Philadelphia.

Hackett, J. C., from Le Mars, Iowa, to Lacygne, Kan.

Kirkpatrick, T., from Topeka to Garnett, Kan.; Kilbride, J. S., from Dawson, Minn., to Emmetsburg, Iowa.

Lockwood, W. D., from Columbia to Stockyards, Mo.

Munn, W. P., from 709 11th Street to 2401 Colfax Avenue E., Denver, Colo.

Naughton, M. T., from 1532 Indiana Avenue to 1725 Ashland Avenue, Chicago, Ill.

O'Reilly, P. S., from 2829 Lucas Avenue, to 2839 Lucas Avenue, St. Louis, Mo.

Ramsey, R. T., from Danville to London, Ky.

Tittin, A. J., from Harris to Maynard, Minn.; Thomas, F. W., from Marion, Ohio, to Denver, Colo.

Let us have a Department of Public Health!

LETTERS RECEIVED.

Anderson, W. E., Pensacola, Fla.; Arlington Chem. Co., Yonkers, N. Y.

Burton, Jas. S., White, Tenn.; Bucke, R. M., London, Ontario, Cana.; Bergey, D. H., Philadelphia, Pa.; Beard, R. O., Minneapolis, Minn.; Blair, G. Henliston, Boothbay Harbor, Me.

Champion, J. H., Portsmouth, Ohio; Clarke, Augustus P., Cambridge, Mass.

Davis, Chas. Gilbert, Chicago, Ill.; Dial, W. H., Laurens, S. C.

Elliott, H. G., New York, N. Y.; Eltenbo, D. H., South Bend, Ind.

Fox, Horace, Bath, Me.

Greeley, James T., Nashua, N. H.

Harris, E. Eliot, New York, N. Y.; Hardon, C. H., Pomona, Cal.; Hummel, A. L., Advertising Agency, New York, N. Y.; Hughes, C. H., St. Louis, Mo.; Herdman, W. J., Ann Arbor, Mich.

Lewis, H. K., London, Eng.; Lentz, Chas. & Sons, Philadelphia, Pa.; Lehn & Fink, New York, N. Y.

Mitchell, H. F., South Bend, Ind.; Manley, Thomas H., New York; Morehouse, George W., Sparta, O.

Potter, S. O. L., San Francisco, Cal.

Richardson, A. R., Chicago, Ill.

Stoneberger, Mrs. Mabel R., San Francisco, Cal.; Shepard, Charles H., Brooklyn, N. Y.

Tipton, W. R., Las Vegas, N. M.

Wingate, U. O. B., Milwaukee, Wis.; Weeks, S. H., Portland, Me.; Wilson, A. R., Atlanta, Mich.; Wood, William & Co. New York, N. Y.; Wood, W. F., Mishawaka, Ind.

PAMPHLETS RECEIVED.

Acquired Umbilical Hernia in Adults; Comparative Frequency of Stone in the Bladder in the White and Negro Races; Splitting the Kidney Capsule for the Relief of Nephralgia; Symptoms and Treatment of Hepatic Abscess with Report of Seventeen Cases; Value to the Public of State Medical Societies. By Geo. Ben. Johnston, Richmond, Va. Reprints.

Amytrophic Lateral Sclerosis. By J. M. Aikin. Reprinted from Western Medical Review.

Clinical Report on the Course of Pregnancy and Labor as Influenced by Suspensio uteri; Contribution to the Technique of Operations for the Cure of Laceration of the Pelvic Floor in Women; Development and Present Status of Hysterectomy for Fibromyomata; Ectropion of the Cervix in Nullipara Resembling Laceration of the Cervix; New Method of Suturing the Abdominal Wall in Celiotomy; Remarks on the use of the Buried Permanent Suture in [illegible] ne Further Observations concerning Movable [illegible] and Drainage of Suppurating Hematoceles [illegible] By Charles P. Noble, Philadelphia.

Criminal Abortion. Its Prevalence, its Prevention, and its Relation to the Medical Examiner. Based on the . . . . vital statistics of the New England States for the year 1892. . . . By H. R. Storer. Paper. 24 pages. Reprinted from Atlantic Medical Weekly.

Credé's Method for the Prevention of Purulent Ophthalmia of Infancy in Public Institutions; Legislation in the United States for the Prevention of Blindness. By Lucien Howe, Buffalo. Reprints.

Early Diagnosis and Mistaken Diagnosis in Cases of Tumor of the Breast; A Preliminary Comparison of Methods and Results in Operative Surgery at the Sea Level (N. Y.) and in places of High Altitude (Denver). By Charles A. Powers, Denver. Reprints.

Eine neue Methode der Hysteropexie; Pylorectomy for Carcinoma; Ueber der Wert der Castration bei Prostata-Hypertrophie. By Carl Beck, New York. Reprints.

Joseph Freiderich Peringer; His Methods and Investigations. By Harry Friedenwald. Reprinted from Johns Hopkins Hospital Bulletin.

Notes on the Pathology and Bacteriology of Appendicitis. By Charles F. Craig. Paper. 12 pages. Illustrated. Reprinted from New England Medical Monthly.

Prognosis in the Treatment of Hemiplegia. By Charles H. Lodor. Reprinted from Medicine.

Relation of Diseases of the Skin to General Conditions. By L. Duncan Bulkley. Paper. 20 pages. Reprinted from Jour. Am. Med. Asso'n.

Report of a Case of Intradural Spinal Tumor Extending Through the Foramen Magnum. . . . By J. T. Eskridge. Paper. 20 pages. Illustrated. Reprinted from Medical News.

Report of the Kensington Hospital for Women. Paper. 28 pages. Illustrated. Philadelphia.

Report of Two Cases of Syphilis with Remarks Relative to Ptyalism. By C. Travis Drennen. Reprinted from Medical News.

Report on the use of a Mixture of Castor Oil and Balsam of Peru as a Surgical Dressing. By A. Ernest Gallant. Paper. 12 pages. Reprinted from Annals of Surgery.

Some Common Poisonous Plants. By V. K. Chesnut. Paper. 12 pages. Illustrated. Reprinted from "Year-book of the Department of Agriculture" for 1896.

Stone in the Kidney. By Charles R. Robins. Paper. 16 pages. Reprinted from Va. Med. Semi-monthly.

Urinary Antiseptics in Cystitis. By Arthur R. Elliott. Paper 8 pages. Reprinted from No. Am. Practitioner.

Yeast Nucleinic Acid in the Treatment of Septicemia, with Report of Cases. By Walter Courtney. Paper. 24 pages. Reprinted from Medical News.

THE PUBLIC SERVICE.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from October 9 to 15, 1897.

First Lieut. Thomas J. Kirkpatrick, Jr., Asst. Surgeon U. S. A., is granted thirty days' extension to leave of absence.

Major W. C. Shannon, Surgeon U. S. A., sick leave of absence further extended six months.

Lieut.-Col. Charles Smart, Deputy Surgeon-General U. S. A., and Capt. William H. Arthur, Asst. Surgeon U. S. A. are detailed to represent the Medical Department of the Army at the twenty-fifth annual meeting of the American Public Health Association, to meet at Philadelphia, Pa., Oct. 26 to 29, 1897.

Major Alfred C. Girard, Surgeon U. S. A., is detailed to represent the Government of the United States at the Ninth International Congress of Hygiene and Demography, to be held at Madrid, Spain, April 10 to 17, 1898.

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ADDRESS.

CHAIRMAN'S ADDRESS.

Delivered in the Section on Diseases of Children at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY JOHN A. LARRABEE, M.D.
LOUISVILLE, KY.

In consideration of the event of the semi-centennial meeting of the American Medical Association, I have deemed it proper to depart from the customary style of the annual address in order to give, as far as possible, a correct history of the Section over which I have the honor to preside. To accomplish this I have placed myself in communication with some of the older members of the Association and with Dr. William B. Atkinson, the Permanent Secretary. The following letters, from Dr. A. Jacobi of New York, and Dr. T. M. Rotch of Boston, will throw some light on the origin of our Section:

New York, Feb. 5, 1897.

John A. Larrabee, M.D.

Dear Doctor:—There is no history. We just did it. As I felt in some doubt I wrote to Dr. Rotch and as the enclosed letter shows, he knows just as little. It is a clear case of spontaneous generation, the Section was in the air, and we were present when it condensed. That is all.

Very sincerely yours, A. Jacobi.

197 Commonwealth Ave., Feb 2, 1897.

Dear Dr. Jacobi:—I only know that you were asked by a number of men to found the Section and be its first President at the meeting in Richmond. You asked me to be your Secretary and I accepted with pleasure and listened to your words of wisdom. Sincerely yours, T. M. Rotch.

It was not until the year 1880 that the Section on Diseases of Children became independent. Previous to this time the work of this Section was done in the Section on Obstetrics and Diseases of Women. At this meeting of the Association, which was held in New York City, an address on the Claims of Pediatric Medicine was delivered by Dr. Jacobi. Dr. S. C. Busey offered a resolution creating this the sixth Section of the Association, and Dr. A. Jacobi was made Chairman and Dr. W. H. Bradford of Massachusetts, Secretary. Thus it will appear that our Section is the sixth legitimate offspring of the American Medical Association. Dr. Busey of Washington, D. C., was the accoucheur on this occasion and Dr. Jacobi stood godfather for the tender infant. Many distinguished worshipers were also present and brought precious spices and rare incense to lay at the feet of the newborn babe. Papers were read by Busey on Chronic Bright's disease in children, caused by malaria; by James S. Green of New York, on a Case of congenital occlusion and dilatation of the lymph channels; by Jacobi, on Atrophy of a fetal liver, and Case of supra-pubic lithotomy.

At Richmond, in 1881, Dr. Jacobi presided as Chairman and Dr. T. M. Rotch was made Secretary. The following papers were read: By Jacobi, Address on progress in the knowledge of the acute contagious diseases and infections; Relations between growth and disease, by H. P. Bowditch of Massachusetts; Middle ear disease in children in the acute exanthemata, by C. J. Blake of Massachusetts, and Thumb sucking, by D. H. Goodwillie of New York.

At St. Paul, 1882, William Lee of Maryland was chosen President in the absence of Dr. Busey, the Chairman, and E. C. Miller of Iowa, Secretary. N. S. Davis read a paper on the Efficient causes of serous diarrhea and cholera morbus in infancy and early childhood, and the best means of lessening the mortality therefrom; William Lee, on Treatment of rickets.

In 1883 the Journal appeared. The same year, owing to the absence of both chairman and secretary, C. W. Earle of Chicago was made Chairman and E. L. Bothby of Wisconsin, Secretary. Dr. Blount, the Chairman, assumed duty the second day. Papers were read on Unity of membranous croup and diphtheria, by Harris of Virginia; on Epidemic jaundice among children, by A. Y. P. Garnett of Washington, D. C.; on Surgical treatment of purulent pleuritic effusions in children, by W. H. Meyers of Indiana; A plea for pleasant medication and a more thorough study of infantile therapeutics, by C. W. Earle; on Dentition, by Good of Indiana; on Pediatric medication, by Casebeer of Indiana; on Infantile paralysis, by N. Teale of Indiana; on Diphtheria, its varieties and variations, by E. L. Boothby of Wisconsin. (Full names are not given because not published, the minutes of some Sections not being reported there was difficulty in finding these.)

In 1884 papers were read by S. S. Adams, on Incontinence of urine in children; Treatment of diphtheria, by J. W. Brown of New York; Septic jaundice of childhood, by M. P. Hatfield of Illinois; Feeding of school children, by L. W. Atlee of Philadelphia.

1885.—Repeated doses of castor oil in skin diseases of children, by L. D. Bulkley, New York.

1886.—Address by W. D. Haggard of Tennessee; Treatment of diphtheria, by D. L. Miller of Chicago; Why diseases of children should be made a special study, by Mary H. Thompson of Chicago.

1887.—Diarrhea infantum and allied diseases, by C. W. Jones of Chicago; Causes and treatment of entero-colitis in infants, by S. B. Sperry of Wisconsin; Infant feeding, by L. D. Bulkley of New York; Treatment of malarial fever in the infant and young child, by W. B. Lawrence of Arkansas; Congenital phimosis, by W. S. Stewart, of Philadelphia; Diphtheria, by H. L. Getz of Iowa; Eczema, by J. V. Shoemaker of Philadelphia.

1888.—The infant food problem, by W. B. Atkinson of Philadelphia; Intubation, by F. E. Waxham, of Denver; Infant feeding, by C. W. Earle of Chicago; Chorea, by G. W. Jones of Danville, Ill.; Is membraneous croup and diphtheria identical, by I. N. Love of St. Louis; Hepatic incompetence in children, by M. P. Hatfield of Chicago; Management of fevers in children, by J. A. Larrabee, of Louisville, Ky.

1889.—Scarlet fever, by C. R. Early of Pennsylvania; A penal rule of our common schools and some of its effects, by D. S. Booth of Sparta, Ill.; One year of acetanilid in pediatric practice, by I. N. Love of St. Louis; Physical education in children, by A. H. B. Leuf of Philadelphia.

1890.—A plea for operative interference in peritonitis with reference to its obscure origin in children, G. F. Lydston of Chicago; Antipyrin in children, by S. H. Desson of New York; Significance of high temperature in children, by W. A. Stowall of New York; Croup and diphtheria, by W. P. Watson of New Jersey, chosen Chairman, and W. R. Hare of Pennsylvania; Croup, by C. R. Earley of Ridgway, Pa.; Commercial milk sugar in infant feeding, by E. F. Brush of Mt. Vernon, N. Y.; Acute rheumatism in children, by S. F. Parsons of Boston; Value of atropin in enuresis, by R. B. James of New York; Further observations on foot and mouth disease in its relation to scarlatina as a prophylactic, by J. W. Stickler of Orange, N. J.; Alcoholic heredity in diseases of children, by T. D. Crothers of Connecticut; Feeding the young, by O. H. Phelps of Blocksbury. Cal.

1891.—Four hundred cases of intubation, by F. E. Waxham of Chicago; Acute bronchitis in children, by C. L. Dodge of Kingston, N. Y.; Relation of food to scorbutus in children, by E. F. Brush of Mt. Vernon, N. Y.; Acute meningitis and treatment, by G. H. Higly of Pennsylvania; Ought infants to be washed directly after birth, by F. S. Parsons of Northampton, Mass.; Eczema infantile, by D. M Ricketts of Cincinnati; Herpetic eruptions of the mouth and pharynx in children, by S. H. Dessau of New York.

1892.—Morbid proclivities and retrogressive tendencies in the offspring of mullatoes, by W. A. Dixon of Ripley. Ohio; Contagion of scarlet fever, by E. F. Brush of Mt. Vernon, N. Y.

1893.—Diphtheria, by F. E. Waxham of Denver, Colo.; Prevention of diphtheria, by J. Lewis Smith of New York; Recent advances in pediatrics, by C. G. Jennings of Detroit, Mich.; Isolated cases of diphtheria, by W. A. Dixon of Ripley, Ohio; treating cases of diphtheria, by G. B. Dunmire of Philadelphia; Discussion. Pathogenesis of bronchitis in infants and children, by W. S. Christopher of Chicago; Pathology and symptomatology of acute bronchitis and broncho-pneumonia, by C. L. Dodge, Kingston, N. Y.; Some phases of broncho-pneumonia in children, by J. M. G. Carter of Waukegan, Ill.; Pneumonia pathology and symptomatology, by F. S. Churchill of Chicago; Therapeutics of bronchitis, by I. N. Love of St. Louis; Treatment of broncho-pneumonia in children, by F. S. Parsons, Northampton, Mass.; Therapeutics of croupous pneumonia, by J. A. Larrabee of Louisville, Ky.; Discussion on these. Hernia in children, by W. E. Wirt of Cleveland, Ohio; Phimosis—a plea for its early relief, by J. A. Hofheimer of New York; Importance of early effective elimination in the zymotic diseases of children, by J. A. Work of Elkhart, Ind.; Meningocele with case, by A. G. Sloan of Dexter, Iowa; Infantile hernia, by T. H. Manley of New York; Treatment of chorea by [illegible] doses of quinin, by W. A. N. Dorland and C. S. Potts; Statistics of intubation, etc., by F. E. Waxham; Primary syphilis and gonorrhea in children, by B. M. Ricketts of Cincinnati; Cholera infantum in malarial localities, by J. Schenck of Mt. Carmel, Ill.; Dentition and its diseases, by M. Thrasher of San Francisco, Cal.; Acute endocarditis in children, by G. N. Highly of Conshohocken, Pa.

1894.—Pediatrics as a specialty, by W. S. Christopher of Chicago; Pneumonia in children, by E. H. Small of Pittsburg, Pa.; Exophthalmos in infant of three months, by H. E. Garrison of Dixon, Ill.; Derangement of kidneys in lithemia of children, by J. M. G. Carter of Illinois; Eczema of children, by W. M. Bolton of New Harmony, Ind.; Causes of therapeutic uncertainty in children, by A. C. Cotton of Chicago.

1895.—Enteric fever in infancy, by W. B. Noyes of New York; Typhoid fever in children, by J. E. Woodbridge of Youngstown, Ohio; Discussion on same. Guaiacol in typhoid in children, by A. Koenig of Pittsburg, Pa.; Acute lacunar diphtheria, by H. Koplik of New York; Antitoxin in diphtheria, by L. Fischer of New York; Diphtheria and antitoxin, by A. C. White of New York; Diagnosis and treatment of false croup, by S. Loving of Columbus, Ohio; Discussion on these. Antiphthisin in tubercle of children, by E. Klebs of Asheville, N. C.; Discussion. Scorbutus in infancy, by I. N. Love; Infantile diarrhea, by Rosa Engelman of Chicago; Colitis in infancy and childhood, by E. Anderson of Rockville, Md.; Pseudo-membranous enteritis with lumbricoides, by I. M. Snow; Sulphate of magnesium in summer diarrhea of children, by S. Patterson of Pittsburg, Pa.; Discussion of these. Has tuberculous cow's milk causative influence in infancy, by F. S. Parsons; Causes of great mortality in infancy, by J. A. Work of Elkhart, Ind.; Heredity and its environments, by J. E. Rigg of Wilkinsburg, Pa.; Bromoform in pertussis, by P. J. Eaton of Pittsburg, Pa.; Double club feet and hands, by B. M. Ricketts of Cincinnati.

1896.—Chairman, A. C. Cotton of Chicago; Secretary, A. J. Work of Elkhart, Ind. Diagnosis of diseases of infants and children, by C. G. Slagle of Minneapolis, Minn.; Sepsis of the new born, by H. E. Tuley of Louisville, Ky.; Chorea, by H. Hatch of Quincy, Ill.; Functional dyspepsia of children, by J. M. G. Carter; Spinal injuries in infants, by J. P, Fiske of New York; Treatment of fractured shafts of bones in children, by T. H. Manley of New York; Epilepsy following injuries in children, by W. A. Dixon of Ohio; Petit mal in children, by L. F. Bishop of New York; Discussion. Use of the stomach and rectal tube in children, by W. J. Bell of Atlanta, Ga.; Infantile scorbutus, by A. H. Burr, of Chicago; discussion. Evolution of girls, by H. E. Harrison of Dixon, Ill.; High pressure in teaching public schools, by W. H. Short of LaGrange, Ind.: Rachitic chest deformities in twins, by W. J. Bell of Atlanta, Ga.; Circumcision not necessary in young children, by W. B. Parks, Atlanta, Ga.

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The wisdom of the establishment of the Section of Pediatrics in the AMERICAN MEDICAL ASSOCIATION needs no better demonstration than is furnished by this history. Many of the early contributors are now enumerated among the authorities upon diseases of children. The claim of pediatrics as an established specialty in medicine is based upon the essential difference in diseases having the same nomenclature in adult life. The growing organism presents anatomic and physiologic peculiarities, which not only increase susceptibility to the acknowledged etiologic factors of disease, but also influence the rapidity of pathologic changes. There has been no advance made in medicine within the last quarter of a century which has resulted in greater benefit to the human race than that made in pediatrics. A closer and more careful observation by men who have devoted their entire attention to this field has been extremely fruitful in bringing to light new diseases. Diseases which formerly were considered rare in infancy and childhood by a closer observation have been found to be of frequent occurrence. The time when a few lectures tacked on to the chair of obstetrics sufficed to fill the curriculum of requirements of medical colleges has passed away never to return. Pediatrics as a special branch with ample clinical instruction, is today obligatory in all reputable medical colleges. Certainly there is no specialty in medicine which requires more thought, keener observation and more patient study than pediatrics. The embarrassment of a traveler in not being conversant with the language of the country which he visits, is not more than that of the practitioner who invades the domain of the nursery without having mastered the unwritten language of its diseases. Here particularly do I desire to emphasize the importance of a closer study of the physiognomy of disease as written in unerring characters upon the face of infancy and childhood. A language when once learned and understood is far less misleading than the spoken language of adult life.

Slumbering embers of disease are suddenly fanned into a fierceness which threatens destruction, while on the other hand we are astonished by sudden and unexpected recoveries in apparently hopeless cases. Disorders of the digestive system are of frequent occurrence and are fraught with consequences to the growing organism far beyond their significance in adult life. For this reason severe and protracted illnesses in early childhood arrest development and affect the mental and physical welfare of manhood and womanhood. Strikes among workmen may be noted by observation of the structures upon which they were engaged. Faults in the Commissary Department of our Army in times of peace would be far less disastrous than to an army actively engaged in the field. Malnutrition, malassimilation, improper food and faulty hygiene may thus cripple the corpuscular elements engaged in phagocytic war and place the child beyond possibility of repair. It is, therefore, of the greatest importance that the diseases of early life should receive prompt attention. If such conditions are overlooked or not properly understood they will culminate in serious conditions in adult life. Nothing which concerns the child should be considered as trivial.

When the AMERICAN MEDICAL ASSOCIATION, whose semi-centennial anniversary we today commemorate, was organized, there was a scarcity of pediatric literature. Choice and reliable works were in demand. Such works are always in demand, but the paucity of medical literature can no longer be regretted. The multiplicity of irresponsible medical publications is to be deplored. We are beginning to realize the force of Solomon's words, "of making many books there is no end." We can also appreciate the saying of Josh Billings, "that it is perhaps better not to know so much as to know so much that ain't so." It would be well if a healthy censorship could be exercised over our periodical publications. It is oftentimes exceedingly refreshing as well as profitable, to lay down the "up to date journals" and pick up a volume of Bennett, Flint, Wood or musty old Watson, and recognize in these great thinkers of a past generation the foundation-stone of the edifice of which we are the topmost structure.

The conclusions which we would draw from such retrospection would be that "every new thing is not true and every true thing is not new." The ambition to write a book is only equaled by the young man in Dickens' "Bleak House." The attempt to master the periodic medical literature of today will as certainly result in a mental dyspepsia as would an attempt to digest the entire *menu* at the Hotel Walton.

During the past year some of the doubtful, or at least debatable questions in therapeutics have become established. Particularly is this true of blood serum therapy and diphtheria antitoxin. It will be remembered that this Section, at Atlanta, presented especial attraction by reason of the talent arrayed on either side of this question. It must be considered for the benefit of future medicine, that all innovation upon established practice and all new or theoretic therapeutics should meet with severe criticism and even violent opposition. Antitoxin has certainly been accorded a liberal share of patronage in this direction. There is probably no better established principle in therapeutics than that quinin cures malaria, nor in inoculation, that vaccination exterminates smallpox, but physicians of London and Paris would have thrown old John Talbot and his bitter tea into the Thames or Seine before he cured Louis XIV. of France, and Jenner would at one time have shared the same fate from the populace whom he saved. The credit of discoveries in medicine and surgery should not redound to those who have simply conceived the idea, but to those who by persistent trial have demonstrated the utility. Your Chairman has no hesitancy in expressing the opinion that the past year's experience has materially lessened the ranks of doubters, and while the extravagant and unreasonable expectations of the over-sanguine have not been wholly realized, antitoxin must now be placed in the required armamentum of the successful practitioner.

The study of bacteriology aided by the wonderful revelations of the microscope has established a new era in the practice of medicine. Etiology and pathology, the formerly intricate mazes, have become plainer pathways and lead us more directly to the effulgent light of truth. This comparatively new field of medical observation presents so many attractions and is in itself so fascinating a study to the student, that there is danger of neglect of semiology. The devotee of the laboratory finds that he is poorly fitted for bedside diagnosis. For this reason clinical medicine must go hand in hand with laboratory work. Special work in medicine and surgery has been an essential factor in the advancement of a conjectural art to an established science, but the practice of specialties should be the outgrowth of natural predilection based upon years of experience in general practice, and the assumption of specialties by inexperienced college graduates is much to be deprecated. Hippocrates' injunction to his students to view the body outstretched, by which was meant a trained observation, is still good teaching. Germicidal therapeutics is all well enough and oftentimes commendable, but there are other indications in the treatment of disease than the possible destruction of pathogenic microbes. Someone has very aptly put this question by saying that in swinging a club to kill microbes we may hit the patient also. The older we grow in the practice of medicine, the more we are impressed by the thought that most of the diseases, as well as the troubles and trials of life, are preventable. It is as natural for an honest doctor to become a philanthropist as it is for a minister of the gospel to become a Christian. Preventive medicine and private and public hygiene mark the progress of the age in which we live. Proph[illegible]is is better than cure. We are all prompted by a [illegible]mmon interest, which is not always appreciated by [illegible]ur patrons, to sacrifice the comforts of life and if needs be life itself gratuitously for the extermination of disease, an object which, if attained, would effectually ruin our vocation. I shall never forget the address of the senior Gross when he was President of this ASSOCIATION. Never did that grand old man appear to me so lovely as, when crowned with all the honors of earth, the surgeon laureate of the civilized world, standing in the twilight of a well-spent life when only the "sorrows of others cast their shadows over him," he pleaded long and earnestly for a purer, better manhood and for the eradication of that vile blot upon humanity, which has entailed upon man and innocent childhood two-thirds of all their sufferings. As pediatricians, we have a better opportunity of knowing the hereditary constitutional diseases and also of judging the so-called cures of diseases acquired by parents. The thought is indeed a sad one, that among the thousands of infants now resting in their cradles such a number will suffer from inherited syphilis, so many will end their lives in misery, so many will help to swell the number of helpless cripples in our asylums, so many will fill our jails and workhouses, while not a small proportion are doomed to fill a drunkard's grave. It is a sadder thought to think, as we are forced to do from statistics gathered in our large and populous cities, that succeeding generations shall reveal a still larger number equally doomed. The hope is father to the thought, that from this Section with its wisdom, in future years there may be evolved laws regulating matrimony which shall forever preclude the possibility of placing upon the charities of the world a helpless deformity. The older nations of Europe, depleted by vice, and among the nobility by consanguinity, are framing such laws. Notably in France, and I am informed that in our own country the legislature of Texas has this matter under advisement. It has been proposed to make syphilis, cancer, epilepsy, inebriacy and tuberculosis tenable grounds for restricting matrimony and obtaining divorce.

There is no age of either ancient or modern civilization that can boast of such magnificent and munificent charities as the age in which we live. Asylums for the afflicted and unfortunate abound in every part of our country, while hospitals, reformatories and sanitariums appear on every hand. The demand for such institutions is still increasing and is met by a liberal response. Now while these eleemosynary institutions will remain as enduring monuments to Christian civilization, it can not be doubted that they tend to promote the degeneracy of the race by making the survival of the unfittest a possibility, thus reversing the Darwinian law. Nevertheless, we have not the authority of the Areopagi of Greece, nor the regulations of Sparta, to destroy diseased and perverse offsprings.

While I believe that some law regulating matrimony would be followed by a race improvement which would show in a single century, such legislation as proposed in France and Texas would be followed by an increase in certain classes of criminals, while illegitimate offsprings would present no better physical status. I believe that there is only one way in which this momentous question can be met and that is by a higher moral education based upon the study of medicine. It is therefore incumbent upon this Section to be an educator of the public, and teach people the importance of having a care for the progeny of man. If ministers of the gospel were educated in medicine we would have less sermons upon the sins of the Israelites and more upon our own society vices. It seems strange and unaccountable that man should be the only animal in regard to whose progeny no care is exercised while cattle and hogs are considered fit subjects for State legislation. The study of physiology and hygiene should be made compulsory in all schools and in all grades of the schools. Let it be understood that "the greatest study of man is man."

ORIGINAL ARTICLES.

RENAL SUPPURATION, CATARRHAL, SPECIFIC AND TRAUMATIC, AND THE VALUE OF MICRO-URANALYSIS OF THE URINARY SEDIMENT AS AN AID TO DEFINITE DIAGNOSIS OF IT.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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NEW YORK.

A peculiar clinical experience during the past year, has led me to the investigation of a class of lesions commonly enough encountered by most practitioners with fair opportunities for observation; but certainly in a considerable proportion of cases they are not understood, nor their clinical manifestations correctly interpreted. I refer to kidney abscess or pyonephrosis; of late, also designated "surgical kidney," for the reason that it is supposed that the lesion admits of relief or cure only by surgical measures, which is only correct, however, in exceptional cases.

Much diversity of opinion has arisen, in consequence of the confusion of terms employed by different authors, in describing the various types of renal suppuration; and, on the other hand, by an attempt at an over-refinement and irrational differentiation of pathologic conditions.

Thus we will note, that one speaks of renal suppuration as pyonephritis, another as pyonephrosis, another as pyelitis, and another as pyelonephrosis.

With our present knowledge of the most common mode of advance of suppurative lesions, it would be well, at least for purposes of diagnosis, if they were reduced simply to three varieties in non-complicated cases: 1. Primary catarrhal pyelitis. 2. Interstitial renal suppurative abscess. 3. Perinephric suppuration—extrinsic.

Catarrh—nephritis, suppuration—This is the usual type of renal suppuration when infection or spread of diseased processes is from below—*ascending.*

In this class it becomes a simple matter to trace the origin of pathologic processes from their source; but in a considerable proportion of cases, the clinical manifestations point to the renal parenchyma itself as being the seat of primary changes.

Interstitial suppuration—parenchymatous.—This may undoubtedly result from a back-flow of the urine, renal calculi, or tubercular infection. In this form, we may have either *open* or *closed* suppuration. In the former the pus *foyers* drain directly into the urinary stream; while in the latter, it is pent up and infiltrates.

Perinephric abscess.—By this term is to be understood a purulent formation of renal origin, burrowing through the inner capsule and discharging into the loose fatty investment or the retroperitoneal tissues. Pus may appear in the urine in very small quantities here, or be entirely absent, as in certain instances of encapsulation or obstructive pyelonephrosis.

Local causes of renal suppuration.—1. Lithiasis, calculus impaction. 2. Trauma, contusion or laceration of renal substance.

Toward the middle of the present century, Laennec, by the simple application of the laws of acoustics in the studies of pulmonary maladies, irradiated the whole science of physical diagnosis as it is applied to the detection of intrathoracic diseases. To one who has made anything like a methodic study of modern renal diagnosis of suppurative lesions of the kidney, it seems remarkable after Laennec's discovery, how we should have groped in the dark for so long a period without utilizing the means within our reach for more precise elucidation in the diagnosis of renal suppuration.

It will be my purpose on the present occasion, while considering a few features of renal suppuration, to point out how we may determine its presence, its character and extent with more certainty than we can a similar pathologic state in any other internal organ of the body.

Verhaagen has made a clear and rational distinction between the diverse varieties of renal lesions, which are *medical* or *constitutional* and those which are chiefly *local* or *surgical;* the former depending on blood changes or toxic states and the latter mainly on local influences. This latter only, can be briefly considered here, from the standpoint, chiefly, of diagnosis.

It is now quite generally conceded that renal suppuration or pyonephrosis very often depend ultimately on an alkalin fermentation of the urine. This has been quite conclusively demonstrated by several distinguished investigators; notably by Van Gieghem, Fels and Ritter, Klebs, Lister, Lancereaux, Lepine, Roux, Krozius, Roosing, Escherisch, Moselle, Schmidt and Aschoff.

Delafield believes that pyelonephrosis most commonly affects both kidneys, that "far as he knows, all these patients die; that when it is once established there is no control of the disease." Weir is not disposed to accept this view, and cites Goodhart's Guy's Hospital reports. This author collected 270 cases of death from urinary disorders, of which 130 were surgical kidney. In 100 of these, there were strictures. There were forty-one cases of suppurating kidney. There were but three in which the disease was limited to one side. In twenty-seven there was prostatic hypertrophy; in fourteen cancer of the bladder. There were forty-four cases of stone; twenty-nine cases of cancer of the uterus. There were fifty-six paraplegic; in twenty-six of these suppuration was limited to one side. On an average there were 14.5 per cent. limited to infection on one side. Dickinson, in sixty-nine cases of death from suppuration of the kidney recorded in St. George's Hospital, found in nineteen, pre-existing stricture of the urethra; disease of the prostate in twelve; in the remainder, there was loss of the vesical power, calculus and cystitis. In his opinion, the liberation of free ammonia in urinary decomposition is the chief factor in the etiology of pyonephrosis.

According to Bazy's statistics, in about 20 per cent. of cases of suppurative kidney, the lesion is unilateral. In Hamil's experience tubercular kidney is commonly unilateral; but if bilateral it is always much more severe on one side than the other.

I have been unable to gather from the literature on "surgical kidney" during the past fifteen years, whether suppurative formations are more common in one sex than the other, or on the left side of the body than the right. Since my studies on this class of lesions commenced, I am, however, convinced that renal suppuration is an infirmity very much more common than is generally supposed.

It is highly probable that in quite a considerable number of cases of presumed unilateral lumbago or nephralgia, the underlying lesion consists of calculous or purulent impaction of the renal pelvis, or the ureter.

In the past, we have been led to overlook the exact pathology of many extensive local renal lesions, because of the absence of grave constitutional symptoms from urinary disturbances, unmindful of the fact that the sound or unaffected organ on one side undergoes compensatory enlargement and thus relieves the one involved by disease. Da Costa maintains, and no doubt with truth, that abscess almost never effects primarily but one kidney at the same time.

Extrinsic and intrinsic injury of the kidney as an element in the causation of renal abscess or ulceratio—Exclusive of pyemic [illegible] or the plugging the arterial branches by substances carried in the blood the most prolific cause of abscess or ulcer of the kidney is trauma, mechanical obstacles to the flow of urine, the presence of autogenous bodies in the cortical substance, or the effects of violence applied from without. Dr. Henry Morris, in speaking on this aspect of the question, says: "Abscess of the kidney is one of the varieties of suppurative disease of this organ Its consideration might appropriately find a place in connection with injuries of the kidney, as they are the most ordinary causes of renal abscess." Mayer, in *Virchow's Archives*, describes a case of abscess, following the thrombosis of the renal artery, after an injury. In these cases, he believes, the primary changes commence with a calculus plugging of the tubules, purulent formation consecutively setting in.

The advances of pathologic processes in the kidney after the external injury are precisely the reverse of what occurs when they proceed from diseased conditions lower down.

In the former, we first observe perinephritic hemorrhage and inflammation propagated through the capsules to the cortex, then pyonephrosis, later pyelitis, ureteritis and cystitis. Physical influences are here the dominant factor; in the latter, chemical changes and the extension of infective, putrid processes.

The significance and source of pus corpuscles in the male and female urine and their relation to suppurative kidney.—A morphologic and bacteriologic examination of the urine, constitutes one of the most valuable aids known to medical science, in the diagnosis of lesions along the urinary tract.

In the present state of our knowledge of the subject, it might be, perhaps, not strictly within the limits of exact truth, to allege, that by a microscopic examination of purulent urine we are always enabled to determine with definite and absolute certainty the exact or precise seat of the morbid process; nevertheless the fact is, that by its revelations alone, we may ore completely elucidate diagnosis than by all our ther resources combined.

In this connection it is well to remember, that a preliminary, systematic, subjective, general and local examination of the patient constitutes an adjunct of the highest importance, which, taken together with the morphologic analysis, should in every instance decide with precision the pathologic process. On this point, however singular it may seem, there is at present some divergence of opinion, for while the general consensus of views supports this position, there are some few highly respected authorities not in full accord with it, who deny, in fact, that we are able to decide on the source of urinary pus by any special characters it presents.

But let us see on what grounds their premises are based and hear from the other side. Da Costa says: "As to the exact seat of the formation of pus, its existence in the urine affords us no clue," and yet with singular inconsistency he adds, "to some extent, however, we can judge of this by the microscopic appearance of the corpuscles. . . . The sudden appearance of pus in the urine in large quantities points to the bursting of an abscess. An abundant deposit of pus in acid urine is chiefly found in pyelitis."

Thudicum goes little further than to call attention to the special qualities of pus corpuscles in the urine, as indicating whether they are from a tubercular abscess or ulcer.

Johnson has described peculiar pus-casts and epithelia thrown off in the urine by those who later, on autopsy, were found to have renal abscess. Purdy says that "pus in the urine may be derived either from the free mucous surface of the urinary tract, an ulcer, or from the tissue substances; and in such cases it is liable to be mixed with elements of its place or origin, which become of great diagnostic value."

Le Dentu regards the diagnosis of pyuria as often very difficult. Brodeur calls attention to the great help of urinary microscopy in these cases.

"Casts composed of pus corpuscles," says Hare, "are rarely seen, but if constantly present, may indicate multiple abscess of the kidney; and when masses of micrococci become grouped together in the tubules and are expelled in casts the significance of their discovery is, that septic infection of the kidney is present. They are seen in suppuration, renal inflammation and in pyelonephritis, in which the true renal tissues are involved by an extension of the disease."

Simon, one of our latest and most advanced authors on this subject, declares that "a marked increase of leucocytes in the urine must always be regarded as indicating the existence of disease somewhere in the course of the urinary tract, except in females, when their presence may be owing to an admixture of leucorrheal discharges; in the latter the pus will be mixed with the pavement vaginal epithelia." This author declares that, "from a clinical standpoint it is of the greatest importance to establish the source of pus in every case of pyuria," and he adds, "a careful examination of the epithelial elements in the urine will be of great value and should never be neglected."

Bizzozero lays it down as a law, that in nephritis the number of pus corpuscles present stand in a direct relation to the intensity and acute character of the morbid process.

Roberts admits that, "in the first stage of pyuria the presence of characteristic epithelia generally sufficiently indicates the nature of the disease, but in advanced cases this valuable sign is not available." Newman is in accord with this view and claims that as new epithelia in the renal tubules, when shed, are small, imperfectly developed they can not be distinguished from pus corpuscles.

Musser says: "Urine containing much pus is slightly albuminous, but pus cells are found frequently in the urine which gives no albuminous reaction." This author makes the rather ambiguous statement in this connection, that it can not be decided from "a microscopic examination whether a cell is a pus corpuscle, a mucous corpuscle, a white blood cell or an inflammatory leucocyte."

Tyson practically discards uranalysis as an aid to localizing pyuria. Guyon is of the opinion that the presence of hyaline cylinders and various epithelia may, with pus, serve to decide its origin, but their absence by no means is negative of renal suppuration. Ralfe concedes that in the early stages of pyuria it is possible by a microscopic examination to determine its source.

From the foregoing we may gather: 1. That all investigators agree that the presence of pus in the urine, in considerable quantities, is always an index of serious or severe inflammatory action along some part of the uropoietic tract, when we eliminate genital admixture in the female. 2. There is a quite general accord of opinion on our ability to distinguish urethral from vesical suppuration, and recognize renal implication in the purulent deposits of early acute renal suppuration. 3. Many, especially medical authorities, are not yet prepared to admit that epithelial admixture in purulent deposits of the urine enables us to determine with certainty the precise source of leucocytosis in all cases. 4. A large and ever-growing number of observers, thoroughly trained in morphologic uranalysis, are emphatic and positive that the epithelial casts and parenchymatous elements thrown off in pyuria, taken in connection with other diagnostic aids, will invariably and with absolute certainty establish the source of pus production.

In America, my late master, the lamented eminent anatomist and pathologist of New York, Dr. Carl Heitzman, taught in his laboratory that the trained microscopist could not be deceived as to the exact seat of pyuria by a morphologic examination. This, he taught for more than fifteen years before his death. But, he was one of those whose modesty was only equaled by his profound erudition and great breadth of scientific achievement. In the current medical press he wrote little or nothing; but now that he has passed from among us, his great work on urinary morphology is making its impress felt wherever medicine is cultivated as a science.

It is my own conviction now, after some years of study on the subject, that the main reason why we are skeptic of the findings of urinary morphology, is because many who have had some general knowledge of the employment of the microscope in normal and pathologic histology believe themselves amply equipped to examine urine. The result, of course, is a lamentable failure, as, through want of a long technical training and opportunities under a skilled and experienced master, they are utterly incompetent to interpret the multiplicity of phenomena revealed by diseased urine.

In the present instance it will be my purpose to very briefly and incompletely call attention to the infinite value of the study of the morphologic elements of the urine in *renal* pyuria alone, as space will not permit a consideration *in extenso* of vesical or urethral, in connection with other diagnostic auxiliaries. Many writers and pathologists, it appears, in their efforts to divide the various types of kidney suppuration on an anatomic basis, instead of elucidating the subject, have greatly confused it. For example, an effort has been made to demonstrate such a lesion *per se* as pyelitis, renal abscess and pyonephrosis. But, let us take for example an impacted calculus in a renal tubule, and what do we have? 1. A distension of the tubules with epithelial erosion and leucocytosis—an *abscess formation.* 2. This impacted infarct is pressed into the mucous membrane of the renal pelvis, when we have *pyelitis.* 3. *The inspissated pus, detritus* or calculus, block up the ureter and widely distend the pelvis of the kidney, when we have *pyonephrosis.*

We might follow the course of this suppurative lesion further, and find, quite invariably, a ureteritis and cystitis.

The pathologic mutations are quite identical in infective lesions, though somewhat reversed or modified. My experience and training have taught me that with facilities now at our command we are enabled to determine with certainty the presence or absence of renal suppuration, or ulceration of the kidney as applied in its broad sense; but to differentiate an interstitial abscess from a pyelitis or a pyonephrosis, is as yet an impossibility. It will be noted that my observations here are restricted to the diagnosis only of the lesions which are entirely of a local character.

Before pursuing further, at present, the discussion of the morphologic elements of the urine, in surgical kidney, it may be well to turn aside briefly to consider some of the more pronounced subjective and rational signs attending renal suppuration.

Pyonephrosis without pyuria.—Four years ago, in a postmortem examination on a man who succumbed after an operation for gangrenous hernia, I came upon a greatly enlarged kidney on the right side. Its capsule was densely adherent to the adjacent parts and was unavoidably ruptured in its detachment, when an enormous quantity of pus with urine escaped into the abdomen. Nothing but a thin shell of cortical substance remained. Yet, in this instance, before operation this patient was closely questioned by me as to previous disease or infirmity of any description, when he denied ever having any other trouble than his hernia. I might add that the urine passed and examined after his admission to the hospital showed negative evidence of either sugar or albumin. No microscopic examination of it was made.

General symptoms and course.—The statements of many authors are certainly most misleading and erroneous with respect to the duration and symptomatology of suppuration within the kidney; some declaring with Delafield that it is progressively destructive, and others that its evolution is always attended with the most pronounced constitutional disturbances; while the fact is, that there is no more reason why we should not, and do not, as often secure a cure of a renal abscess, when it is uncomplicated, than we should of one of the lungs; and while, in some few individuals, surgery alone can save life and relieve the sufferings of the afflicted, there are others whose general health is almost never seriously menaced, and they continue undisturbed at their usual occupations. In my own cases the degree of suffering and invalidism was altogether greater in the females than in the males. Tuberculous infection was more common with them, while nephralgia or pyonephrosis from calculus was often met with in men. With two exceptions, every single case of unequivocal remittent pyonephrosis in the female ever coming under my care succumbed, while no case in the male, seen by me, has yet passed away from the effects of this lesion.

As to the acute or chronic course of pyelonephrosis, we have ample proof of cases which extended over years, as well as others which run a short course.

Dr. H. O. Walker of Detroit has reported a case in a young man who was a sufferer for nine years, and another, a female school teacher, who had renal abscess for four years, before prominent symptoms were manifest. In fact everything points to suppurative kidney generally being an exceedingly chronic disease, where there is a simple vent for the purulent deposits and the disease runs into the ulcerative stages. Much depends on the patient's age, general state of health and environment in the evolution of the disease.

There are certain individuals of vigorous health, with only one localized abscess of a kidney, who may pass through life without any symptoms of it, or at least until by some application of violence, exposure or indiscretion a fresh inflammation is set up; while there are others, in whom, from the beginning, indications of the lesion are quite clearly manifest. Of the former, Guyon records a case of a middle-aged man who for several months complained of occasional pains in the right side. His uranalysis was negative. He was later cut off by intestinal disease, when, on autopsy, it was found that the right kidney was the seat of a vast abscess.

Subjective symptoms.—The most common subjective symptom of renal lesion, accentuated by the onset of acute changes, is that generally known as renal colic, neuralgia of the kidney, or nephralgia, dependent on mechanical obstruction. The onset is usually sudden and the agony great. It does not appear that the renal parenchyma is richly endowed with sensory nerves; or at all events we have no evidence of stone or inspissated pus being present until it is forced out of the cortex and chokes up the pelvic outlet of the ureter. In these attacks the constitutional disturbances are extremely depressing until the pent-up decomposed urine, gravel, pus and detritus are washed away through the bladder and urethra. A patient, the subject of one attack, is quite certain of another if prophylactic measures are not instituted.

It is now well known that we may have suppurative degeneration of the kidney from ascending infection, chiefly of two varieties; one from gonorrheal infection, something very unusual, according to Senn, and in my own experience; and the other from the advance upward of those pyogenic bacteria, which are consecutive to the mechanical impediment to the passage of urine, by urethral stricture, prostatic hypertrophy, calculus, impaction or ureteral stenosis.

Tuberculosis is one of the most serious of the infective maladies that seize on the kidney. Bearing in mind then, the more ordinary causes of suppurative kidney, we will examine carefully for their indications as revealed through the subjective symptoms which belong to each, not omitting to inquire as to the possibility of trauma in the rôle of causation.

We will find in many chronic cases that the patient complains of pain *in the back;* always on one side more than the other, and extending down over the course of the ureter along the flank to the bladder. Polyuria, cystitis and vesical tenesmus are invariably present in advanced cases. In a few I have witnessed repeated attacks of neuralgia, involving the genitocrural, the iliohypogastric and sciatic nerves. But the symptoms may widely vary in renal suppuration, and in certain types we may have none of a pronounced character at all; certainly at times, not for long intervals. In certain individuals the agonizing cystic irritation coincident with pyonephrosis is almost constant; there is no let-up night or day; the hot ammoniacal, putrid urine coming down from the kidney has destroyed the vesical mucous membrane; the bladder is thickened and contracted, and no sooner has it drained off its burning contents than the patient is again seized with violent and protracted vesical tenesmus.

In tuberculous patients "pain in the side" low down with well marked evidence of cystitis, is an extremely suspicious symptom of renal abscess. Most women, the subjects of pyonephrosis, with few exceptions, will attribute all their symptoms to "womb disease," or to the "change of life," especially when they are about middle-age.

Another noteworthy symptom is an intermittent sensation of burning heat extending from the arch of the eighth rib down along the side into the hypogastrium. When septic toxemia is pronounced, rigors and sweats alternate.

These symptoms may be further divided, 1, into the constitutional and the local, and 2, into those which are constant or permanent, and 3, those which are intermittent or transient. The former are more frequently observed in connection with extensive interstitial pyemic infarctions, from secondary infections or in blenorrhagic metastases, so graphically described by Sée; the latter we observe especially in connection with calculous impaction or temporary plugging of the ureter. But we will occasionally meet with instances of pyuria of unequivocal renal origin, with very slight inconvenience to the patient.

Pain *in the side* or pain *in the back* is commonly borne by women; that of itself, except in extensive renal suppuration is of no distinctive value as a symptom. In some we will find that our patients complain of a dragging pain and a burning sensation over the affected organs. In most instances the patient is unable to lie on the same side, and when the body is at rest in the sitting or recumbent attitude the greatest degree of comfort is obtained.

In advanced cases the constitutional powers are seriously shattered, digestion is greatly enfeebled, the bowels are constipated and great bodily weakness is present. Along with this, a great change comes over our patient's whole being; broken down by long continued suffering, sleepless nights and want of food, they become melancholy, indifferent and irascible.

The most pronounced and prominent symptoms in many of these grave cases emanate from the bladder, cystic inflammation, ulceration and contraction. Probably at the outset when the urine is yet acid, its purulent admixture provokes little irritation, but as time progresses the purulent foyers in the kidney, or the putrid, ammoniacal, pent-up urine discharged into the bladder excites a septic inflammation, first destroying the superficial vesical epithelia, then the middle and deeper layers leading to an erosion and ulceration. In chronic cases inflammatory changes extend into the paravesical tissues, the vaginal, rectal, prostatic and seminal structures. The act of defecation or any severe straining produces a painful sensation over the hypogastrium, the rectum or perineum. The patient not only has polyuria and tenesmus, but usually has more or less urinary incontinence while on the feet. This is more pronounced in the female than in the male. Lumbago, sciatica and neuralgia down along the course of the anterior crural nerve and its divisions is a frequent symptom when renal tension is accenuated.

Physical examination; postural, surface and internal.—The state of the pulse or the degree of temperature are unreliable guides in a considerable number of pyurics. In some of my own cases the temperature was rather subnormal, while pus was draining away in great quantities. When the renal lesion is secondary to pulmonary tuberculosis, the thermal augmentation attends the hectic flushes. Colliquative and exhaustive perspiration is present in systemic invasion.

In all those about to be examined for renal suppuration it is important that the patients should be placed in different attitudes. The trunk should be well exposed below the mid-dorsal region.

In severe pyelonephrosis the kidney is enlarged and its volume and density increased, so that with few if any exceptions it will be found displaced downward and forward along the flank.

On palpation and deep pressure we will find on the affected side well-marked muscular rigidity, with a thickening of all the overlying tissues, and areas of more or less sensitiveness. Having taken advantage of gravity, as a primary step, the patient is first placed on the right side and then on the left, with or without a pillow under the lowermost side, as circumstances may require. Finally the patient is placed on the chest, with some central raised support under the abdomen in fat subjects, as recommended by Dr. Robert Morris.

By submitting patients to these tests and searching carefully for the diseased organ, in nearly every instance so far I have been able to detect a pyonephrosis without the clinching evidence of uranalysis. In some, its presence was so palpable as to render little more than surface examination necessary.

But when the right kidney is involved difficulties of great magnitude may arise, especially in the female; for this displaced, bulging mass of renal tissue may closely simulate perityphlitis, appendical abscess, pyosalpinx, abscess of the broad ligament, of Pott's disease of the spine, of localized malignant degeneration, etc. And I may add that without the microscope, in skilled hands, all our efforts to definitely and absolutely differentiate the one from the other, without mutilating the patient, would be utterly futile.

It is true that each of the above lesions pursuing a typical course is accompanied by a fairly uniform *ensemble* of symptoms; but the exceptions are only too numerous and we are often confronted by a most complex and embarrassing state of things.

The details of the physical examination of the subject have so multiplied of late years that it will be impossible in the present instance to but very briefly refer to a few of their more salient features as they apply to the detection and recognition of abscess or ulcer of the kidney. So late as twenty years ago but little was known of them and as a precise and definite means for the recognition of urinary lesions they constitute practically a new science.

They embrace an external and internal examination, an exploration of the tubular passages and a careful inspection of the urinary excretions. For obvious reasons, we must make a wide departure in our examination of the sexes.

When we suspect the kidney as the seat of suppurative changes, palpation, percussion and auscultation will serve us as valuable aids.

For a proper examination the patient should always be placed on a firm, flat surface. A strong table with a blanket over it answers better than any bed. In some, who have marked muscular spasm, an anesthetic might be desirable, but the renal lesion usually interdicts its use. It is always well to commence our examination with the patient lying flat on the back. In some the renal enlargement and tenderness may be readily detected in the prone position, but in others of stout build, or in whom the kidney remains fixed deeply in position, we must resort to other accessory expedients. We may flex the lower limbs on the trunk or raise the shoulders.

In all, with few exceptions, we will find a thickening, induration and spasm of the muscles in the lumbar and iliac regions of the side involved, along with tenderness over the course of the ureter and in the hypogastrium.

In woman we will easily determine varying degrees of renal displacement more definite and positive in some than in others; in all however more frequently than in men.

Firm renal pressure properly directed will quite invariably elicit definite indications of suppuration of the organ, especially when there is occlusion of the ureter and the pus cysts are large or multiple.

In order to proceed with success in our manipulations, bearing in mind the probability of renal displacement or unusual mobility, it will be well to first as definitely as possible determine the position of the diseased organ and its relation to others in its proximity. This having been effected, the palm of one hand is placed firmly over the left or right lateral lumbar region, while the other is pressed gently over the lax abdominal muscles in a direction approaching the other. Between the hands the kidney should engage. If a sensation of deep-seated pain or soreness is not at first elicited, then the pressure over the hypogastrium should be made in an intermittent manner—an up and down motion and with more force.

As a rule, in cases of renal suppuration, simultaneously or soon after pressure is applied the patient complains of pain along the ureter into the bladder.

Examination by the orifices or tubular passages.—This is conducted by two methods: 1. Digital examination *per rectum et vaginam.* 2. By reflected light, the cystoscope or ureteral catheters. For various reasons, except in special cases, a rectal examination will throw but little light on any lesions along the urinary tract, except when the prostate or bladder is involved, or in those wherein differential diagnosis is necessary. With the female maiden, however, as an avenue to the access to the pelvic organs, it is different.

The vagina of a multiparous woman will permit, generally, of such an examination as will enable us to determine the presence or absence of pelvic phlegmasia or tumors, although it is well to remember that these may coexist with renal suppuration. Endoscopic examination of the urethra and bladder is undoubtedly one of the greatest aids in the diagnosis of lesions involving these organs. Valentine of New York has demonstrated its positive value in the detection and study of lesions along any areas of the urethra and bladder, and in fact, in our time, no genito-urinary surgeon is regarded as at all properly equipped without the cystoscope and ureteral catheter. But its intelligent use requires special skill and extended experience; besides, it is almost unnecessary to add that in the presence of stricture, enlarged prostate or a tortuous canal, its employment is quite impossible.

Willy Myer, and Kelly particularly, in America, have shown us the possibilities of ureteral catheterization in the male and female. Everyone concedes the practicability of introducing a ureteral catheter by way of the floor of the healthy female bladder in many, although not a few gynecologists claim that it is utterly impossible in a considerable number; in the patulous, partly stenosed or tortuous ureter. Skene admits that it does possess some value as a remedial agent, but denies its utility for general diagnostic purposes. It involves always a considerable urethral dilatation and more or less trauma of the sensitive vesical and ureteral mucous membrane.

It seems, therefore, quite inconceivable that the ureteral catheter can have anything other than a very limited application in the male subject; probably none at all in the presence of cystitis, or such organic changes in the bladder and ureter as have been recently so well described by Myles of Dublin.

Exploratory incisions.—Any procedure which involves a mutilation of the body, in the ascertainment of diagnosis, is a humiliating confession of failure. Except, indeed, in cases of very rare occurrence, presenting very grave and complex features, it is something of more than doubtful propriety; in fact, it should be ruled out.

The time is past when anyone should further impose on our credulity by informing us that "exploratory incisions opening into the abdominal cavity are harmless."

When, however, one is in doubt after having exhausted all other diagnostic methods known to science, then it may be justified, when we contemplate combining simultaneously therapeutic measures with diagnostic exploration.

(*To be continued.*)

ALCOHOL IN MODERN MEDICINE, OR ITS PRESENT POSITION AS A REMEDIAL AGENT IN THERAPEUTICS.

PRELIMINARY REPORT AND BRIEF SUMMARY OF A SPECIAL JOINT COMMITTEE OF THE AMERICAN MEDICAL TEMPERANCE ASSOCIATION AND THE AMERICAN ASSOCIATION FOR THE STUDY AND CURE OF INEBRIETY, FOR A SPECIAL STATISTIC REPORT OF THE PRACTICE AND OPINIONS OF AMERICAN PHYSICIANS ON THE USE OF ALCOHOL IN MEDICINE.

Presented to the Section on State Medicine, at the Forty eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1-4, 1897.

BY ISAAC N. QUIMBY, M.D., CHAIRMAN.

JERSEY CITY, N. J.

The following questions soliciting answers from members of the medical profession of the United States were printed and distributed by a committee of physicians representing The American Association for the Study and Cure of Inebriety. The circular which explains these questions is herewith presented:

JERSEY CITY, N. J., March 1, 1897.

My Dear Dr. ——

We shall be pleased to have you write out your experience and views in answer to the enclosed questions and return to me at your earliest convenience.

We wish to obtain with some exactness the present status of the use of alcohol in medicine and the views of the leading medical men in this country.

The results of this inquiry will be presented at the June meeting of the AMERICAN MEDICAL ASSOCIATION at Philadelphia.

Thanking you in advance for your labor and assistance, I am, very truly yours. I. N. QUIMBY, Chairman.

T. D. CROTHERS, M.D.
F. H. KELLOGG, M.D. } Committee.
L. D. MASON, M.D.

Explanatory remarks.—Up to this time the answers to the fifteen questions give a summary of the opinions of one hundred and twenty medical men scattered more or less widely over the United States. The larger proportion of these are experienced and old practitioners, many having practiced fifteen, twenty-five and thirty years and averaging twenty years of varied and extensive medical experience; nine from forty to fifty and three from fifty-five to sixty years. It is but just to the committee to state that the question blanks were distributed without any knowledge of the possible outcome of such distribution and with a few exceptions none of the committee knew the views, on the questions submitted, of those to whom the blanks were sent; *so* that the replies to the fifteen questions may be inferred to be a fair representation of the position which alcohol holds as a drug in modern therapeutics, as far as these replies can attest to the fact. About six hundred of these questions were issued by the committee and 120 replies were received, the total contributing a valuable addition to the views of the profession today on the position of alcohol in modern therapeutics. The committee have endeavored to procure a candid opinion from all the physicians applied to and have therefore reported in full, and in the words of the writer his opinion *pro* or *contra*, so that fair conclusions may be drawn by those who may be interested from the statements given *verbatim* and not in the language or interpretation of the committee.

The answers will speak for themselves, but in order to call attention to some of the more salient points in the questions and in the answers to them the committee feel obliged to make a brief summary of the facts presented.

1. To what extent and under what circumstances do you use alcohol in your practice, either hospital, dispensary or private?

The term alcohol is used in a general sense so as to mean the drug itself, pure and simple or tinctures, malt and vinous or spirituous liquors containing a greater or less per cent. of alcohol. We infer from the answers that this fact was understood, at least in the majority of cases. To classify the replies to these questions we divide them into, 1, those who do not use alcohol in any form; 2, those who have used alcohol only as an *external application*; 3, those who have used alcohol to a limited extent and under certain conditions and restrictions and who were conservative in their views, and finally, 4, those who have used it freely and liberally "to any extent and under all circumstances when a diffusible stimulant was indicated." In these four classes we find two extremists; *non-users in any form* and those who use *alcohol freely in their practice.* A careful study of the question blanks shows that the third class, those who use alcohol to a limited extent—the conservative class—are in a large majority. But if we carefully study the answers of this class it will be noted that the use of alcohol as a remedy is limited in its application to a certain type of diseases and that its use is decidedly restricted as compared with its use twenty-five or thirty years ago. It is certainly not the "universal panacea" for "all the ills that flesh is heir to" as it was then, and its use by those who advocated its advantages is restricted to a certain class of cases—we refer to the replies. The testimony on this point is quite conclusive.

In the Matteawan State Hospital, with an average of 590 inmates, for twelve months the consumption was sixty gallons of whisky and thirty gallons of wine. In one hospital 110 patients (mostly surgical) averaging sixteen days each, used less than one-half a gallon of brandy (Galloway, Chicago). In the Portland Sanitarium, Oregon, it is not used at all. It seems to be very seldom used in dispensary practice. In hospitals it is used in emergency cases, shock, before or after operations, in adynamic state of fevers and pulmonary diseases. Although the replies are not very full on this point we may venture to remark that the "institutional use" of alcohol as a remedy is more limited than formerly. It is well to note that not only the nature of the disease, but locality, climate, character of the population, tenement or otherwise, season of the year, occupation and habits of the people, nationality of the person and other conditions, severally seem to have an influence in determining whether or not the physician shall use alcohol in this or that particular case.

2. To what extent and under what circumstances, according to your observation, is alcohol used in hospital, dispensary or private practice of physicians of your acquaintance?

While the answers as to the personal use of alcohol in the respective practices of those replying are in favor of its gradual disuse or limited use, the answers to Question 2 are, in many instances, unsatisfactory, where the question is answered; but on the whole the testimony is in favor of the more guarded and scientific as well as limited use of alcohol as a remedy. But the fact remains that a large proportion of physicians use alcohol in some form as a remedy in their practice, and some of these *do not* guard its administration with the same restrictions and safeguards as they do other drugs. We claim that alcohol should be given with the precautionary measures that surround the administration of other narcotic-poisons, opium and its alkaloids, cocain, etc., and to which the patient is in danger of becoming habituated. (See examples of answers.)

Examples of answers to Question 2.—As a diffusible stimulant and in adynamic stages of acute diseases; in surgical shock, in threatened collapse from any cause; in delirium tremens to control fibrillary spasms; after severe surgical operations; as officinal tinctures and externally; in tedious convalescence after fever or debility from other causes; fainting, collapse, shock, anesthesia narcosis; temporary stimulant only, as in shock; sometimes in intestinal disease, as a substitute for food; in all cases of sepsis; all diseases of a rapidly acute asthenic type; in diphtheria, do not use it in chronic diseases of the young and middle aged; large experience in chronic pulmonary disease, in the majority of cases California red wine preferred; in prostration stage of typhoid and pneumonia, never as a routine remedy; low fevers, debility and exhaustion; in all cases requiring prompt stimulation; sometimes for its anesthetic effect in hopeless cases, adynamic stage of typhoid fever or pneumonia or diphtheria, and old persons; phthisis and pulmonary edema, pneumonia; in surgical work do not use one-half pint of whisky a year, had 278 operations; heart stimulant, old persons as tonic and stimulant; with ammonia carbonates in pneumonia, and in malted milk in malarial and typhoid fevers; acute infectious disease; exhausting chronic conditions; snake bite (as antidote); malignant diphtheria; bronchial catarrh of the aged; as force food, hepatic functional stimulant, as a vasomotor sedative; in shock, otherwise very little internally, and as an antiseptic in gargles, mouth washes and lotions; in pneumonia and typhoid fever; when the case is hopeless and life can not last long, for its anodyne and soporific effect, euthanasia; typhoid fever and convalescence; as an emergency stimulant; as an antiseptic (never as a stimulant), rattlesnake bite, typhoid and typhomalarial fevers; shock, convalescence from protracted and wasting disease; old inebriates (alcoholic habitués), nursing mothers (galactagogue), acute asthenic diseases of children; in shock and before chloroform anesthesia; low type of fevers.

3. What drugs in your opinion, may be advantageously or satisfactorily substituted for alcohol in medical practice, and what, in your opinion, is the comparative value of alcohol and of strychnin, used by the mouth or hypodermically?

This is a very important, as well as interesting question, asked with a view to determining the favorite heart tonic of practitioners, as well as their views concerning the same as a substitute for alcohol, particularly with reference to strychnin. The answers will therefore bear close scrutiny and may be studied with advantage as they are full of suggestion and practical value. With some, strychnin "is of greater value and more certain in results" than alcohol and preferable to it; with others it can not take the place of alcohol and acts in a manner quite different from it. Although the majority of the answers acknowledge the usefulness of strychnin in cases of alcoholism, it is *par excellence* the heart tonic and antidotal to the evil effects of alcohol, as well as a substitute for it. All the answers will well repay a careful study as to the relative merits of alcohol and the various nerve and heart tonics, strychnin, nitroglycerin, etc., and the respective conditions in which each is more especially useful as compared with others.

4. Have you ever studied the treatment of diseases of a similar character *with and without alcohol*, and what did the record of cases so treated demonstrate? Was the testimony in favor of the alcoholic or non-alcoholic method of treatment? Can you cite cases?

Another question of great interest and one that has divided the profession at home and abroad so far that non-alcoholic treatment of cases is not uncommon, and special hospitals have been established in which alcohol is not used as a remedy. The reports are not as full as we might desire. One physician reports a mortality of 7 per cent. in typhoid fever with alcohol, 1 per cent. without alcohol. He states, "I have treated 283 cases of typhoid without alcohol and lost only three cases, and these were marked cases" (Bleighton). Another reports, "Yes, surgical cases and I am inclined to the non-alcoholic treatment" (Bovie, D. C.) Another does not recognize an alcoholic or non-alcoholic method of treatment. Another, "The advantage of alcohol in chronic pulmonary conditions." Another, "I have made a special study of 100 cases of typhoid without alcohol and 100 with, and the results are greatly in favor of treatment without alcohol."

With regard to the alcoholic or non-alcoholic treatment of diseases, excluding the replies of those who are doubtful or have formed no definite opinion on either method of treatment, the profession seems to be nearly equally divided with the preponderance in favor of the non-alcoholic method. Thus, twenty-four expressed decided preference for the use of alcohol in the treatment of certain specified conditions of disease, thirty-eight markedly pronounced in favor of the non-alcoholic method, and the balance had formed no definite opinion, or were not positively in favor of either method, so that we may state from the records that the answers decidedly favor, when positively given, the non-alcoholic method of treating disease. It should be also stated that when alcohol is used its advocates give specific and intelligent directions as to the diseases and conditions under which it is to be used, and we may state that a careful study of these diseases and conditions limits the sphere of alcohol as a remedy to certain diseases and certain definite stages of those diseases, and practically, therefore, condemns indiscriminate use and indefinite dosage as not only unscientific, but positively harmful.

The questions and replies in detail are appended and respectfully commended to the thoughtful.

5. What proportion of persons among the laity, according to your observations, make use of alcohol as a domestic remedy, and what form of alcoholic beverage is most commonly used?

An analysis of the answers to this question shows that the great majority, fully 90 per cent. of our families, keep alcohol in some form, either whisky or brandy, and resort to it as a domestic remedy for all slight or severe, real or imaginary ailments. A fact also brought out is the use of alcohol as whisky or brandy, for painful menstruation, and another fact the large consumption of alcoholic liquors in the shape of patent or proprietary medicines, medicated wines, malt extracts, tonics, tinctures, etc. The question arises how far the family physician is responsible in his relation to the family as medical adviser, for the almost universal use of alcohol in some form as a domestic remedy, and what is his duty in the premises, in pointing out the fact that alcohol is not a universal cure-all as it is supposed to be, and that it is often positively detrimental in its effects in diseased conditions.

6. To what extent, in your opinion, does the moderate but habitual daily use of alcoholic beverages produce disease?

As to the term "moderate" as applied to the use of spirituous liquors, there is great difference of opinion. We think the term is an unfortunate one, indefinite, unsatisfactory, but we have used it in a conventional way, and as it is generally used, leaving to each one questioned the privilege of interpreting the term according to his own views and experience. The "habitual daily use" is a phrase more definite and ought to be answered in a satisfactory manner.

In the opinion of some, "moderation" means four ounces of whisky, or a glass or two, or two or three drinks daily, or two or three ounces of spirits daily, or one-half ounce distilled liquor well diluted; or three glasses of malt liquor a day can do no harm, except whisky; one writes, no harm, except in gout; another, no harm after meals, properly diluted in moderation. No harm, beneficial after middle life, in moderation, etc. What constitutes moderation in the opinion of this section? Those opposed to habitual daily use of alcoholic beverages in moderation, or at all in any quantity, in brief assert that it lowers vitality and resistance to disease, increases mortality and shortens life expectancy; that its use is prejudicial to physical, mental and moral tone, and so, indirectly, fosters habits of life that lead to injury and disease; that moderate use of alcoholic stimulants leads to excessive use or, as one puts it quaintly, "Pigs grow to hogs, and hogs root up the garden." It creates an artificial desire and, as we have said, paralyzes the moral sense and so leads to disease, *i. e.*, leads to gout and forms of sclerosis, develops predisposition to disease: where diathesis exists, prefers to give alcohol —to a non-alcoholic—to get definite results; moderate use of alcohol produces a bias in favor of disease, tends to fatty degeneration of tissue, etc.

The majority are seemingly opposed to the so-called moderate habitual daily use of alcoholic beverages and believe that such use directly or indirectly produces disease.

7. In your observation what are the prevalent forms of disease among those who habitually use alcoholic beverages in moderation, and are they less or more susceptible to disease than total abstainers, or is the relative frequency the same in both classes of persons?

Moderation means more than is consistent with good health; on an average two ounces of whisky; one pint of beer; here are a few of the replies in a condensed form: In cardiac, nephritic, hepatic disorders, and subsequent fatty degeneration; gastric disorders; neurasthenia, insanity, nephritis, hepatic cardiac disease, obesity; susceptibility to disease, rheumatism; dyspepsia; Bright's disease; susceptibility to disease; diseases of stomach, liver and kidneys; susceptibility to disease, gastric, renal, hepatic; rheumatism, gout and mania; susceptibility to disease; "alcoholic pneumonia," with grave prognosis; users more susceptible to disease than total abstainers; do not believe that four ounces daily in adults will produce disease, or that moderate drinkers are susceptible to disease; the relative frequency of disease is the same in moderate drinkers and abstainers; the term "moderate" is relative, and moderate drinkers as a rule become excessive drinkers and so disease results; habitual beer drinkers are especially short lived.

It is interesting to note in consulting the various answers that the majority, however they may differ as to the moderate habitual use of alcoholic liquors being a factor in directly producing disease, agree that persons so using alcohol have a lower power of resistance to disease, and are more susceptible to disease than total abstainers, which is an important fact brought out and substantiated by these statistics.

8. Do you think the use of alcohol in any form as a domestic remedy is increasing or decreasing, or have other narcotics been substituted?

About 50 per cent. of the answers assert that the use of alcohol as a domestic remedy is on the decrease, and about half of these answers state that other narcotics have been substituted, notably the coal tar derivatives, phenacetin, antifebrin, etc. About 10 or 12 per cent. assert that the use of alcohol is increasing as a domestic remedy. One or two replies from southern physicians attribute this to the lax administration of the liquor law in their respective States. About 6 or 8 per cent. believe that the use of both alcohol and narcotics is on the increase. A small percentage deny that the use of either is on the increase or decrease, but about stationary. Other views are also given, namely, that the lighter forms of wine and beer are substituting—distilled liquors—and that the higher and intelligent classes of society are becoming more temperate and that *hard times* favor decreasing use of liquors, wines, etc. The balance, probably 25 or 30 per cent., do not answer this question.

9. What proportion of the laity, according to your observation, make use of alcohol as a beverage?

About one-third do not answer this question, or do so indefinitely. From the replies of those who do answer, about two-thirds of the whole number, the following conclusions are drawn:

(1) That from 50 to 60 per cent. of adult males use malt or spiritous liquor as a beverage.

(2) That 10 per cent. use distilled liquors and 90 per cent. malt.

(3) That the proportion of males to females is as 5 to 1—the tables on this point are not very definite or full.

(4) Its use is less prevalent in rural districts and more prevalent in large cities, especially in seaboard and manufacturing towns.

(5) The number of habitual drinkers to occasional drinkers is as 1 to 5.

(6) The use of wine, spirits or beer is more common among foreign born than native population.

(7) The environments, occupation, nativity, locality, sex, age, etc., all influence the use of alcohol as a beverage.

(8) Different States and localities show a marked difference; one states that "in Kentucky *everybody* drinks whisky." "In a prohibition town in Arkansas, only 2 per cent. use alcoholic stimulants as a beverage; this is a prohibition town, 'and prohibition prohibits.'"

10. For what length of time have you given especial consideration to the effects of alcohol as a medicine?

Those who had observed it less than ten years, 9; from ten to fifteen years, 24; from fifteen to twenty years, 3; from twenty to twenty-five years, 14; from twenty-five to thirty years, 12; from thirty to thirty-five years, 2; from thirty-five to forty years, 1; from forty to forty-five years, 6; from fifty-five to sixty years, 3; in all, 74. No answer was given by the balance.

Of the seventy-four recorded, over 50 per cent. had given their entire professional life to the study of the problems involved in these tables, such professional experiences extending over twenty years in all cases. The inference must be that the testimony here submitted is given by professional men and after long and practical experience.

11. To what extent, in your opinion, does the medicinal use of alcohol encourage, either directly or indirectly, the habitual use of alcohol by the laity, and, as a consequence, inebriety?

We may classify the answers as follows: Those who believe the medicinal use of alcohol *does not* in any way lead to its habitual use and as a consequence, inebriety. Some thirty so affirm, as follows: Properly used; in acute disease; properly used; no, promiscuously, yes; libel on the profession; excuse (unwarranted) of inebriates; argument of extremists; properly used, no; patent medicines, etc., yes; regular prescription, no; "advice of physician" an excuse; not if by a temperate doctor; yes, if by a whisky-drinking doctor who gives it on *all* occasions, for *all* conditions, in *all* diseases; all drunkards are liars; statements not reliable; never after 50 years of age; yes, indiscriminately given; no, in cases of temperate people and children. Twenty-four say "yes, but to a very slight or moderate degree." Thirty-four say "yes, in some instances"; about one in fifteen, "principally patent medicines"; careless prescribing; verbal directions more or less indefinite; yes, in chronic, no, in acute cases; heredity; idiosyncrasy; one-half of 1 per cent.; especial tendency; four out of five; only six cases in thirty years; yes, great numbers; to a large extent in country practice, where the patient is his own physician or left to his own devices.

The consensus of opinion would be: 1. That the medical use of alcohol develops the habitual use and from this inebriety under certain conditions. 2. That the risk of such a result was much lessened if the patient was previously temperate and of good family history, over fifty years of age, and the case one of acute disease—also in the case of children. 3. If indiscriminately and carelessly given, especially in chronic diseases, history of heredity or peculiar idiosyncrasy, the patient continuing to use the remedy after the physician ceases to attend him and yet with the apparent sanction of the physician; under such conditions the habitual use of alcoholic liquors is established and in a certain proportion of cases results in inebriety.

12. When you prescrible alcoholic beverages as a medicine, do you specify the form, the quantity, the period, and especially the length of time in which it is to be used as a medicine? In your opinion, are not specific directions desirable and oftentimes important in the use of alcoholic beverages?

All answers are in the affirmative; a few of them specify kind, quantity and time; same care as with other medicines; explicitly; yes, emphatically, yes; absolutely so; important; yes, disguised with other tinctures; I do not give alcoholic stimulants, if I did I should prescribe alcohol (to secure definite dosage); limited period and specific directions.

From the testimony here given it would be in evidence that physicians as a rule do not prescribe alcoholic stimulants, carelessly or without restrictions. Our remarks apply to conscientious and intelligent practitioners and not to "intemperate doctors."

13. In your opinion, is the medicinal use of alcohol increasing or diminishing?

Fifty-six believed the medicinal use of alcohol (meaning thereby alcoholic and malt liquors, etc.) is decreasing; some assert that *legitimate* use only is decreasing, not the *illegitimate* use; also that much depends on the doctor of a particular locality; it is given with more discrimination; malt extracts and light wines are more used; various wines are drugged and disguised and sold by the wholesale drug houses as tonics, etc. About a dozen believe the use of alcohol is neither on the increase nor decrease. Thirteen believe its use is increasing, not probably in its purer forms, or as stated, in "medicinal wines," malt extracts, tonics, tinctures and alcoholic preparations of various kinds. The rest give no data. The preponderance of opinion seems that there is a decrease in the use of alcohol as a remedy and that when employed it is with more limit and discrimination than formerly.

14. What form of alcoholic beverage do you generally prescribe—distilled or malt liquors, or the various wines—and under what conditions and for what purposes?

About one-third do not prescribe alcohol in any form, under any conditions.

The remaining two-thirds use distilled liquors in some form, as a diffusible stimulant or "force food"; whisky seems to be the favorite, brandy occasionally, and one or two recommended *pure alcohol*—diluted with water—as susceptible of more definite dosage and results; malt liquors, as food in certain wasting diseases and as a bitter tonic; some prefer "malt extracts"; one physician, *old Jamaica rum* to whisky or brandy. The majority never prescribe alcohol in any form as a *beverage* and limit its use to the acute stages of disease, and others to the period of convalescence. Exception made in cases of aged persons for its continued use as wine, red wine preferred by some, and California wine preferred. The "ærated" wines, champagne, etc., in certain conditions. Some never give it to intemperate persons and to alcoholic habitués, only in disease.

The general opinion favors alcohol in some form, under certain conditions *pro re nata*, but condemn alcohol as a beverage and its use in chronic diseases, except in exceptional cases, and deprecate its continual indiscriminate or unscientific use

15. In your opinion, [illegible] tre[illegible]t of dise[illegible] are the lighter forms [illegible] b[illegible] the v[illegible] forms of alcoholic [illegible] [illegible]rce of alcohol is great[illegible]

About 43 per cent, there is no change; about 35 per cent. think that there is; about 20 per. cent. do not answer or are indefinite; about 2 per cent. do not use wine medicinally. One of the latter class does not use it because a pleasing, and therefore dangerous, form, especially for the young, and apt to be used indefinitely; uses whisky and brandy *pro re nata* only, and not as a tonic. Another physician regards wine as absolutely worthless from a scientific and medical standpoint. Another states, other things being equal; a larger quantity of wine is given to produce certain results; when a smaller quantity of distilled liquors would do, the same quantity of alcohol is given, although the form, etc., in which it is given is changed.

In closing I wish to heartily thank those physicians who have so kindly responded to our committee's request, thus aiding us materially in our attempt to open up a comparatively unexplored field of inquiry into the power of alcohol to injure the human tissue and retard cell growth and development.

We are just at the beginning of a new era along the line of scientific investigation and many physicians who now prescribe and advocate the use of alcohol and its derivatives will look back with astonishment in the early dawn of the new century at the erroneous position they had occupied on this important and far-reaching question.

It is to be regretted, however, that there is such a diversity and divergence of opinion in reference to a substance (alcohol) which is in such universal use, and with such seductive and destructive tendency.

It is also to be regretted, judging from a number of answers received, that many physicians are in the habit of prescribing alcohol and strychnin (remedies diametrically opposed in their action) as a stimulant or heart tonic.

The use in combination of two powerful drugs, so diverse and antagonistic in their action as alcohol and strychnin, is quite unscientific.

Now it is clearly demonstated that alcohol acts on the brain mainly and nervous system, in fact is a brain poisoner, perverting and deranging the physical, mental and moral faculties, while strychnin is a *true* tonic and acts mainly upon the spinal cord, with none of the destructive tendencies of alcohol.

You will scarcely find a physiologic opponent of the non-alcoholics in medicine who does not make a handle of the word stimulant, while advocating the use of intoxicating drinks Every one acquainted with the nature of life is aware, that without stimulants, life is impossible for any length of time. Food, water, air, light, heat, etc., are not only stimulants of life, but habitual, healthy and absolutely necessary stimulants of combustion. The lash of the whip, the prick of the needle or bayonet or the sting of the bee, etc., are also stimulants, but they are neither pleasant, necessary or wholesome. So alcohol in this sense is a stimulant.

Therefore the opponents of non-alcoholics argue, though it may not be necessary, it is hence a beneficial auxiliary of life. Disregarding and concealing the fact that alcohol is not only a stimulating irritant, but a corrugator and paralyzer of the living tissue, as well as a narcotic poison. The excitement of all natural stimulants is not necessarily followed by a corresponding depression, but it is the inevitable result of alcohol and all other narcotic stimulants that they are followed by depression, more than equal to the excitement produced, so that a person using narcotic stimulants is more depressed than ever and therefore is more inclined to repeat and increase the dose. This is the unsuspected pitfall into which thousands of the unwary plunge.

But amid all the confusion and doubt and darkness and superstition, it is gratifying to know that all physicians and scientists, physiologists and chemists, who have recently made and are making scientific investigations, with the modern instruments of presision, in reference to the action of alcohol on living growing tissue have arrived at about the same conclusion as is proven by the recent experiments in the physiology of alcohol by Prof. F. Hodge of Clark University, etc., *i. e.*, that it retards, perverts and is destructive, either in large or small doses, to normal cell growth and development.

Allow me to diverge from the strictly scientific aspect of the question. It should concern the medical profession to know that juvenile crime is increasing, both in this country and in Europe. The juvenile criminals are undersized and sickly, and many have a feeble intellect, bluntness of feeling or unstable will. One would not have to draw much upon his imagination to attribute or connect the cause for this increase and degeneration to the increasing use by the parents of alcohol and other narcotics. The operation of heredity has fastened these defects upon them, as a rule, so that they must be regarded as belonging to a decadent class.

This is a significant fact which the medical profession or the public can not safely disregard.

ALCOHOL VERSUS ANIMAL POISON.

Read before the American Medical Temperance Association, in the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY CHAS. H. SHEPARD, M.D.

BROOKLYN, N. Y.

Animal poison is by no means uncommon, and so quick and mysterious is its action that a prompt remedy is a vital necessity. There is good reason to believe that the numerous remedies that have been recommended from earliest times as antidotes for animal poison are worthless, as they have not the properties commonly ascribed to them. The paucity of remedies is so great that alcohol is the one which comes most quickly to the mind of those who have been taught in the traditions of the past, and who are not fully aware of its action on the human system. We shall endeavor to show that the action of alcohol is not helpful; on the contrary it is really detrimental, and also that there is a better way out of the difficulty.

If we get a splinter in the body, vital energy is aroused to get rid of the offending substance, inflammation is set up and sloughing goes on until the splinter is voided. If the splinter is covered with acrid material, the same process is intensified and nature endeavors to eliminate the offending substance through the natural excretions. Upon the peculiarity of the material depends the direction of this elimination.

It is well known that some poisons are thrown off by the kidneys, some by the lungs, while others again are attacked by all the emunctories. The difference in the power of the system to absorb different substances, appropriate whatever can be utilized, and throw off whatever can not be used, is sometimes called idiosyncrasy, but more properly it may be called vital resistance, and upon the integrity of this power rests the ability to combat disease in all its forms, whether it be the absorption of any animal virus or the poison resulting from undigested food. This ability is in proportion to the integrity and soundness of every tissue and organ of the body. This may be illustrated by the fact that with a person suffering from kidney disease, which necessarily impedes elimination, the ordinary effects of a poison are intensified; therefore whatever aids in the promotion of good health, or in other words, the normal action of all the functions, will contribute to the safety of the individual in any and every emergency.

When a person dies from the effect of poisoning, it is simply because the system was unable to eliminate the offending substance and was exhausted in the effort. There is a tolerance of some substances which frequently results in chronic disease, and again it is shown in what is called the cumulative effect or acute disease.

Those who would hold that a substance is at one time a medicament, and at another time a poison, have much trouble in drawing the line between the beneficial and the poisonous effect. The idea that poisonous substances act on the system is responsible for many grave mistakes, whereas always and under all circumstances it is the system that does all the action.

There might be some excuse for the idea that disease is an entity, from the facts that have been brought to light by the germ theory, but this theory is of recent date, while the entity theory is as old as superstition.

Snake poison, which may be cited as a type of other animal poisons, takes effect through the circulation, and acts by paralyzing the nerve centers and by altering the condition of the blood. In ordinary cases death seems to take place by arrest of respiration from paralysis of the nerves of motion. The poison also acts septically, producing at a later period sloughing and hemorrhage.

Dr. Calmette, a noted French scientist, claims that what is poisonous in the snake's bite, is not the venom absorbed into the blood, but a principle which the blood itself has developed out of the poison. This would necessitate very quick action when the poison is inserted in one of the large veins, as that is followed by instant death.

The following cases fairly represent some of the tragedies that are occurring in our everyday life.

A man 60 years old falls and dislocates his finger, he goes to the hospital, where in a short time he dies from blood-poisoning. . . . Another man 48 years old, many years a wine merchant, whose great toe was severely crushed by a heavy man stepping on it, was taken with blood-poisoning and in spite of all treatment, even to the amputation of the leg, he soon succumbed to the disease. . . . A young woman 24 years old, picks a pimple on her chin and at once her face begins to swell. In vain was all medical treatment, for in a few days she died in terrible agony. . . . About a year ago there died in Brooklyn, N. Y., a physician in his 38th year, who six years previously received a slight scratch in his hand while performing a postmortem examination. All that medical science could suggest was done to no avail. . . . In the summer of 1896 a young woman 22 years of age was bitten on the leg by an insect. Several physicians were called in but their treatment gave no relief; blood-poisoning set in; it was decided to amputate the leg, but before it could be done she died. . . . In July, 1896, a veterinary surgeon 34 years of age, while removing a cancer from a horse pricked his finger with his knife. The wound was so slight that he forgot all about it. A few days later blood-poisoning set in and in a short time his end came. . . . Some forty years ago a man named Whitney was teasing a rattlesnake in a Broadway barroom, was bitten by the animal and, though whisky was poured down his throat by the quart, all was in vain and he soon died.

Such results seem entirely unnecessary were the proper course pursued, and at the same time they are a fearful commentary on the medical resources of the day.

The latest researches in regard to alcohol reveal it as a poison to the human system in whatever way it may be diluted or disguised. Its effect is always the same in proportion to the amount taken. It is impossible to habitually use it in any form, even in small quantities, without disease and degeneration resulting therefrom. When taken into the stomach the action is the same as with any other narcotic; the meaning of this word is *to become torpid.* It benumbs the nerves of sensation, and thus the vital resistance to any offending material is reduced, and while the patient *feels* less of any disturbance the real harm goes on with accumulated force because of the lack of vitality and non-resistance of the nervous system. This loss of control is readily seen in the conversation of one who has taken what is called "a little too much." The inhibitory power of the brain is diminished.

When the body is in the throes of a vital struggle with a virulent poison it would seem to any unprejudiced mind, the height of folly to further weaken the vital resistance by the administration of any narcotic, and especially alcohol.

The eminent German, Professor Bunge, says, "All the results which on superficial observation appear to show that alcohol possesses stimulant properties, can be explained on the ground that they were due to paralysis." . . . Professors S. Weir Mitchell and E. T. Reichert on "Researches on Serpent Poison," make this notable statement: "Despite the popular creed, it is now pretty sure that many men have been killed by the alcohol given to relieve them from the effects of snake bite, and it is a matter of record that men dead drunk with whisky and then bitten have died of the bite." . . . Says Dr. Richardson, "Even a small quantity of alcohol affects the acuteness of vision."

Testimony of the most reliable character, to the fact of the injurious action of alcohol in disease could be quoted *ad libitum.*

As a great contrast to the weakness of the mass of our people who are drug-takers and alcohol-consumers, and who are liable to almost any epidemic that comes along and quickly succumb to a serious injury, may be mentioned the Turkish soldiers of today, who know nothing of drugs as we use them, and never use alcohol in any form. During the late controversy with the Greeks, one of them was reported as having been shot in the stomach, remaining in the ranks and afterward walking ten miles. Another one who was wounded twice in the legs and once in the shoulder, continued attending to his duties for twenty-four hours, until an officer noticed his condition and ordered him to the hospital. The heat was tremendous but the troops endured it without complaint, and the doctors are astonished at the wonderful vitality of the wounded Turks, who recover with remarkable rapidity. This with good reason is attributed to their abstemious lives.

It has been stated that the Moqui Indians handle the rattlesnake with impunity, and are not inconvenienced by the occasional bite of the animal.

The rational treatment of animal poison is to endeavor to prevent the entry of the virus into the circulation, to neutralize it in the wound before it is absorbed, but when it has entered the system then everything should be done for its elimination.

The most powerful aid to the human system, and the most perfect eliminator known to man is heat. It is used with much advantage and great success by means of water, both internally and externally, but above all is its use by hot air, as in the Turkish bath, which works in harmony with every natural function, promoting the action of all the secretions and more particularly the excretions. By this means will the system unload itself of an accumulation of impurities in an incredibly short space of time, while the heat aids in destroying whatever there may be of virus therein.

Calmette, whom we have previously quoted, has shown that whatever be the source of snake venom, its active principle is destroyed by being submitted to a temperature of about 212 degrees for a variable length of time.

In the not remote future thousands of human beings will owe to the Turkish bath not only an immunity from disease in general, but also an escape from the horrors of a premature death from hydrophobia, the poison of snake bite or the slower action of infectious disease.

The mass of testimony that has been accumulating for over thirty years past is more than sufficient to convince any reasonable mind that is willing to examine the facts.

The medical profession has searched the world over and under for the means of controlling disease, while within the human body itself lies the vital power which needs only to be cultivated and exalted to its true function to banish the mass of disease from the land.

THE THERAPEUTICS OF ALCOHOL IN DISEASE.

Presented in the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY J. B. GARBER, M.D.

DUNKIRK, IND.

Ever since the days of Æsculapius, the "Blameless Physician" who went about healing and raising from the dead until finally killed by the thunderbolt of Pluto, the progress of medicine has been a struggle. Its history reads almost like a fable. In those days great temples were built in honor of this Father of medicine, and even snakes were believed to receive healing power from his hand. These endowed serpents were sought after by the Greeks and Romans during epidemics, in the hope of their being able in some way to allay suffering and drive away disease.

On this shaky foundation began the struggle of scientific medication, and in this early beginning we find empiricism to be the key-note of therapeutics. Remedies were used in the treatment of disease that possessed a supposed medicinal power or charm that would in some way bring about a cure. Those who practiced medicine were usually an uneducated class of barbers or quacks, who had more influence from the appearance of their dress than from their learning. The same may be said of the pupil, whose student life was judged more from the number of scars on his body than from his profound knowledge.

Yet in all this ignorance and mysticism we find here and there a bright light who would shine out from among the darkness and shadows around him and bring forth some new medical idea or theory that has stood the test of ages. We shall refer to a few as we pass. Vesalius, who after the publication of his great work on anatomy became physician to Philip II., and whose useful life was cut short by his being shipwrecked on the Island of Zante as he was returning from a trip to Palestine; Paracelsus, who was the greatest military surgeon of the sixteenth century, even though he burned the books of Hippocrates and Galen in contempt. We need but mention such names as Harvey, Paré and Jenner, whose great lifework we celebrated so fittingly at our last meeting. These able men with many others have left "footprints on the sands of time." And among the great constellation of medical stars we find some of lesser light whose brightness has long since faded. Hence we naturally think of Hahnemann, who was born in the year 1755, and after practicing medicine for ten or twelve years without success, began the translation of medical books, and when he came to the subject of Peruvian bark became so mystified that he began taking repeated doses to find out its action on a person in health; and while under its tonic influence his mind became so clouded that he gave to the world his theory of *similia similibus curanter*.

The blazing glory of this unscientific principle has long since faded in European countries, and its American brightness has been waning until at the present time we can find only here and there a disciple who is bold enough to announce on his office sign the title "Homeopathy." It now stands on an equality with "mesmerism," "Thompsonianism," "faith cure," "specific medication," etc.

Thus we see what a struggle scientific medicine has had in the past, and is it any wonder that it has come down to us, at the close of the nineteenth century, laden with errors and extravagant ideas in reference to the therapeutics of many remedies?

We hear it said that surgery has made great progress in the last few decades. The same can be said of therapeutics. Think of the shotgun prescriptions of the past. Who would dare write one today? The old "ten, ten" is written no more. The "thumb-lance" has taken its place among the curiosities of relic collectors.

The striped pole of the barber has lost its original significance. Yet while great changes have taken place in the vast domain of medicine, some therapeutic agents, by the great hold they have had on the popular minds of the laity and some physicians, have held on remarkably well.

The most important of these, and the one that concerns us most in this paper, is alcohol, for in some form it has retained a place in therapeutics ever since the people were advised to "take a little wine for their stomach's sake."

The distillation or production of alcohol originated, no doubt, among the Chinese; but the term came with other chemic knowledge through the Arabs. And notwithstanding the progress of therapeutics, alcoholic prescriptions have kept pace and by many have held their original importance. It is only during the last few years that its use in the treatment of disease has been checked, and for this, thanks be to the American Medical Temperance Association and other similar organizations, and to such noble investigators and experimenters as Richardson, Davis, Kellogg, Crothers and others, whose sole object is the scientific investigation of the subject.

In this work in the past there has been a great struggle on account of the popular ideas of the laity and the teachings of many of our text-books on therapeutics and practice.

It has been demonstrated beyond any doubt that alcohol interferes with normal digestion. In those experiments made by Drs. Chittenden, Kellogg and others, it is conclusively shown that alcohol in any quantity or form taken into the stomach inhibits or neutralizes the gastric juice. Hence the use of alcohol is contraindicated in the treatment of all forms of stomach ailments, whether acute or chronic.

Now, what is the effect of alcohol on the normal resistance of the human body to disease? It is not necessary to refer to the experiments of Berkely and others, and especially those of Frank H. Hamilton, for every physician who is a general practitioner has had frequent opportunities of observing how readily those who are habitual drinkers succumb to disease. This fact is well demonstrated in military life, as well as by those who endure great hardships in exploration and navigation; neither can alcoholics stand the extremes of heat and cold as well as the non-alcoholic.

In shock it is of no benefit and adds greatly to the danger. The same is true whether the shock is accidental, surgical, anesthetic or toxic.

Now, lest our paper should be too lengthy, we will hasten to a series of conclusions in regard to the therapeutics of alcohol that we believe are so well established on scientific principles, and as the result of the most scientific investigators of the present day, that they will not be questioned, and if so, then in the light of scientific investigation can easily be defended.

1. Alcohol is an anesthetic instead of a stimulant, and the apparent stimulating effects of its use are delusive.

2. The beneficial effects attributed to its use by alcoholic advocates are due to its paralyzing influence on the nerve centers.

3. Its use greatly interferes with the elimination of urea and other poisonous products, thereby rendering the system more liable to disease.

4. It impairs the co-ordinating powers of the brain and diminishes cerebral activity to such an extent that we have an abnormal action of the nerve centers.

5. It is of no benefit in any of the acute diseases, but greatly complicates the conditions and renders the chances of recovery much less than without it, and to use it in chronic diseases only adds fuel to the fire and substitutes a disease of alcoholism for the one under which the patient is suffering. And if it is of any benefit, it simply keeps up an anesthetic condition of the nerve centers to such an extent that the patient is not conscious of his sufferings.

6. Therefore, we believe that in the scientific light of the closing of this century alcohol should be classed among the anesthetics and poisons, and take its place in therapeutics along beside chloroform, cocain, morphin, chloral, etc., and that our success as physicians will be much better if we abstain entirely from its use in the treatment of disease, and that the beginning of the twentieth century will mark an era in therapeutics.

The shadows of the empiricism of the past shall give way to the light of the scientific medication of the future.

THE TREATMENT OF DIPHTHERIA WITHOUT ALCOHOL, WITH REPORT OF CASES.

Presented to the Section on State Medicine at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY SERAPH FRISSELL, M.D.

SPRINGFIELD, MASS.

That diphtheria is an infectious disease, with a specific poison, is universally believed by the medical profession. Whether there are two forms of the disease, the result of different bacteria, is still a mooted question. I believe there are two forms. Just at present, quite as much attention is being given to the treatment as to the nature and cause of the disease. And while the war of words is still raging, and clinical reports both favor and oppose the antitoxin treatment, while judges as well as jurors disagree as to the merits and demerits of this new remedy, I find that whichever line of treatment is followed, the greater part of the medical profession still cling to the belief that alcohol, usually in the form of whisky, is a necessity. Believing that alcoholic stimulants are *not* necessary, but rather are injurious in diphtheria, my purpose in presenting this paper is to call your attention to a line of treatment less dangerous, and attended with better results than when alcohol is used.

Previous to commencing in general practice, I had seen less than half a dozen cases, including an attack I myself had. The first was soon after the disease appeared in the United States in 1856. The case was that of a young lady, a member of a family all suffering from throat trouble, and who had had a similar attack the previous winter. I well remember the white glistening membrane covering the lips and tongue, and its beaded appearance, but I know nothing of the treatment.

The attack from which I suffered was during my college course in 1873. At that time I was with a homeopathic physician who gave me some pink powders. Not satisfied with the results, I applied to a physician of the regular school. He prescribed tinctura ferri chlor., with potassii chlor., also quinia powders and a generous diet. His directions were, "Eat, eat all the beefsteak you can." For the first day swallowing was exceedingly difficult and painful, but I persevered and made a rapid recovery, with no symptoms of heart failure; no whisky or brandy; no alcohol except that in the tincture of iron. The treatment of the three cases which came under my observation while in hospital and dispensary practice was similar to the foregoing, with local applications of glycerin and tannic acid added.

Case 1.—My first case after entering on general practice was that of a young woman student, 16 years of age. Her home at the time was a public board [illegible] sease wh
first seen was not far enough d [illegible] ts natu
and as sore throats were pre [illegible] rgle a

gave quinia powders. I did not see the patient the next day. The third day I was much startled to find the throat and tongue covered with membrane. Three years before, diphtheria had prevailed in the place and many cases proved fatal, one of the leading physicians having lost two children. So alarmed were the people that it was difficult to find any one willing to care for a person sick with the disease. Fortunately for my patient, as well as for myself, two sisters assumed the duties of nurse.

The following were the prescriptions given:

R.	Tinct. ferri chlor	ʒij	8 00
	Potass. chlor	ʒj	4 00
	Glycerini	℥j	32,00
	Aquæ puræ q. s. ad.	℥iv	128 00

Misce, Sig.: Gargle throat every two hours, also take one teaspoonful diluted every four hours.

R.	Quiniæ sulph	gr. xxx.
	Ft. chart. No. xx	

Sig.: One powder every four hours.

Two and three times a day I made applications of glycerin and ferri persulph. to the throat. The latter I by accident found to give better results than tannic acid. No alcoholic stimulants were given, but the patient took from five to eight goblets of milk and two to four eggs every twenty-four hours.

Dishes and spoons were retained in the room and thoroughly cleansed, and the most scrupulous care was exercised about the sputa. External applications of sliced lemon were made to the throat. Twice alcohol was used as a gargle.

There was great excitement among the boarders when it was known that no form of alcohol was prescribed. The mistress of the house informed me that "all the doctors in town and the best doctors in New York City gave whisky or brandy in diphtheria; that her nephew was then sick with diphtheritic sore throat, and was taking whisky by his physician's order." My reply was: "You tell me all the doctors here give whisky, but their patients do not all recover; I know that one physician buried two children with the disease. No doubt they had plenty of whisky. This being true, if my patients die without whisky, I can not see that the physicians have any reason to criticise me, or my line of treatment."

Previous to this conversation, I had consulted various authors on the treatment of this disease, and found the majority of them favored the use of alcohol in some form; a few did not, and these reported no more fatal cases than the others.

I also found that the authors who recommended whisky, brandy, etc, in diphtheria, recommended the same in other diseases that I had successfully treated without their use. Furthermore, in my own case stimulants had not been prescribed and I had taken nothing of the kind. I had therefore decided not to give alcoholic stimulants in this case. The following day I learned there had been so much said to the sisters who had been caring for my patient, that there was some whisky put in her milk. She detected it and asked whether I ordered it? On being answered "No," she said, "Then I'll not touch a drop," and did not.

My patient made a good recovery. Though a delicate girl, she showed no symptoms of heart failure, did not lose color, and to all appearances had gained in flesh. Her recovery was so rapid, and she looked so well, it was a common remark that "Miss Fannie could not have been very sick." If there was anything further needed to strengthen my belief that whisky was needless in diphtheria, it was the marked contrast between *my patient's* recovery and looks, and the young man who had taken the whisky treatment.

Case 2.—May 20, 1890, I was consulted by the janitor of our building, for sore throat. (From experience gained as a nurse during an epidemic of diphtheria a *few* years before, he had diagnosed his own case before seeing me.) Examination revealed inflamed fauces and gray patches on tonsils. I prescribed the same medicine as in Case 1, using the gargle every half hour; the iron internally every hour; external applications of salt pork with black pepper to the throat; plenty of beefsteak; room to be disinfected with chlorin gas once in eight hours. My patient, whose room was in the building, decided that with his previous experience, he would care for himself, and promised to take the medicine faithfully as prescribed. This he did, but after twelve hours, I became dissatisfied with results and decided to try the chlorin treatment. I commenced using chlorin water, preparing it myself so as to have it of greater strength than the officinal: Aquæ chlorini ℥iij; glycerini ℥j. This was used as a gargle every half hour. Also one-half to one teaspoonful diluted, every two hours; iron and quinin every four hours alternating. A marked improvement followed. The evening of the third day found the throat apparently clear, and everything indicated a speedy recovery. With the relief of mind which came from this knowledge, the patient retired at ten o'clock and awoke at four in the morning, when he found the membrane again forming. That day, without my advice, he took a cathartic. When I next saw him, he complained of a burning sensation in the esophagus and stomach, with nausea and vomiting. Later the same burning in the bowels. For about thirty hours he was unable to retain food or medicine. Pieces of membrane resembling cooked macaroni were vomited. Various remedies were given to check the vomiting, but nothing proved effectual, until vegetable charcoal was used. From this time the vomiting ceased, and three evacuations of the bowels followed in about fifteen hours. The first two were described as burning like fire; the third more natural.

The symptoms from this time were much more favorable. While vomiting the posterior nares became infected, as did the larynx. The latter was relieved by inhaling chlorin gas, sufficiently strong to produce spasmodic coughing, when the membrane was dislodged and expectorated. I dismissed the case in ten days.

For the first two and a half days, the patient ate nearly three pounds of beefsteak per day. Very little if any food was retained the next two days; after the vomiting ceased, a moderate quantity was taken. Naturally there was some prostration from not taking food for so long a time, as well as from the disease. There was no whisky and no heart failure.

Case 3.—Miss G. consulted me July 4, 1890. She had recently been with a brother and nephew who had diphtheria; both cases fatal. Had dressed the nephew for burial, putting on stockings when the nails were loose. Had taken whisky as a preventive. Sulphur had been used for disinfecting attendants and premises.

Examination showed the throat very much congested, but no membrane visible. The night before she had used kerosene oil for external application to throat and she wished to use the same again. I made no objection. I prescribed the same remedies, disinfectants and food as in Case 2.

July 5. Throat much as the night before. Blisters had formed on the neck, from the kerosene oil. No membrane visible until the third day. Later I found that swabbing the throat spread the disease, and omitted this part of the treatment, but continued gargle and medicine every half hour.

During the second week, pieces of ice were given for a few hours, resulting only in incrasing and thickening the membrane; the same results from a dish of ice-cream.

At this time the membrane covered the tongue and so nearly filled the throat, that there was little space for swallowing. This condition was relieved by local applications of papoid. I also gave papoid, gr. iss to v, every two hours. A local application of mercuric bichlorid (1 to 1000) dissolved the membrane like snow in hot water, but the surface beneath was left in such a sensitive condition, that I did not dare continue its use, fearing spasms from contact of food with the denuded tissue.

The nasal passages to which the disease extended were irrigated with chlorin water by means of an elastic catheter attached to an ordinary hard rubber syringe, with the piston removed. For more than three weeks the treatment was continued every hour or half hour.

During the earlier stage of the disease, notwithstanding my strict orders, the patient was careless about the sputa, and I am confident that later this was the cause of re-infection, since it is the only case in my practice where the disease continually recurred after it was apparently under control.

It was not till the patient was removed to another room, and her bed, bedding and room thoroughly disinfected with chlorin gas and bichlorid solution that the disease was finally conquered after four weeks sickness. This case was followed by paralysis.

When the agent for the Board of Health disinfected the premises, I am informed that he said he "had noticed where chlorin was used the patient was often paralyzed."

I inquired, "if it was suggested to the man, that possibly where it was not used sometimes there were funerals?"

Cases at Mount Holyoke College, South Hadley, Mass.—In five of the six cases which occurred among the students at Mount Holyoke College, in 1891, at which time I was the physician, I followed the same line of treatment as in the last case reported. In the sixth case, the young lady had chronic catarrh and the nasal passages proved the point of attack.

Laryngeal obstruction developed the third day, and the patient was in danger from suffocation. Chlorin gas cautiously used gave relief. This case proved very stubborn.

On account of the catarrhal condition, the gargle and douche of chlorin water produced irritation, and a solution of mercuric bichlorid was substituted 1 to 100, for the nasal passages and 1 to 62 for the throat. My authority for using this strength, was cases reported by Dr. F. H. Peck of Clinton, N. Y., in the *New York Medical Record*, Jan. 31, 1891.

These applications were made every two hours. A small swab of absorbent cotton with four drops of the solution was used each time for the throat, then burned. An atomizer was used for the nasal passages.

In this case it was twelve days from the inception of the disease until the parts were entirely free from the membrane. Three days later, the patient went to the eastern part of the State (a journey of more than one hunded miles), where she spent one week, when she returned to the college and resumed her school duties.

Not one of the six young ladies showed serious prostration. After the first twelve hours, they were usually ready for their three meals, with two or three lunches. Two of the meals, sometimes all three, consisted of a generous piece of beefsteak or roast beef, with other articles of diet to suit their appetite, while the lunches were usually milk with plenty of cream and eggs. It was one of their pastimes, to make out their bill of fare for the coming meal.

Dr. Edward Hitchcock of Amherst College, Chairman of the Sanitary Department, Dr. G. W. Davis of Holyoke, and Dr. G. G. Hitchcock of South Hadley Falls, saw these cases (but not at any time when the exudate was at its worst), and all three pronounced the disease diphtheria. Prof. Hitchcock said to me: "I presume you give plenty of whisky?" The others made similar remarks. My reply was, "Not one drop; my diphtheria patients have food, not whisky."

Like my first case reported, these young ladies made rapid recoveries. They had so few of the complications usually following the disease, that some of their relatives questioned my diagnosis.

A local paper reported ten cases with one death. Fearing this would be the means of breaking up the school, a report went out from the college, that there neither was, nor had been a case of diphtheria there. The question may naturally arise, why was not the school discontinued? My answer is, because of the source of the infection, and my faith in chlorin gas as a sure disinfectant. Had I found that the disease resulted from defective sanitary conditions, the only thing would have been, to have closed the school; but with the third case, I traced the source to a room, whose occupants had been in communication with relatives whose son had diphtheria.

The following interesting case was the first in which I used the chlorin treatment:

July 9, 1888, I was called at 10 P.M. to see Annie B. aged 6 years. She had had fever for two days. The parents had given aconite, but the child had continually grown worse. Her breath was very offensive, and strongly diphtheritic, and the glands about the throat swollen; tonsils so swollen I could not see beyond. Temperature was 103 degrees; no membrane was visible. I prescribed a solution of tincture ferri chloridi and potass. chlor. with glycerin every four hours, alternating with quiniæ sulph. gr. j. July 10. Patient was much worse; temperature 104.2 degrees; gums and lips cyanotic. Acting on the suggestion of an old practitioner (Dr. M. Calkins, Springfield, Mass.), whom I knew did not favor giving whisky in diphtheria, I put my patient on the following:

R.	Aquæ chlorini	℥iij	96|00
	Glycerin	℥j	32|00

M. Sig. Gargle throat every half hour, also one-fourth teaspoonful diluted, internally, every hour.

I continued the iron and potassa solution alternating with the quinia, every four hours. The rooms were to be disinfected every eight hours with chlorin gas. All the beefsteak the patient would eat was given. This treatment was continued seventy-two hours. The last eight hours the mother said, "they could hardly rouse the child she was so sleepy, and sometimes she fought like a little tiger." At times she was troubled for breath. While gargling her throat, she asked her mother, what made her keep spitting up skin.

No doubt this was membrane. Her mother gave little thought to the child's question, therefore neglected to save a specimen for examination.

After the fourth day, the temperature gradually fell to 99.5 degrees, then to 99, where it remained for days, and was not normal, when I dismissed the case.

I had read much of sudden deaths from heart failure when everything seemed favorable for recovery.

This was such a serious illness, I cautioned the mother at each visit not to allow the child to exert herself. I was informed it was impossible to keep her quiet. The truth of this statement was soon verified, for within a few days I found my little patient playing horse, with string attached to bedpost, herself astride the foot-board.

During her sickness, her uncle, a physician, saw the case. His thermometer registered 105 degrees. He favored whisky and beef tea. As the case was progressing satisfactorily I could see no necessity for whisky, and so long as the patient was eating a pound of steak a day, there was no need of beef tea.

Later the father informed me that for seven days the child averaged a pound of steak a day. Previous to her sickness she cared very little for meat.

My patient made a rapid recovery, and showed no symptoms of heart failure. During her entire sickness there was no whisky nor alcohol in any form used, excepting in the tincture of iron.

In treating diphtheria cases, two things I consider quite as important as medicine, viz., the disinfectants used and plenty of wholesome food, especially meat. After eight years experience with chlorin as a disinfectant, the favorable results following its use prompts me to say that I believe there is nothing more effectual. I have yet to learn of the first case of infection from any of my diphtheria or scarlet fever patients since using it.

The following proves its superiority to sulphur.

In Case 3, Mrs. E., at whose home my patient was during her sickness, showed no symptoms of the disease for nearly two weeks. Then for three mornings in succession I was aroused at five o'clock to go to her, as she feared diphtheria. During the day, under treatment, all symptoms would disappear. After the third call, I made particular inquiries and found the woman had been sleeping those three nights in the same room that my patient had for two nights occupied, after coming from the house which had been disinfected with sulphur. I ordered the room and bedding fumigated with chlorin gas. This was done and there was no further complaint from the occupants.

The cases at Mount Holyoke College were reported to the town authorities. In conversation with one of the gentlemen, he referred to the ill success in disinfecting a dwelling house where diphtheria had prevailed. It was almost rebuilt before immunity was secured. Carbolic acid and sulphur were among the disinfectants used. At the college chlorin gas was my only reliance. As soon as I decided that my suspicion as to the nature of the disease was correct, the young ladies were removed to the hospital department and nurses procured. My directions were to use the gas in the patients' rooms every six hours; also use it freely in the hall from which the rooms opened. On making my visits before leaving the hall a fresh supply of gas was prepared and my clothing disinfected.

The rooms occupied by the patients before they were taken to the hospital apartments were disinfected in the same way; also the room where the disease first appeared. After the patients had recovered, the apartments they had occupied with the furnishings were thoroughly disinfected. The mattress and curtains in only one room were burned. There were no more cases of diphtheria although the rooms were used after a week's time.

In regard to food, if diphtheria is first a local disease (usually invading the throat and air passages), I ask what is to hinder stomach and intestinal digestion?

I know from experience that mastication and deglutition is attended with pain. Yet I believe in, and insist on my patients taking nourishing food from the first, if only liquids.

In a few hours the throat seems less sensitive and beefsteak, with other solid food, can be taken by older children and grown people, unless medicines are given which destroy the appetite and interfere with digestion.

By taking food the system is fortified against the disease, the stomach is in a better condition for medicine, the secretory and excretory organs stimulated to perform their natural functions and the diphtheritic poison more rapidly eliminated from the system.

That alcohol will kill diphtheria bacilli I believe, so will chlorin gas. The latter is a disinfectant and germicide; besides, the hydrochloric acid which I use in its preparation, is a normal constituent of the gastric juice, and aids digestion rather than retards it.

Whisky, like any alcoholic stimulant, congests the the mucous membrane of the stomach, retards digestion, destroys the appetite, and paralyzes the nerves.

So many fatal cases are reported where whisky is given, it is my belief that sometimes it is the whisky which causes heart failure rather than the disease.

In closing I will say that, though differing from the general practice of the medical profession, I have never prescribed alcoholic stimulants in diphtheria. and I have never seen reason to regret the course I have taken.

Let us have a Department of Public Health!

CONCEALED ALCOHOL IN DRUGS.

Presented to the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

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The fact is well known that nearly all proprietary drugs contain large quantities of spirits, particularly the bitters and tonics that are advertised so widely Several authorities have made extensive examinations of drugs advertised as temperance drinks and free from alcohol, and in every instance have found spirits from 3 to 50 per cent. of volume, literally ranging all the way from the lighter beers up to the strongest alcoholic drinks in common use. Dr. Bradner has published tables of these drugs compiled from the reports of the Massachusetts Health Board and the examination of State chemists in different parts of the country. His paper appeared in the *Journal of Inebriety* for January, 1890, and the second paper on this subject will be found in the July issue of that journal. These papers bring out the fact, not well known, that nearly all the more prominent proprietary drugs on the market contain large quantities of alcohol.

How far these drugs depend on alcohol to increase their attractiveness and sales is not known, but it is evident that many of the widely used drugs would have no demand if it were not for the alcohol which form the bases of the combination.

The *Medical Press and Circular* and the *Lancet* have called attention to the great danger from the so-called temperance drinks advertised as antidotes for inebriety. An examination of many revealed cocain, opium and alcohol in nearly all of them. Several instances are given of persons who used large quantities of these drugs under the impression that they were cured of the alcoholic crave and were building up against it in the future. In reality they were worse and more incurable than they would have been, using spirits alone.

One case was cited of the death of a man who used large quantities alone of "Seaweed Tonic," which contained 40 per cent. of alcohol. He was under the impression that he was being cured of inebriety, when suddenly delirium tremens came on and he died.

In this country the substitution of ginger compounds for alcoholic drinks are common and always end disastrously, leaving the victim worse and more incurable.

Coca wine preparations are also dangerous, and although I have used them in the first period of withdrawal of alcohol for the treatment of inebriety, it was evident that in many cases they would completely take the place of alcohol and require as much difficulty to remove as the spirits.

The dangerous credulity of professional men in freely endorsing drugs for this or that affection is very common in this country. One of the latest examples of either stupidity or duplicity, is the warm endorsement of a drug by a noted temperance revivalist as a great tonic to be used by all persons who are worn out from alcohol and other causes. Repeated analyses have revealed the fact that this drug contains 21 to 28 per cent. of alcohol, and it is literally stronger than most of the alcoholic drinks in the market. While these *facts have been stated many times before, they seem* not to have been accepted by the general medical public. The older theories that alcohol is a medicine and food, in some unexplained way still continues, and the use of spirits in drugs of all kinds seems not to be thought harmful in any particular way. The gold cures for alcohol and opium contain in many instances these drugs concealed, and while in use completely satisfy all cravings and give the person a false sense of security and restoration. A very important question has been repeatedly raised and answered differently by persons who claim to have some expert knowledge. The question is, can strong tinctures of common drugs be given in all cases with safety; tinctures of the various bitters which contain from 10 to 40 per cent. of alcohol, and are used very freely by neurotic and debilitated persons? It is asserted with the most positive convictions that such tinctures are more sought for the narcotic effect of the alcohol than for the drugs themselves.

In my experience a large number of inebriates who are restored, relapse from the use of these tinctures given for their medicinal effects.

A neurotic who takes bitters or vegetable extracts for any purpose soon turns to wines and then stronger liquors for relief and becomes worse than before. This does not occur in all cases, the effect of the bitters is often repelling, the alcohol causes a headache and they are abandoned.

Alcoholic extracts of any kind used as tonics, diuretics or cathartics are always dangerous and uncertain. The alcohol they contain is, in most cases, very cheap and impure and more dangerous than the spirits used as beverages.

In a recent investigation it was shown that wood spirits were used to make a patent bitters, and the steady increase of the demand for this form of spirits beyond the known requirements of the arts point to its use in drug extracts. There are no evidences of this use, especially in well known drug houses, but the temptation to add to the profits of a drug by using an alcohol on which there is no duty and one with a duty of 90 cents a gallon is very great. Nevertheless, as physicians studying the symptomatology of cases, we are often confronted with a new class of symptoms, where tinctures are given freely and the effects are unexplainable.

In a recent case of influenza where tinct. cinchona was used freely there was mild delirium and irritation, which subsided when the cinchona was stopped. In another case a secret drug was used and the continued stupor and dulness which followed suggested an opiate. An analysis revealed morphia in large doses. It is easy to see how quickly an addiction to such a drug would be created, especially in a neurotic.

I have seen two cases who were suffering from some bronchial irritation, addicted to a secret cough remedy which contained morphia. They suffered, and with great difficulty were made to abstain from the use of the drug.

A very excellent clergyman had certified to a cure of consumption by a certain cough drug, but he could not keep from using it more than a day or two. After two years of continuous use of the drug he became very ill and was treated with morphia by a physician. He recovered but became a morphia inebriate, the beginning of which was the cough medicine at first.

The question is raised, how much alcohol can be used as a solvent in drugs without adding a new force more potent than that which is brought out by the alcohol? Opinions of experts differ. One writer thinks 10 per cent. of alcohol in any drug will, if given any length of time, develop the physiologic effect of alcohol in addition to that of the drug. An English writer says that in some cases a 5 per cent. tincture is dangerous from the alcohol which it contains.

There is some doubt expressed by many authorities as to the potency of a drug which is covered up in a strong tinture. It is clear that the value of a drug is not enhanced, and it is certain that a new force producing or exploding agency has been added to the body.

In experience, any drug which contains alcohol can not be given to persons who have previously used it without rousing up the old desire for drink, or at least producing a degree of irritation and excitement that clearly comes from this source. It is also the experience of persons who are very susceptible to alcohol, that any strong tincture is followed by headache and other symptoms that refer to disturbed nerve centers.

In many studies I have been surprised at the increased action of drugs when given in other forms than the tincture. Gum and powdered opium have far more pronounced narcotic action than the tincture. Yet the tincture is followed by a more rapid narcotism, but of shorter duration and attended with more nerve disturbance at the onset.

I am convinced that a more exact knowledge of the physiologic action of alcohol on the organism will show that its use in drugs as tinctures are dangerous and will be abandoned.

There are many reasons for believing that its use in proprietary drugs will be punished in the future under what is called the poisoned act. It is certainly clear that we are now at the beginning of the study of alcohol and our knowledge of its effects.

THE ETIOLOGY AND THERAPY OF TUBERCULOSIS.

Presented in the Section on State Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY H. B. WEAVER, M.D.
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All intelligent therapeusis must necessarily have as a basis a correct understanding of the etiologic factors that enter into the morbid complexus which it is intended to combat. That there can be no rational treatment of tuberculosis without a correct knowledge of its pathology is evident. On the other hand, it can not be claimed that the histogenesis and progress of the various elements of tubercle are thoroughly understood, although all admit that many facts bearing on it are well determined. One of these facts is, that a vegetable parasite, infective in its nature, is in some way causative. Whether, however, the bacillus tuberculosis of Koch is the fundamental primary cause of this morbid complexus is not so generally acknowledged.

Many eminent pathologists point out the fact that not only the minute tissue changes, which identify the tubercular processes, are virtually one and the same, but that these tissue changes are the result of the same parasite—Koch's bacillus. Even if we grant these facts upon a purely histologic hypothesis, yet there are clinical facts observed over and over by the greatest clinicians of today which might lead to a somewhat different conclusion. They insist, and not without the show of facts, as we believe, "that there is in the constitution of the individual anterior to the bacillary infection something that determines the fact of the infection and that largely determines also the course and character of the results of infection. We are aware that this doctrine of diathesis or susceptibility is generally admitted by those who hold the current view. We only wish to demur to the idea of the *subordination* of a *primary* etiologic factor to a *secondary* one.

The lamented Flint, among his latest utterances, while admitting the etiologic importance of Koch's bacillus, said in paraphrase of Shakespeare: "You take away their lives when you do take away the means by which they live." Dr. Andrew H. Smith, in the New York Academy of Medicine, recently said in speaking of phthisis, "The fact should be recognized that tubercle bacilli never become implanted in the healthy system. There is always an abnormal anterior condition, and it is that condition that should receive our attention." "By sufficiently improving the nutrition," says Dr. Smith, "you lift the patient above the plane on which the bacillus flourished." Solis Cohen, in his most exhaustive treatise on tuberculosis, forcibly remarks that, "to make our conception of the disease sufficiently comprehensive, we must include other elements than the bacillus and the changes in cellular structure or chemic constitution of solids and fluids brought about by its activity." He continues: "That condition which makes the human tissue a 'receptive soil'—a favorable 'culture medium' for the tubercle bacillus—that condition which of old was called 'diathesis' or susceptibility, is *itself* a disease, a departure from the *norme*, and I believe it to be the most important element in the morbid complexus termed tuberculosis." "It is the element requiring the greatest care in the prophylaxis, the most intelligent and faithful treatment." We believe that this cachexia, this predisposition which may be inherited or acquired, is a defective nutrition, superinduced by a want of vital energy which has its correlate in the histologic expression, in the place of normal tissue elements, of tissue elements of abnormal condition and lowered vitality. We know that tuberculosis is not the product of a truly inflammatory process, neither is it a neoplasm, for it tends neither to " resolution and repair nor to proliferation and persistence. Its tendency is to destruction without subsequent repair." It is a necrosed coagulation without blood vessels and without cell organization, without life—it is death.

Koch's bacillus, then, though still a power, is no longer supreme, according to many pathologists. Though the diffusion of the bacillus has been proven by laboratory research to be almost limitless, that it is in the air we breathe, in our food and drink, yet how few, comparatively, become infected. It is now proven that the respired air of the consumptive may be breathed with impunity. The sputum must be perfectly dessicated before it can become infectious. There is a later school of pathologists who maintain that the bacillus is not even infectious or contagious; that there are other concomitant bacilli more dangerous in their nature, to which "Koch's is simply the cross-sweeper" favoring their entrance; "that in the more pronounced cases of phthisis with the severe symptoms of hectic are the resultants of these concomitant bacilli only," and that the bacillus of Koch is assigned to simply an accidental rôle, appearing in local manifestations merely, which are well defined and eminently curable; that the disease is nothing more than a scrofulosis. How well founded these views are, remains to be seen. Yet it must be admitted that the trend of modern medicine is toward the doctrine of malnutrition as the fundamental, primary factor in the evolution of the phthisic state, and that the intervention of the bacillus of Koch is the secondary factor in the modification of a process already determined. Therefore, we conclude with Cohen, that when in the course of ordinary wear and tear, or "extraordinary wear and tear, or following inflammation or injury, or from any cause or combination of causes degraded tissue elements have been produced, it is highly probable that the tubercle bacilli or other microbes finding therein a favorable soil modify by their activity the further evolution of the disease." Consequently, in summing up the facts, as reflected by both observation and experience relative to the causation of tuberculosis, we think that we are warranted in the following conclusions: 1, that malnutrition is the starting point of all tubercular process; 2, that while the bacillus of Koch is perhaps the most important of the several microbes that influence the progress of the lesion in the various forms of the disease, yet it does not of itself originate the disease in any form; and 3, that both factors, the dyscrasia and the bacillus must exist in combination before there can be tuberculosis.

THERAPY.

Since tuberculosis is a curable disease; since defective nutrition, which may be either congenital or acquired, is the fundamental primary factor, and Koch's bacillus, which is infective in its nature, is the modifying secondary factor in the causation of phthisis, it behooves us to adopt such means and methods as are at once prophylactic and curative in their nature. To attempt to consider the various agencies, either preventive or remedial, in detail, would far transcend the scope of this paper; therefore we shall content ourselves by referring to those of most vital importance. If there is any principle in medicine established so firmly as to exclude debate it is that which makes the highest degree of nutrition the supreme condition of health.

The province and purpose, then, of modern medicine is to restore. And if there is one thing more than another that distinguishes this age of therapy it is the lessening of therapeutic agents by physiologic methods of therapy. It is doubtless true that the vegetable and mineral kingdoms and the realm of applied chemistry have given us countless remedies of value in the antagonism of diseases, but the "grander and deeper researches of biology, the study of the revelations of our cell-life forces operating within the blood, the life stream of the body, has resulted in far more direct and positive agents, restorative and at the same time vitalizing in their natures, reinvigorating the system and enabling nature to offer resistance to the encroachment or ravages of disease." It is also true that nothing has been more indisputably settled by the modern science of biology than that health or vitality is as truly and as practically the antagonist, as it is logically the antithesis, of disease, of every form of disease, of every course of disease. Again, it is one of the most brilliant of all the demonstrations of modern biology that the principle we call health or vitality is not only centered, as was always blindly believed in the blood, but also that perfect blood is an impregnable citadel, carrying an armament against which the assaults of disease whether by antecedent germs or in consequence of toxins are forever impotent. Here, upon this great truth, it is clear that an infallible hemotherapy might be founded which has been shown to possess the power of, 1, antagonizing specific pathogenic germs; 2, distributing to their ultimate destination nutritive material; 3, stimulating the physiologic functions by normal pathologic influence.

The fact now universally acknowledged by scientists without exception, that millions of pathogenic germs entering into the organism at every breath would go on to immediate destruction of the tissues of the body, is itself an argument *a priori* in favor of the existence in the organism of cellular agents of germicidal resistance to pathogenic germs. This fact was first demonstrated to the world in the discovery of the cellular principle of nuclein, which physiologists found to be the product of the action of the blastema or cell substance of multinuclear leucocytes, or white blood corpuscles on the proteids delivered to the blood from the digestive tract. All peptones are converted into nuclein through their leucocytes. The hitherto mooted physiologic point concerning the assimilability of the peptones is thus explained. Before being cellulized they are foregn bodies and often toxic agents. Therefore nuclein is two-fold in its functions: 1, it has a physiologic function of tissue building; 2, a pathologic function of an antitoxin. In the first all proteids are converted into nuclein by the leucocyte and delivered to the various tissues of the body by the blood. In the second capacity it is the natural enemy of all disease germs. When formed in the blood, as we have said, it is the action upon proteids by the leucocyte. When introduced into the organism it acts in two ways: 1. It immediately excites the osmotic action of each leucocyte, causing it to proliferate or break up into nuclei, which is leucocytosis, the first physiologic step in the resistance of disease, and the fundamental axiom of physiology is, the more active the leucocytosis the greater the vital resistance. 2. It furnishes ready made to the leucocyte material which, under depressed vital conditions, it is unable of itself to construct from the proteids and thus lifts the organism to the physiologic plane, while it so strengthens and increases the leucocyte that it overpowers the toxic germs with which it may come in contact. Every leucocyte if in normal condition is a phagocyte, it has the power of eating up toxic germs and destroying their vitality. Hence this theory of phagocytosis, first advanced by Metchnikoff, has started the profession into the conception of a higher therapy, hemotherapy.

Hemotherapy, blood therapy as the name imports, "is a system of treatment by blood supply, and comprehends also the treatment of the blood fluid itself, its reconstruction and renewal, its cellular alteration and its constituent modification by the introduction of direct biologic agents or substances derived from the blood or tissue, or the introduction into that fluid of chemic and other agents capable of modifying its diseased and altered components, rendering them isomeric and identical with pure and healthy blood." We care not what the agents may be. It may be pure bovine blood or extracts from glandular tissues or the nucleins of Vaughan, or it may be a cultured substance, as those of Koch and Klebs. It must be some substance directed to and introduced into the blood, exerting its known influence therein directly upon the fluid so as to modify for the better, alter and purify, reconstruct and renew that fluid. The fact that some of these biologic or chemic substances other than blood itself are capable of producing these effects brings them under the purview of hemotherapy. The objects aimed at and the effects produced are the same or identical in nature. Hemotherapy seeks to supply blood material, to promote its cellular activity and its germicidal powers. The theory is so palpably clear, so true to the teachings of nature that its wisdom is self-evident.

"Phthisis has its origin in defective tissue-building forces superinduced by privation and depression." It is a popular belief that if food is digested and taken into the circulation that is all that is necessary, but food elements that have undergone thorough transformation in the digestive tract, have been absorbed by the lymphatics and discharged into the blood current, are not yet blood. They are still food and have done the body no good. There are two conditions yet to be fulfilled before this food can benefit the system; a demand on the part of the body for it and nutritive force sufficient to convert such food into tissue. Hence the sheer failure of the food elements, be they ever so well digested and thoroughly nutritive, if they are not appropriated by the body. For this demand, which is dependent on healthful activity both external and internal, and this vital force which resides in the blood cells and is measured by their plenitude and their oxidizing and vitalizing power, are the very things that neither medicine nor diet nor change of air can enable the exhausted functions to reproduce. Oxidation in the lungs takes place in proportion to the amount of space in which the air comes in contact with the blood. When, as is the case with pulmonary tuberculosis, an extended portion of the lung becomes obstructed or the tissue thickened, so that the oxidizing process is to a degree frustrated, nutrition is likewise frustrated and poisons necessarily accumulate in the blood. Under these circumstances when the blood is already surcharged with débris which it handles with difficulty, food crowded into the circulation only aggravates the condition instead of relieving it. Every day the tubercular infection eats away more of the lung tissue and shuts off more of the breath of life from the languishing and non-proliferating blood cells, which thus daily appropriate less nutriment and transform it into less and less of living tissue in every part, organ and nerve of the system, a process which is well called consumption, for the victim is rapidly consumed by starvation; "not for want of food (with which he can do nothing), but for want of breath, for want of lungs. There is no help in him and no human art or power can engender help within him; it must be put in him. Is there nothing that can be done to stanch this flux of life blood?" It is here that hemotherapy comes to the rescue and supplies the great desideratum with her conserved nuclein, in the form of pure bullock's blood or in animal or vegetable nucleins, which may be transfused or introduced through any part of the alimentary tract, which will do the whole work of healthy blood, ready oxidized in spite of inadequate breath; ready vitalized and cell-abundant in spite of exhausted vital energy.

The only practical question remaining is: Can these principles be extracted and preserved in their physiologic environments for therapeutic use? The very scientific researches and trustworthy experiments of Vaughan, Alude, Breckenridge and their colaborers would seem to answer this very conclusively in the affirmative; while the testimony of such distinguished clinicians as Biggs, Conant, Baxter, Bliss, Mays, Waugh, Wathen and a host of others can be taken only in the light of a demonstration of the proposition that in hemotherapy we have the corroboration of Metchnikoff's experiments that it is the principle of leucocytosis, hence phagocytosis, the most valuable method in the modern pharmacopeia. And as phagocytosis is declared to be the basis of resistence of the body to micro-organized disease and that the blood serum has germicidal constituents and that this quality is found in the neuclin, it is reasonable to suppose that hemotherapy or neuclein therapy is a rational procedure in the treatment of tuberculosis.

There is a difference between immunity and cure. Immunity we conceive to be a condition brought about by the introduction into the organism of a modified virus or an antitoxin which so stimulates certain cells that they produce an antidote to the poison. In diphtheria the antitoxin introduced into the body of the child may so stimulate the spleen that it manufactures nucleins in such abundance that they in their phagocytic functions are enabled to swallow up or in some way neutralize the toxins of the micrococci in the throat.

"In tuberculosis nature has attempted to immunize every tubercular subject and has utterly failed. Some step in the process has failed." The process of leucocytosis has been interrupted by want of vital energy or defective nutrition. The leucocytes are no longer phagocytes. "The bacterial poison has been introduced into the body in a form too virulent to be resisted or the cells of the body have been unable, devitalized as they are, to act with normal energy." Hence, if nature with all her resources within the body is unable to combat the disease, then where shall we look for curative substances in infectious diseases? Not to and within the body itself. We must look to some extraneous source. Either we must introduce some germicide formed by other cells outside of the body or employ other agencies for the purpose of stimulating the nuclein-forming cells. Hemotherapy offers us the means which we can utilize, either the bullock's blood or the animal extracts which contain the germicidal essence—the nuclein. We see then that the only germicide from which we can expect any good results must be of cellular origin. We know that the experience of the medical profession for the last twenty years has demonstrated the fact that no known chemic remedy can be introduced into the living organism with sufficient strength to act as a germicide without doing serious harm to the tissues with which it comes in contact. Almost every day we hear of some new discovery of a germicide for tuberculosis, but experience has invariably shown in every case that it was poisonous or not germicidal at all. Hence pet nostrums of various combinations of creosote, terebene, eucalyptus, menthol and the like have been used with all manner of mechanical devices, by the ardent advocates of this local process, without any permanent effect on the tubercular process. The researches of Behring demonstrate that antiseptics, when injected under the skin, reach a fatal dose when one-sixth of the amount which is necessary to prevent the development of the anthrax bacillus, is used. Solis Cohen, speaking of the local use of these substances, remarks: "Those that have been urged or revived since Koch's discovery are principally germicidal agents and are directed against the bacillus. Recalling the location of lesions containing bacillus, anyone at all familiar with the penetrating power of sprays and vapors, under the usual physical conditions, will know how fallacious is this notion." With the possible exception of turpentine (as a type of its group) they have not seemed to me to have the slightest influence over tubercular processes." Now, in the language of Victor Vaughan, "that we have learned that the animal body itself germinates a germicide more powerful than corrosive sublimate, and since we know how to increase the amount of this substance in the blood and can isolate it and inject it into other animals, renewed hope comes to us." In the pure blood or nuclein treatment we have hope of accomplishing the destruction of the specific germs of tuberculosis within the living organism or immunity from their toxic products. If infection occur in healthy persons, their tissues and especially the blood are capable of offering successful resistance and the organism is preserved in its integrity. But in the established disease the resisting power of the patient has been insufficient, either by reason of the organism having been overpowered by excessive quantity of infecting material or by minor resistence on the part of the tissue where the germ gained entrance. It is, therefore, most rational to seek the regeneration of the blood. In addition to dietetic and hygienic management, we look to hemotherapy to bring this great boon to man.

I am under obligations to Drs. Osler, Cohen, Vaughan, Andrews, Biggs, Summers, and others, from whose works I have freely drawn.

A REPORT OF THREE CASES OF TETANUS. ONE TREATED SYMPTOMATICALLY AND TWO WITH TETANUS ANTITOXINS.

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Case 1.—Thomas McG., Canadian, laborer, aged 26. Patient walked into St. Luke's Hospital Oct. 25, 1895, with the following history: Eight days previously he had received a punctured wound of the foot from a nail. The wound bled slightly and he had at once gone to St. Luke's Dispensary for treatment. Here the wound had been freely incised and washed with a strong bichlorid solution and wet bichlorid dressing applied. He had returned each day to have the dressing renewed. The evening before his appearance at the hospital he had noticed some difficulty in chewing and swallowing, and this had brought him to the hospital early the next morning with the remark that he thought he was going to have lockjaw. Examination showed marked trismus, the masseters being tense and hard and the patient unable to open his jaws more than a half-inch, and attempts to separate them forcibly caused pain. His speech was indistinct. An attempt to swallow some water that was given him caused spasm of the pharyngeal muscles and part of the water was regurgitated. The patient complained of lameness in the back of his neck and could not flex his chin on the sternum. Forcible attempts to do so caused pain. Examination of the wound showed an incision about one inch long and half an inch deep in the ball of the foot, dry and clean and with no signs of inflammation. The patient was at once assigned to the surgical ward, the wound enlarged and irrigated with 1 to 2000 bichlorid solution and a bichlorid dressing applied. Chloral, grs. xv, and sodium bromid, grs. xxx, were ordered given every three hours. Attempts to secure some tetanus antitoxins were made at the Health Department and the various laboratories in the city but none could be found. The patient continued about the same during the day except the pain in the face and neck became more severe and began to extend down the back, and deglutition was a little more difficult. Extract of calabar bean was ordered later in doses of a half grain every two hours. Just twenty-four hours after admission the first general convulsion occurred, and they continued to recur at short intervals with increasing severity, involving the neck, thorax, back and abdomen and required chloroform anesthesia. Later the extremities became involved and the patient was in a position of opisthotonos almost constantly when not under chloroform. Finally the diaphragm became involved; sufficient chloroform could not be administered even by artificial respiration to secure relaxation, and the patient died from asphyxiation thirty hours after admission. Cyanosis was intense. The temperature during the entire time ranged from 97.8 to 98·6 degrees. The patient retained consciousness up to two hours before death. An autopsy could not be secured.

Case 2.—J. A., American, cook, age 19, brought to St. Luke's Hospital Oct. 27, 1895. He had fallen between two cable cars in such a position that the guard surrounding the car struck him in the head, pushing him along on the track for some distance. He presented the following injuries: 1. An extensive laceration of the scalp in the left parietal region with a large oval flap 10 cm. in diameter torn up and turned back; the periosteum scraped from a large part of the exposed bone and hanging in shreds. 2. A small laceration at the outer angle of the left orbit, and several abrasions about the face. All the wounds were very dirty but the scalp wound especially was full of the dirt of the street, ground in with such force that the pores of the denuded bone were filled. No fracture was demonstrable and there were no symptoms of intracranial pressure. Patient was conscious and able to talk intelligently.

He was anesthetized, the entire head shaved and the wounds cleaned as thoroughly as possible under constant irrigation. Portions of the scalp, where the dirt was so ground in that they could not be cleaned were excised, as were the torn shreds of periosteum, and the dirt picked or scraped out of the bone. Ample drainage was supplied with gauze and twisted silkworm gut, antiseptic gauze being carried into all the crevices between the edges of the wound and the skull. The flap was then replaced and held in position with a few loose sutures of silkworm gut, no attempt being made at accurate approximation as the tension required would interfere with the drainage. The laceration at angle of orbit and abrasions about the face were next carefully cleaned and the whole side of the head enveloped in a wet antiseptic dressing. Antiseptic irrigation was kept up daily and the patient made good progress, being up and about the ward with no temperature on the sixth day. During the second, third and fourth days the highest temperature was 101.8, 101.2 and 100.4 degrees respectively, coming down to normal on the fifth day. On the seventh day after the injury it was noticed that the patient apparently had a left-sided facial paralysis, as the lines about the cheek and angle of the eye were effaced and the corner of the mouth seemed to droop a little. Upon being questioned the patient said he felt first-rate. The next day, the eighth, the patient complained of pain in the back of the neck and difficulty in eating. Tetanus was suspected and sedatives prescribed. Chloral, grs. xv, sodium bromid, grs. xl every two hours. On the ninth day marked trismus developed, also a slight delirium; temperature 98.2 degrees axilla, and difficulty in swallowing persisted. Positive diagnosis of tetanus made. Tenth day pain in the neck and back very severe, trismus not so marked, difficulty in deglutition increased, although still able to take liquid nourishment. Eleventh and twelfth days, all symptoms intensified, especially the trismus and difficulty in deglutition. Extract of calabar bean in doses of 1 gr. exhibited every two hours. As we had been unable to procure any antitoxins for the first case no attempt was made at this time, but on the twelfth day we accidentally learned from Dr. Evans of the Columbus Laboratory, that a representative of the Institut Pasteur of Paris was in the city and had the antitoxins with him. As the patient's condition was certainly becoming worse, notwithstanding the slow progress of the symptoms, it was determined to try the antitoxins in this case. Thirty c.c. were secured the next day, November 8, and injected in doses of 15 c.c. six hours apart. Immediately following the injection the temperature, which had been normal since the fourth day following the injury, rose to 103.2 degrees, coming down to 100 degrees in six hours. November 8 the patient said he felt better but the pain and spasms in the back of the neck continued and he still had great difficulty in swallowing. This interference with deglutition had so far been the most distressing symptom, though he could manage quite well by taking liquids very slowly, but his hunger and thirst were so great he could with difficulty be controlled. Attempts were made to increase the nourishment and at the same time decrease the feedings by mouth by giving nourishing enemata, but he resisted so strongly that it would have required forcible restraint and on account of the irritation and excitement it was not thought best to resort to such measure. All this time the patient would get out of bed and sit in a chair or go to the lavatory or help himself to a drink whenever he was not watched by the attendant.

November 9, 30 c.c. of antitoxin was administered, the temperature promptly rising to 103.2 degrees and persisting for ten hours, then falling to 99.4 degrees. The patient's condition continued about the same until the next day, when general tonic spasms developed, requiring chloroform anesthesia to control them. During this time the chloral and bromids had been kept up, with one grain doses of extract of calabar bean every two hours. Later in the day delirium and incontinence of urine developed. November 10, another 30 c.c. injected under anesthesia. Temperature rose to 101.4 degrees, falling to 99.4 degrees in eight hours. All medicine and nourishment by mouth had been stopped, as every attempt to swallow produced intense spasms about the mouth and throat, and nourishing enemas containing the sedatives were given when the patient was under an anesthetic. Following each injection of antitoxin there was a noticeable decrease in the frequency of spasms for a period of from twelve to sixteen hours, and during that time the patient rested quietly. The relation of pulse and temperature to the injections is best shown by the accompanying

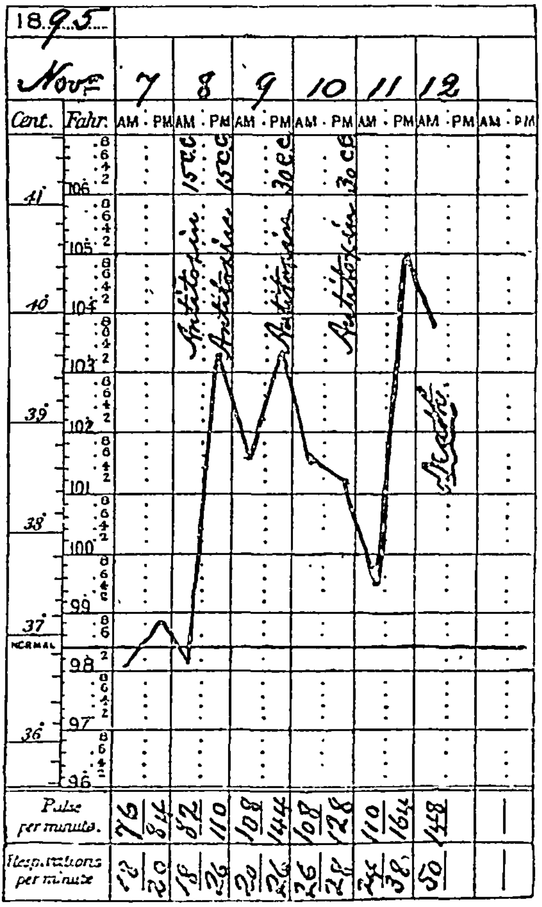

chart. While the pulse followed the temperature curve very closely, it became weaker each day. Four hours after the third injection of antitoxin all spasms ceased, but the patient was unconscious, pulse 136 and weak and general condition bad. Nourishment and stimulants were pushed by enemas and hypodermic injections, but without effect. November 11, twenty four hours after all tetanic spasms had ceased and thirty hours after last injection of antitoxin, the temperature suddenly rose to 105.2 degrees, pulse 164, and the patient became comatose and died six hours later. The autopsy revealed no fracture or hemorrhage that could have caused pressure, and no evidence of [illegible] eit[illegible] ar or cortical, which had been s[illegible] h[illegible] ve co[illegible] plicated the diagnosis. Mi[illegible] b[illegible] e[illegible] inations were not made.

Case 3.—C. E., [illegible]

1896, while coupling cars. Compound fracture left index finger with deep laceration of palmar surface. Also deep laceration of middle finger extending back into the palm. Avulsion of nail and soft part of end of finger nearly crushed off. The hand was thoroughly scrubbed with hot water, soap and brush; foreign bodies, dirt, etc., removed and wounds scrubbed with 1 to 2000 bichlorid solution. The lacerations were sutured, fracture splinted and hand dressed with dry boric acid dressings. The case apparently made good progress until the morning of December 3, when symptoms of tetanus developed with pain in back of the neck and trismus. Did not report to surgeon in attendance, however, until late in the evening. Bromids and chloral given during the night and sent to St. Luke's Hospital December 4, at 9 A.M. At this time the trismus was marked, pain in the neck and back very severe, with some muscular rigidity and beginning convulsions. At 12 M., 10 c.c. of antitoxin injected; at 12:30 P.M., general convulsions and opisthotonos; temperature 100 degrees, pulse 118, respiration 20; 5 P.M., 20 c.c. antitoxin injected; 8:30 P.M., temperature 101.2 degrees; pulse 110; 10:30 P.M., temperature 102.2 degrees, pulse 130, respiration 30; 1 A.M. (December 5), pulse 150; 3 A.M., temperature 102.6 degrees, pulse 128, respiration 40; 3 A.M., temperature 103 degrees; 4 A.M., temperature 105 degrees, pulse 168, respiration 28; 4:20 A.M., dead. From the time of the first injection of antitoxin the convulsions progressively increased in severity, occurring regularly at intervals of about twenty minutes. Sodium bromid, grs. xxx, and chloral, grs. xv, were given per rectum every three hours and inhalations of chloroform frequently, to control the convulsions. The antitoxin injections apparently exerted no influence upon the tetanic symptoms and the circulation weakened rapidly.

In reviewing the published reports of cases of tetanus that have been treated with antitoxic serum, one is at once impressed with two facts: 1, that the mortality rate has been but little influenced by the treatment; and 2, that the relation of the period of incubation to the mortality is practically the same as in cases where serum therapy was not used. In the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for July, 1896, Kneass makes the mortality of tetanus as heretofore treated about 47 per cent., a result obtained by averaging reports from numerous sources and observers. The same author analyzes a series of sixty-one cases treated with tetanus antitoxin with a mortality of 41 per cent. As regards the influence of the treatment with relation to the incubation period in this same series, he shows the following results:

Period of Incubation.	Deaths.	Recoveries.	Mortality, Per cent.
One to five days.	7	1(?)	87.5
Six to fourteen days. . .	16	25	38
Fifteen days or over. . .	2(?)	10	16.66

He says, as a result of his deductions: "It seems to me that those cases in which the symptoms appear before the sixth day die in spite of any antitoxic treatment, and that those in which the development is delayed beyond the second week would recover without any such treatment." This is almost precisely the opinion that has obtained for the last century regarding the symptomatic treatment of tetanus. In each of the three cases reported above the period of incubation was seven days. The two that were treated with antitoxic serum showed very different results, corresponding closely to the acuteness of the development of the symptoms. In the cephalic case the symptoms developed more slowly and with less intensity and the antitoxin injections seemed to influence the tetanic convulsions for a short time, while they ceased entirely after 90 c.c. had been exhibited, but the circulation gave out either from the effect of toxins or antitoxins. Trevelyan[1] reports a case of head tetanus treated with antitoxins, in which the incubation period was twelve days and the clinical course corresponded very closely to the one reported above, including the reduction of spasms and death from heart failure. Several other cases have been reported, among them those of Mason,[2] Farrant,[3] MacEwan,[4] in which the antitoxin seemed to lessen the frequency or intensity of the convulsive seizures, but the patient died from circulatory depression. Considering that the so-called head tetanus, or tetanus following head injuries, is almost universally described as running a slower and more favorable course than tetanus following wounds of the hands and feet, it would seem that such cases offer the best hope of improvement under antitoxin treatment; yet in the two cases referred to above the results were no better than what might have reasonably been expected from the usual symptomatic treatment, possibly not as good. Some observers report a sudden decrease in the urinary secretion following the exhibition of antitoxin, in some cases amounting to complete suppression. This was very marked in our second case, the amount falling from 30 ounces to less than 12 ounces within the twenty-four hours following the first injection. We have analyzed twenty-six cases that have been reported as having been treated with antitoxic serum within the past two years with the following results: Recoveries twelve, deaths fourteen; total mortality 53.8 per cent. Of those that recovered, the shortest period of incubation was six days; of those that died, the longest period was twelve days. Of twenty-one cases with incubation periods of seven to fourteen days eleven died, or 52.4 per cent. The period that elapsed from the onset of symptoms till treatment with antitoxins was begun, varied in the twenty-six cases from twelve hours to fifteen days and seems to have had little influence upon the result. In seven of the fatal cases antitoxin was administered before the third day, in four of these as early as twenty-four hours. In six of the cases of recovery it was not administered until the seventh day or later, in three later than the thirteenth day. In only four of the above series of twenty-six cases was antitoxin used alone; in the others chloral, bromid, morphia, physostigmin or chloroform were used as well. In comparison with this the series of nine cases reported by Archinard[5] of New Orleans is so unique as to be of interest, particularly as regards the following points: 1. He reports nine *consecutive* cases with two deaths, or *22.2 per cent.;* 2, in the two fatal case the incubation period was *eleven and twelve days,* while in three of the seven successful cases it was *five days or less;* 3, in the seven cases that recovered three received only one injection each of 20 c.c., three had two injections, or 40 c.c., and one was given 60 c.c.; 4, no ill effects were observed from the treatment except a slight rash in a few cases and a little pain at the point of injection. The Institut Pasteur advises the exhibition of much larger doses, 100 c.c. to 200 c.c. after the development of symptoms, and also says that while it is of undoubted value in preventing attacks, both in man and animals, it is of doubtful value after symptoms of tetanus have appeared. Experimentally it has been demonstrated that from 1–400 to 1–100 of the body-weight, 600 c.c. to 150 c.c. for a man, must be used to prevent development of symptoms after inoculation. Doubtless to be of value after the disease has developed even larger doses than that would be necessary. The value of antitetanic serum as a prophylaxis in animals has been proved beyond a doubt by the experiments carried on by veterinarians in France and elsewhere, and following the deductions from the clinical and laboratory observations to date we must conclude that in the treatment of tetanus in man its chief value is doubtless as a prophylactic rather than a therapeutic measure. We believe it deserves a more general use along that line in cases of injury where the wounds are of such a nature that tetanus is to be feared.

In this connection it is of interest to refer to the experience of the Medical Bureau of the World's Columbian Exposition, as illustrating the value of thorough aseptic and antiseptic wound treatment as a prophylaxis of tetanic infection. Dr. Plummer has reported[6] a series of 203 punctured wounds of the foot treated by the Medical Bureau during the construction period of the Exposition *without the development of a single case of tetanus.* Of the 203 cases 202 were nail punctures made, says the author, "in a vast majority of cases by a rusty nail." As to the treatment carried out in these cases the same writer says:

"Although our treatment varied much in different cases, the routine treatment finally agreed upon as being applicable to most cases and followed by the best results, was as follows: 1. Thorough cleansing of the foot with solution of bichlorid of mercury 1-1,000. 2. Trimming the edges of the wound. 3. Swabbing out the wound with a probe lightly covered with cotton and dipped in 95 per cent. solution of carbolic acid. 4. Drainage. 5. Antiseptic dressing. 6. Rest. In the sole of the foot, where the epidermis is very thick, the edges of the wound frequently come together with valve-like accuracy, effectually preventing the escape of anything from the wound, so that, in some cases, it was only after trimming away the edges that the presence of a foreign body was discovered. This procedure also favors drainage. The use of the probe in cleansing these wounds is preferable to syringing, for two reasons: First, it is easy to reach the bottom of the wound with the probe, while it is doubtful in many cases whether this could be done with a solution applied by a syringe; secondly, a small particle of foreign material will often adhere to the cotton and thus be removed."

In several of the cases domestic treatment with various poultices had been tried and followed by cellulitis before the patient presented himself at the Medical Bureau.

Such results certainly justify us in saying that an ounce of clean surgery is worth several pounds of serum therapy in the treatment of tetanus at the present status of our knowledge.

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[1] British Medical Journal, vol. 1, 1886, p. 32.
[2] Lancet, 1895, ii, 329.
[3] Lancet, 1895, ii, 1432.
[4] Lancet, 1896, ii, 381.
[5] New Orleans Medical and Surgical Journal, vol. xlix, p. 385.
[6] Chicago Medical Recorder, June 1893.

THE PHYSIOLOGY AND THERAPEUTICS OF THE THYROID GLAND AND ITS CONGENERS.

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(Awarded the L. C. P. Freer medal, Rush Medical College, 1897.)

From the chemic and pathologic laboratories of Rush Medical College.

(Concluded from page 960.)

Exophthalmic goiter.—In this serious disease we have to consider a condition very different from those previously described, in that they are due to an increased functional activity of the gland. The view that a hyperthyreosis is the underlying cause, is based on several facts, as follows: The symptoms are almost identical with those observed after administration of overdoses of thyroid extract, viz., tachycardia, tremor, headache, prostration and sweating; and a certain degree of exophthalmos has sometimes been observed during thyroid treatment. Exophthalmic goiter has been known to follow an overdose of the extract. The structure of the gland in this disease is almost exactly reproduced in glands stimulated to the highest degree of activity. Halsted, by removing large portions of the thyroid from dogs, has produced a compensatory hypertrophy in the remaining stumps, and he describes the changes as consisting of a branching of the acini with foldings in their walls, so that they consist of alternate recesses and promontories, while at the same time a vacuolation and disappearance of the colloid material occurs and the epithelial cells are changed from low, cuboidal forms to tall, columnar cells which in many places reach entirely across the lumen of the acini and meet in the center. These changes are exactly duplicated by the gland in Basedow's disease. And further, if this condition is due to a hyperthyreosis we would expect the administration of thyroid extract to aggravate the symptoms, and this is exactly what does occur. Thyroid preparations have been tried in hundreds of cases by reliable observers, and the great majority of them agree that the patient becomes much worse under this treatment, and is relieved on its cessation.

The writer has analyzed the thyroid in one case of exophthalmic goiter in which the gland weighed 17 grams, containing in each gram 0.3 mg. of iodin, a total amount of 5.1 mg. This small proportion is readily explained by the microscope, for, as stated above, the colloid probably vacuolates and disappears as rapidly as formed, so that none is stored up in the acini. We must therefore conclude that the symptoms are due to a rapid production of colloid by the hyperactive epithelium, the product apparently being more fluid than normal, and discharging at once into the system by the lymphatics.

With all these facts to oppose them the theories of a purely nervous origin of exophthalmic goiter in the cervical ganglia or the restiform bodies have lost much of their support, although some authorities still uphold them, and a few surgeons have reported good results following the removal of the cervical sympathetic ganglia. Whatever the cause of Basedow's disease may be, it is pre-eminently the condition in which thyroid therapy is contra-indicated.

These four diseases above mentioned include all those due to evident changes in the thyroid itself, and are naturally the conditions in which this form of treatment was first suggested. Were they the only conditions in which it is of use the thyroid extract would have little market in this country, where goiter, cretinism and myxedema are so rare; but there have been a great number of other uses to which it has been applied, and its success in one of them would seem to be sufficient to place it in the hands of every physician; that disease is obesity.

Obesity.—During the treatment of the diseases above described it was generally noticed that the patient, especially if stout, began to lose weight, and this while gaining in strength and vigor. In fact loss of weight is one of the most prominent symptoms observed in cretins when first put upon thyroid treatment. These observations suggested the experiment of exhibiting thyroid preparations to patients with troublesome obesity, and the most happy results were obtained. Even without change of diet there is a marked loss of weight at first, frequently one pound a day for three weeks or so, and when combined with the usual dieting methods a most pleasing reduction in weight is obtained. This loss of weight is also produced without injury to the body, or loss of strength and health. The fat is removed as carbon dioxid and water, while there is comparatively little loss of the nitrogen, containing tissues, making it an ideal remedy. The reliability of the method is shown by a series of 145 cases, collected by Cabot, in all but six of which there was some improvement. The improvement is not permanent, except in a few cases, but if the patient adhere to a system of dietetics and exercise, such as is ordinarily used, the ground gained by the thyroid extract is held. In all probability the benefits of this treatment are due to the increased metabolism in the tissues, producing the same results as vigorous and general exercise, *i. e.*, a burning up of the superfluous carbonaceous materials in the body. It can not be stated positively that obesity is or is not due to any diminution in the activity of the thyroid from lack of investigation on this point, but it has often been noticed that the thyroid glands of obese people are smaller than normal, red and soft. Study of the structure and iodin content of such cases may throw some light on the question.

Nervous diseases.—Because of the awakening of the intellect of the cretin, the removal of the apathetic condition of the myxedematous patient, and the nervous symptoms observed similarly in over dosing with the thyroid extract and in exophthalmic goiter, the thyroid treatment has been tried in conditions referable to both the peripheral and central nervous systems.

In insanity the results seem to be variable. Bruce tried the treatment in the Royal Edinburgh Asylum in cases not amenable to ordinary methods, and obtained many gratifying results in patients threatening to pass into confirmed dementia, or who had been tuporous for long periods. He considers it of value a cerebral stimulant where the higher cortical cells anergic after acute attacks of acute insanity. On the other hand the majority of observers report no improvement whatever in the mental conditions, and consider it dangerous in acute mania and melancholia. A more extended trial along these lines is needed before the thyroid therapy can be absolutely condemned, for it seems very reasonable that its effects on metabolism may in some cases improve the condition of the higher cerebral centers.

The writer has had occasion to examine, chemically, the thyroid from a case in which mental development was arrested, in a female, at about two years of age. The patient lost every particle of reason, and had been fed and cared for by attendants until she died at the age of 23 years. She had frequent convulsions during all this time. The thyroid was rather large, nearly encircling the trachea, and weighed when dry 11.62 grams. Each gram contained but 0.532 mg. of iodin, the total amount being 6.16 mg. While the total amount is small, and the proportion very low, yet an isolated case like this can not be considered an indication of the usual condition.

Since tetany has been observed to follow thyroidectomy, both in man and animals, the use of the gland in cases of the idiopathic disease is rational, and the clinical results seem to justify it, Levy-Dorn, Gottstein, Bramwell and others have reported very favorable results, some of the cases having been of long-standing.

Chorea has been treated with some success by the thyroid extract. Wolfstein reports a case with excellent result, in which the use of the thyroid was based upon its effect on metabolism, its use in tetany, and its diuretic action.

Lepin has reported two cases of progressive myopathy, in which, after electricity the usual treatment were found unavailing, the thyroid gland was given with the result that in a short time muscular vigor was greatly increased without change in their size.

Stieglitz, in a case of hemiatrophy of the face with clonic convulsions of the temporal and masseter muscles, produced a marked improvement by administration of thyroid extract, but the relief was only temporary.

Skin diseases.—The use of the thyroid in this class of cases was suggested by the effects on the skin in myxedema. It has been tried most in psoriasis, with varying results. Of 154 cases collected by Cabot sixty-three were reported as improved, fifty-three as unimproved and twenty-two as worse. Some of the cures, however, were in very obstinate cases. Similar results are reported in eczema, acne rosacea, icthyosis and xeroderma. Therefore it would hardly seem that the thyroid therapy was to be applied promiscuously, at least, in dermatologic affections.

Scleroderma, however, seems to offer a more favorable field. Grünfeld and Stieglitz have each reported cases in which a permanent improvement was produced by this treatment, and the writer has had the opportunity to study, postmortem, a case of the diffuse form of this disease in a woman, 51 years of age, in whom the disease had existed for about one year. The thyroid gland was found to be atrophic, weighing but 14 grams when fresh. Microscopically it was found to consist of groups of acini, collected into lobules, and in the lumen of which there was little or no material. In occasional areas, on the other hand, a few vesicles had become filled with colloid until their walls had ruptured and large cysts formed. There was a general increase in the connective tissue, and the vessels of the gland had undergone a proliferation of the intima and calcification. The dry gland weighed only 3.23 grams, and in each gram there was but 0.91 mg. of iodin, so that the total amount reached 2.94 mg. but little more than one-fourth of the normal quantity. In addition to this the hypophysis was hypertrophied, weighing 0.7 gram, and microscopically it was found that many of the alveoli were dilated by a colloid secretion and in their walls were an unusual number of eosinophile cells. If these changes are constant in scleroderma they point strongly to a thyroid origin for the disease.

In lupus, Bramwell and Abraham have had favorable results, obtaining an improvement in all of their cases, but no cures.

Miscellaneous.—Morin first tried thyroid extract in pulmonary tuberculosis, basing the treatment on the fact that in phthisis the thyroid is usually atrophied, that in goitrous districts the people with enlarged thyroids rarely acquire tuberculosis, and that phthisis has been observed to improve after the patient acquired goiter. The results in phthisis have indicated a general temporary improvement, such as generally follows any new form of treatment in this disease. If there is any specific action of thyroiodin on tuberculosis, it seems difficult to account for the not infrequent occurrence of tubercular areas in the thyroid gland.

In syphilis this treatment has also been tried, and its reported success in two cases of a very malignant form, acquired in India by British soldiers, created considerable interest. Since the active principle is an iodin compound, the application to syphilis seems reasonable. But it seems very strange that when iodin is a specific in syphilis we should have gumma develop in the thyroid gland which contains so much of this element, yet this sometimes happens.

Because of its effects on cretins, and its influence on metabolism, the thyroid extract has been used in many cases of stunted growth in children, and in nearly all the cases increase in height has followed. In the same way it has been administered in rickets with some reports of improvement.

It has also been used and reported as efficient in removing scars, deformed finger nails, keloids, fibroids, including myo-fibroma of the uterus. In fact, to enumerate all the conditions to which it has been applied, with at least imagined success, would almost be to give the entire list of known pathologic conditions.

Summary.—Put in compact form, the sum total of our knowledge of the thyroid gland amounts to the following, according to the results of the latest investigations:

The thyroid gland is an organ of very variable size and shape, reaching its highest degree of development at about adult life, and decreasing with old age.

It is capable of great hypertrophy, but probably is not capable of more than a slight degree of regeneration.

Its secretion is a colloid material, which is discharged into the general blood current by way of the lymphatics.

The colloid material contains the active material of the gland, which is a complex but very stable body, called "thyroiodin," which contains about 10 per cent. of iodin.

This substance either acts as an antitoxin to the products causing auto-intoxication, or furnishes some substance necessary to tissue metabolism.

Thyroiodin is necessary to the animal economy, absence of it in adults producing myxedema; in the new-born, cretinism.

The amount of iodin in the thyroid glands of the inhabitants of any given district varies inversely with the prevalence of goiter in that district.

Thyroid glands of residents of Chicago contain fully four times as much iodin as do glands in the goitrous districts of Germany

It is probable that glands from the Atlantic coast contain about the same amount of iodin as do the Chicago glands.

Simple parenchymatous goiters contain about the same total amount of iodin as normal glands, but the proportional amount is much smaller. Probably colloid goiters contain the same proportional amount, with a very much higher total.

The amount of iodin in the glands of children, from a mere trace at birth, steadily increase until adult years. It then decreases, and in old people again becomes very small.

Therapeutically the thyroid extract is a specific in cretinism and myxedema.

In simple goiter and in obesity the majority of cases are improved or cured.

It seems to have some value in tetany, scleroderma and arrested growth.

The value in psoriasis and other skin diseases, tuberculosis, insanity, rickets, etc., is doubtful.

It is contra-indicated in exopthalmic goiter, heart lesions, albuminuria and glycosuria. The dose should never be so large as to produce symptoms.

THE THYMUS AND HYPOPHYSIS.

In a study of the thyroid gland one's attention is necessarily called to two other organs in very close relation, both by the manner of development and the general obscurity which surrounds their function. They are the thymus gland, and the hypophysis or pituitary body.

The Thymus.—This gland is developed from the entire third visceral cleft and from a part of the fourth cleft, the remainder of which goes to form the lateral lobes of the thyroid. This common origin explains the frequence of thymus rests in the substance of the thyroid gland. From the terminal end of the cleft is formed a tube lined with epithelium, which grows downward and unites with its fellow in front of the trachea, and then becomes ramified. At this stage the thymus is a purely epithelial organ, like the thyroid, but it soon becomes invaded by a growth of lymphoid tissue which forms in lobules about the epithelial tubules, the latter undergoing atrophy until only a small concentric group of flattened cells is left in the center of the lobules. The entire gland increases in size slightly up to the second year, when it weighs between 5 and 15 grams, and then gradually disappears until about puberty, when it is replaced by fat and connective tissue. In some cases, however, the thymus is persistent until adult years.

The thymus is structurally part of the lymphatic system, and is affected in the diseases involving the lymphatic system as a whole, such as leukemia and pseudo-leukemia. With the rest of these organs it also seems to be engaged in the formation of both red and colorless corpuscles. Watney describes the thymus as containing hemoglobin in cysts and in cells located near to or forming part of the concentric bodies. He believes that this hemoglobin is collected into masses resembling red corpuscles, and which pass out through the lymphatics into the blood vessels where they become red corpuscles. There are said to be more colorless corpuscles in the veins and lymphatics of the thymus than in the arteries and lymphatics of the neck. The thymus also contains many extractives similar to those of the spleen, and a globulin has been derived from it that is capable of producing extensive intra-vascular clotting.

In addition to these functions, common to other lymphatic glands, the thymus serves an important part in the economy of hybernating animals. In them it remains throughout life, and every fall becomes the seat of a great deposition of fat which by spring has been entirely used up, the gland apparently acting as a store-house for the accumulation of fat to meet the needs of the animal during its dormant condition.

From its structure there would seem to be no relation between this gland and the thyroid, yet Baumann has found that the thymus contains iodin, which he believes is in the form of thyro-iodin. The writer has analyzed the thymus glands of four children. In one from a four months old child, and in one from a still-born infant, slight traces of iodin could be detected. In the other two, which were both from still-born infants, no traces whatever could be detected, even when three grams of the dried grands were examined at one time.

Another thing that points to some relation between the thyroid and the thymus is the frequency of persistence and hypertrophy of the latter in exopthalmic goiter. Prof. Hektoen has reported a case illustrating this fact, the goiter weighing 100 grams, and the thymus 60 grams.

The use of the thymus extract in exophthalmic goiter has led Owen to believe that the thymus may have an inhibitory action on the thyroid secretion, supposing Basedow's disease to be a hyper-active condition of the latter. In support of this idea he cites the fact that exophthalmic goiter rarely occurs in children before the disappearance of the thymus, and also that the thyroid produces emaciation, while in the hybernating animals the thymus prevents it. None of the theories advanced to explain the function of this organ fully meet all the conditions, so that most authors are content to say that it provides some substance necessary for the development of the young, and that it atrophies on the cessation of the need of this material.

The thymus extract has been used chiefly in exopthalmic goiter, and has there met some success. Of forty-three cases collected by the writer, from the current literature, improvement was observed in thirty-one, varying from apparent cure to slight diminution of the symptoms. Todd in one case obtained a reduction in the pulse rate from 156 to 72 in three weeks, with great improvement in three other cases. On the other hand Dreschfeld obtained no results in three cases. Mackenzie, who has treated twenty cases in this manner, does not believe that the thymus has any great therapeutic activity. He thinks that its benefits are limited to an improvement in the general condition, without specific effect on the heart, goiter, or exophthalmos.

In the Breslau clinic the thymus preparations have been used in simple goiter with much success. Thirty cases were treated in this way, of which twenty were successful, the goiter not only diminishing in size but the subjective symptoms also disappeared. In some of these cases the thyroid extract had been used unavailingly. The favorable cases were all of pure diffuse hyperplasia. Ten to thirty grams of fresh sheep's thymus was given three times weekly. In other cases the thymus tablets, made in the same manner as those from the thyroid, were used. Small doses seem to give fully as good results as do the large.

The hypophysis.—This organ bears a still closer relation to the thyroid, not only in its development and structure, but in its clinical and pathologic manifestations. In origin it corresponds to the median portion of the thyroid, being developed from a diverticulum of the buccal epiblast from the posterior wall of the pharynx. This becomes flask-shaped and partly enfolds the end of the infundibulum developed from the second cerebral vesicle, the nervous portion becoming the posterior lobe and the epiblastic diverticulum forming the anterior lobe of the mature gland. The epithelial portion becomes divided up into alveoli, which in the normal hypophysis are for the most part empty, but occasionally one can be found to contain a small amount of a material apparently identical with the colloid substance of the thyroid gland. Around the alveoli is a network of capillaries, with little connective tissue stroma.

Our knowledge of the function of this gland is very limited. Experimental removal has so far given contradictory results, a muscular twitching having sometimes been produced. Administration of the gland to man and the lower animals, according to Mariet and Bosc, causes a slight and transient elevation of temperature, gastro-intestinal disturbances and a temporary albuminuria. It seems to have but a slight degree of toxicity. The same authors report the results of the administration of the pituitary body in twenty-one cases of epilepsy, from which they concluded that it was powerless to prevent or diminish the number of attacks, and they also observed a quite constant delirium three or four days after it was administered.

There can be no doubt that the hypophysis is closely related to, if not the direct cause of, the condition known as acromegalia, which is characterized by an abnormal growth of some one part of the body, most commonly the extremities or face. In practically every case of this disease the gland is found to be enlarged, sometimes to the size of a hen's egg. It is also probable that many cases of giantism are traceable to this little organ, since many of the famous giants have been acromegalic, while the skulls of giants show in many instances enormous enlargement of the sella turcica.

This suggests that the hypophysis has a trophic function, a hyper-activity of the gland therefore producing an increased growth, either local or general. In support of this theory it is stated that in the older vertebrates, and in some of the low forms now in existence, the diverticulum forming the organ does not become obliterated but remains as a tube, which is continuous with the canal in the infundibulum, and so with the ventricles of the brain and the central canal of the spinal cord. This tube is lined with ciliated epithelium, and Andriezen has observed that in animals particles of pigment pass from the buccal cavity through this canal and down the entire length of the spinal cord. In this case the hypophysis surrounds this nutritional canal, and presumably excretes into it certain substances from its glandular portion, while the nervous lobe regulates the quantity and quality of the material passing through it. It is supposed that while in the higher forms the gland loses its connection with the alimentary canal, it still retains its control over the nutrition of the central nervous system, and so exercises a trophic influence over the rest of the body. This history shows another resemblance to the thyroid, which is also originally connected to the alimentary canal by a duct, which in later life becomes obliterated.

The connection between these organs is certainly a very close one, not only in their anatomic and embryonic relations, but also in their pathologic changes, when they seem to attempt to compensate one for the other, and also to be affected by similar conditions. For example, in animals that have their thyroids extirpated there is almost always an hypertrophy of the pituitary body, and the same condition has been observed in this organ in people dying with myxedema. In the case of scleroderma described previously, where the thyroid was greatly atrophied the hypophysis weighed 0.7 gram, the average weight of twenty-one normal glands collected at the Cook County hospital being but 0.1 gram. This increased size seemed to be due to the fact that the majority of the alveoli of the hypophysis contained colloid, in some the quantity being so large as to convert them into true vesicles, while in a normal gland the colloid material is generally found in only a few alveoli in each section, and then in extremely small quantities. The walls of the alveoli also contained an unusually large number of eosinophile cells. It would seem that in this case the hypophysis had undergone a true compensatory hypertrophy secondary to the atrophy of the thyroid. Conversely in the great majority of cases of acromegalia the thyroid has been found to be altered, sometimes goitrous and sometimes atrophic.

Fourteen normal pituitary glands were analyzed by the writer, and found to contain iodin in no inconsiderable amounts. On account of the small size of the individual glands they were analyzed together. The total weight when dried was but 1.225 grams. Altogether they contained 0.05 mg. of iodin, an average amount of 0.0036 mg. for each gland. The proportion of iodin is much smaller here than in the thyroid, about one to fifty, and suggests that in the hypophysis also the iodin exists in the colloid material, as the colloid there forms but a correspondingly small proportion of the total bulk of the organ, and if that is the case the iodin probably exists in the form of thyroiodin.

Whether the gland has any other effects than can be attributed to the iodin compound it contains, can not be said. Schaefer has found that injections of pituitary extract into dogs causes a marked increase in blood pressure with augmentation of the force of the heart beat. This is just the opposite from the effect he obtained with thyroid extracts, so he believes that this experiment negatives the theory of identity of function of these two organs.

Therapeutically the pituitary gland has so far been a failure, both in nervous and nutritional disorders. It has been tried in acromegalia, but without result. If acromegalia is due to hypertrophy of this organ, one would not be justified in using pituitary extract, any more than he would use thyroid extract in exophthalmic goiter, since theoretically, at least, this treatment would serve to augment the symptoms of the disease.

ADDENDUM.

Since this article has been in the hands of the publisher, results have been obtained from the analysis of six thyroid glands received from Baltimore and an equal number from Montreal. The Montreal glands averaged 4.49 grams in weight when dry, each gram containing an average of 2.4 mgr. of iodin, the total amount per gland being 10.77 mgr. The weight of the Baltimore glands averaged 5.41 grams, each gram containing 2.36 mgr. of iodin, an average of 12.76 mgr. for each gland. These results differ but little from those obtained from the series of glands from Boston and New York, and seem to indicate that the iodin content of thyroid glands of residents of different parts of the country is practically the same.

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An Interesting Study of the movements of the arms in walking was presented at Moscow by Dupré, who traces them to an ancestral origin, relics of a past age when man walked on all fours. They are more pronounced in children and in the less developed cerebrally, than in adults.

HOLOCAIN VS. COCAIN.

BY F. C. HOTZ, M.D.
CHICAGO.

Early in August I received from the druggists Gale & Blocki, a 1 per cent. solution of holocain for testing its anesthetizing virtues. I first tried it on a few normal eyes and on eyes with foreign bodies in the cornea, with the following results: The instillation always caused more or less smarting and burning, which however lasted but about half a minute; it also produced considerable redness of the conjunctiva (palpebral and ocular), which persisted during the whole period of anesthesia. Within one and one-half to two minutes complete anesthesia of the cornea was noted; after six minutes the sensibility of the cornea began to return, but a second instillation prolonged the anesthesia for another five minutes; and if then another drop was instilled the anesthesia could again be continued. It would seem then that the anesthetic effect of holocain can be kept up indefinitely by repeating the instillation every five minutes. With cocain this can not be done; at least I have noticed that if the eye is coming out of the cocain anesthesia, repeated instillations do not restore the anesthesia; on the contrary, I have often found the eye becoming more sensitive the more cocain was used. Holocain does not contract the conjunctival blood vessels and therefore causes neither bleaching of the eye nor lessening of the lacrymal secretion nor drying of the corneal epithelium. It does not dilate the pupil and has no effect on the accommodation. On account of these qualities one would naturally feel inclined to use this new anesthetic in preference of cocain, in all operations on the eye. But a series of comparative tests of the efficiency of the two remedies seemed to show that the anesthetizing effect of cocain (2 per cent.) is more thorough and penetrating than that of holocain (1 per cent.). I had, for instance, two patients with corneal ulcers which required the repeated application of the electro-cautery. I made one application under holocain anesthesia and the next time cauterized the same eye under cocain. Both patients, who thought cocain was used on both occasions, said the first cauterization was decidedly painful, while they did not feel the second one at all. I performed an advancement of the externus on the right eye under holocain and on the left eye of the same patient under cocain; complete anesthesia of the conjunctiva in both eyes; but the cutting and suturing of the tendon was decidedly painful in the holocainized eye, while scarcely felt in the cocainized eye.

The most telling illustration of the difference in their penetrating effect was furnished by a case of subconjunctival injections of cyanid of mercury. Several injections had previously been made under cocain and the pain following the injections was moderate and never lasted over five to ten minutes. The next injection was made under holocain and caused the most violent pain, which after twenty minutes showed no sign of letting up in intensity; I then instilled cocain and within five minutes the patient was free from pain. One week later this experiment was repeated with the same result.

All these observations seem to show that the effect of holocain is very quick, but superficial: it is therefore a very useful local anesthetic for the removal of foreign bodies from the cornea, and for operations upon the conjunctiva; but for deeper operations, and especially for those which involve the opening of the globe (iridectomy and cataract extraction), I regard cocain as the more reliable anesthetic.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
BY CARL H. VON KLEIN, A.M., M.D.

XVI.—DISEASES OF THE BLOOD VESSELS, NERVES AND SKIN. NEOPLASMS.

(*Continued from page 965.*)

Tetanus was not unknown to the German military physicians. Bilguer relates that after the battle of Prague (1757), several thousands with slight wounds died in the field hospitals of so-called "dog-cramp," in spite of careful treatment by Cothenius, Schmucker and others; and the same was true after the battle of Liegnitz. Later in the war he saw the cramp more rarely. The bad hospital air was recognized as the cause of tetanus (in which A. de Haën had already measured the higher temperatures) and Theden recommended ventilation for the improvement of the air, as a prophylactic remedy for tetanus, although a draft often induced it. Certain ligatures were also condemned as a cause of tetanus, especially in castration (Theden, Plenk and Morand). Bilguer attached great importance to local treatment, and enlarged gunshot wounds in length and depth in order to bring about widening. Plenk and Siebold amputated with success, for which method Larrey in particular later entered the lists. In internal treatment opium, especially recommended by Petit and Bilguer, stood in high repute, and large doses were given without hesitation; Windsor gave 25 drops of laudanum every three hours. Charles White gave 317 grains of poppy juice within five weeks with success. Others, on the contrary, saw no use whatever in opium, and since it was said principally to effect relaxation, they preferred quinia and wine (Rush). Charles White advocated warm baths; cold water, which the ancients applied, was endorsed by Wright in Jamaica, who poured a few pailfuls over the patients every few hours, and also by Curne, who threw his patients into water and immersed them several times. J. Hunter declared in his lectures that he would proceed with the disease according to Zamblé and have himself put into an ice-house.

Parry of Bath first introduced therapeutically the *compression of the carotid* for certain nervous diseases (1789). Rufus of Ephesus and Columbus knew this method. Parry would in this way relieve delirium, dizziness and convulsions, but noticed a return of the symptoms as soon as the pressure ceased. Severe headache, for which Felix Würtz had one of the art. temporales severed, and had "given praise, honor and thanks to God Almighty" for the cessation of the pain, Parry had relieved immediately by compression of the carotid or the temporal. He allayed pain in the feet by compression of the art. poplitea, pain from panaritium by a pressure upon both sides of the fingers. Compression of the carotid was also recommended for *facial pains*. When Fothergill first accurately described this ill (1776), already known to the ancients, to which the Versailles surgeon André gave the name *tic douloureux* (1753), he regarded hemlock as the only alleviating remedy; hence he was obliged to believe that the evil arose from "an occult cancer-like acridity." Later he located the causes of the pain in the stomach, and gave purgatives and emetics. Galen had already recommended severing the N. infraorbitalis; Albin performed this operation, but a cure ensued only after a second intersection, while Thouret maintained (1782) that in most cases the operation had been without any result whatever.

Among the surgical diseases of the skin the terribly extensive picture of *ulcers* is most conspicuous. On no theme in surgery were so many variations composed as upon this; every writer had his own classification. Pus and ichor were considered as the actually destructive element, and therefore they defined ulcer as a dissolution of a combination, from which results pus and ichor or decomposed blood (B. Bell). It was said that an increased activity of the lymph vessels causes a waste of substance (J. Hunter). We give Richter's classification, and construct a plan out of his treatise in order to save tedious descriptions.

I.—VARIOUS CAUSES.

a. Internal causes.—1. Venereal (plain syphilis, disguised syphilis, consequences of badly treated gonorrhea); 2. Scurvy; 3. Scrofula; 4. Gout; 5. Obstructed menstruation; 6. Hemorrhage of the hemorrhoidal vein; 7. Absorbed skin eruptions; 8. Diseased urination; 9. Suppressed perspiration; 10. Irritation in the intestines, most frequently bilious or atrabilious; 11. Resulting from smallpox; 12. Bad condition of the fluids.

b. External causes.—1. Misuse of salves; 2. Foreign bodies (diseased bones); 3. Sharp irritating agents.

II.—VARYING CONDITIONS OF THE SOLID PARTS.

1. Simply unclean; 2. Callous; 3. Fungus; 4. Inflammatory; 5. Painful; 6. Varicose; 7. Edematous; 8. Scirrhous.

III.—VARYING CONDITION OF THE ICHOR.

1. Corrosive; 2. Putrid; 3. Rancid; 4. Humid; 5. Dry.

IV.—VARIATIONS IN AGE AND FORM.

1. Fresh; 2. Old; 3. Open; 4. Fistulæ. Supplementary (Complicated ulcers, salt rheum).

As to treatment there was a mass of obscurity and prejudice. B. Bell deserves the credit of introducing clear principles. It was necessary to remove the cause; if this was unknown one was obliged to address himself to the condition of the solid parts and the ichor. If this also was unavailing, then empiric means were resorted to. Naturally there were ulcers which they could not cure at all. The list of medicines in use was enormously large; those which were not swallowed were spread on. Disregarding the antidyscrasia remedies, mercury for syphilis, quinia, antimony, hemlock and cold baths for scrofula, etc., artificial warmth belonged especially to the empiric methods. It was applied in the shape of a warm bandage, glowing coals were held in the vicinity of the ulcer (Faure), or the sun's rays were caught by a burning glass and concentrated upon it (La Peyre). The other chief empiric agents were mercury, antimony ore, nitrate of silver, hemlock, belladonna, quinia, poppy juice, water fennel, chenopodium, burdock and pulverized zinc-white. As a forerunner of the present Hoff's malt extract now become well known through advertisements, a malt drink enjoyed a high place among the antiscorbutic remedies, and was also recommended for cancer (1771). They put six ounces of barley malt into a quart of water and boil it a quarter of an hour with some fennel seed and licorice, and let it stand four hours in a closed vessel, in a warm place. The patients drank two or three pounds of this daily. In external therapeutics the surgeons clung principally to the application of salves and envelopment. They finally became aware of the infinite abuse of salves. The Académie de chirurgie (1772) published a prize essay on the dangerous application of these. Faure answered this by stating that he repudiated salves and plasters entirely and B. Bell ascribed to salves only the advantage that they prevented the adhesion of the lint. These maxims were taken up by the good surgeons of all nations. That was an extraordinary advancement in the treatment of the ulcer; one needs to read only once the long winded directions for plasters composed of from ten to twenty ingredients, which Purmann and his contemporaries applied to ulcers. The value of envelopment was first recognized in the case of varicose ulcers and was later appreciated in all edematous and obstinate ulcers. As to varicose ulcers, views were divided according to whether they were considered a dyscrasic or a local affection. The ancients cut the varices out, but were already aware that this was often of no avail (Ætius and Paul of Ægina); later the double bandage and evacuation by puncture was practiced (Fabr. of Aquapendente). Compression for varicose vein was known to the Arabians; Avicenna described a compression bandage from the lower part of the leg to the knee. But they did not venture to use compression if ulcers also were present besides the varicose vein. Fabr. von Hilden and Scultet first applied a compression bandage to the ulcers. Subsequent time forgot these methods, until Theden won the distinction of snatching them from oblivion (1771). Else, Bell, Richter and others imitated him. In France, Desault, who highly prized compression in general as one of the best resorptive methods, adopted this bandage and attained the best results in varicose as well as all callous ulcers. He thought that for a relapse laced stockings of dogskin were the best, an old remedy already applied by Fabr. of Aquapendente, Wiseman and Scultet. To this treatment was added the method of the Oxford professor, Rowley, who discarded rest and the horizontal position along with the internal use of saltpetre, and had the patient walk about considerably (1771). Eight years later this method was still entirely unknown in London. Baynton improved the compression bandage by his well-known envelopment with adhesive plaster (1797). When old and large varicose ulcers gave much pain and bled often and profusely, a ligature was applied above and below the ulcers (Richter); and the vena saphena was constricted above the knee-joint (E. Homer). It is of no interest to follow farther the therapeutics of ulcers. But we will mention that the gastric juice was announced from Geneva as an excellent means to allay stench and pains (1787), and we will close with the homeopath, Samuel Hahnemann. He wrote instructions for the fundamental cure of old injuries and putrid sores (1784). The closing words characterize his work: "Who has had the opportunity to make so many observations as I: who allows himself to be so influenced and absorbed by the well being of his neighbors as I feel that I am; who hates so much the prejudice and the partiality for the old and the new, or in general the regard for any great name, and so earnestly strives to think and act for [illegible] in mys[illegible] who can with me see [illegible] of own industry, succe[illegible] since they almost [illegible] sicians using different treatment?" Richter's criticism left nothing to be said; unintelligible, pompous, vague, impractical rubbish!

This surgeon considered the *furuncle* as a swelling which arises from stagnant, thickened humors, in part from coagulated blood; its thrombus he regarded as a cyst of cellular tissue or perhaps a cutaneous gland. He considered the *carbuncle* as a malignant swelling arising from corrupt matter extracted from the blood, and he recommended an early incision. *Erysipelas*, either idiopathic or only a symptom, was an inflammation mostly arising from biliary acridity or suppressed perspiration. Gregory and J. Hunter had already taught that any specially poisonous matter has such an effect. It might be combined with inflammatory (erys. phlegmonodes) or putrid fevers (erys. malignum). Special kinds were the laminated erysipelas, with which the so-called girdle or St. Anthony's fire was included, and a habitual or chronic erysipelas which often proceeds from affections of the liver. The treatment consisted in diaphoretic remedies, purgatives and emetics; only in serious cases did they resort to the lance. As external remedies, which were in general regarded as injurious, they permitted only little bags of chamomile and elder to keep the part moderately warm and protect it from the air. They allayed severe pain with a piece of flannel which was moistened with elder flower tea. In suppressed erysipelas, bleeding, mustard plasters, blisters and emetics were necessary. These were the principles of Desault and Richter.

Burns were divided into different degrees, of which Heister, Richter and John Hunter accepted four, which covered the ground pretty well. Heister distinguished rednesss, blister, superficial suppuration and scar formation; Richter, mild redness, redness with swelling, severe pain and fever, blister and mortification; J. Hunter, superficial inflammation, deeper inflammation, skin eschar and deep charring. In the two first degrees of Richter, brandy and oil of turpentine were applied (J.Bell), and Theden's arquebusade-water; in cases of severe pain emollient pulps and oils, especially linseed oil. The blisters were carefully opened and covered with linseed-oil, lead or lime-water. In case of *freezing* the rule was to warm the part very gradually by rubbing it with snow or ice-water. Chilblains were most effectively treated in the same manner, for which there was besides a mass of balsams, oils and spirits. The different kinds of *panaritium* were classified then as now; the pus lay either just under the epidermis or the nails, or the inflammation had its seat in the cellular tissue, in the sheath of the tendons or in the periosteum. Richter added, besides, a dry felon in which the soft parts were naturally constituted, but the bone had been transformed into fat. The methods for dispersion were bleeding, leeches (Schmucker), envelopment of the fingers upward to the arm (Theden), immersing the fingers in hot water (Platner), in ice-cold water (according to Aëtius), etc. Richter gave the best advice when, if the conditions had not improved by the fourth day, he made an incision whether the pus had formed or not: for great relief always followed even if only blood came. In inflammation of the periosteum he early made an incision quite to the bone in order to induce a relaxation; in inflammations below the nail he scraped it quite thin with a piece of glass and cut out the point of the nail with the bistoury. An inadequate treatment of panaritia even led to amputation of the fingers, as one frequently saw in Paris at the end of the century.

Warts were supposed to arise, for the most part from local, sometimes from internal causes (syphilis, and undue use of milk-foods for children). Among the local remedies were spirits of sal ammoniac, butter of antimony, spanish fly plaster, compression, binding, and the sticking of a red-hot needle into the root of the wart. Corrosives and extirpation demanded great precaution. It is not without interest to notice how the common *corn* was found worthy of study by the two most celebrated Dutchmen. Albin investigated it anatomically (1754), and found that the hardness consists entirely of epidermis, that after slight maceration it can be stripped off, and underneath the skin-papillæ are atrophic while they turgesce strongly in the vicinity. Camper gave the best remedy for the disease where the shoe pinched. We will insert his interesting essay here:

> *What is the best shoe?* P. Camper answered this question (1781), when his pupils declared that the material for dissertations was exhausted. He wished to show them that even the most unimportant subject can become interesting. "It was thought that I would never venture to publish an essay under my name. I condescended to it and wrote." Posidonius has asserted that the shoemaker's art was very obviously devised and perfected by the philosophers. Anatomy and mathematics is the basis of their work. The work of the cobblers of that time could only serve to deform the toes and to induce corns; even the most skilful shoemakers took the measure incorrectly. The ladies of fashion wore very high, pointed heels, which, in order to make the foot appear smaller, were placed as far as possible under the back of the foot. The heel was hollowed before and behind, and ended in more or less of a point, just as do the boots of the present women. Camper said that the high heels not only made the ladies walk upon the points of the feet badly and never comfortably outside of their own houses and the well-paved streets; that in consequence of the insecure footing, in the case of girls, the spine became bent insomuch that it caused difficult parturition, because in severe curvature of the spine the head of the child was squeezed. It was customary in Dutch villages, but not in the cities, to make a special last for each foot, as the same shoe could never fit both feet well. Camper gave the following rules: 1. The shoemaker must first measure the foot when flat and then when bent in order to determine the length of the sole. 2. A special last is necessary for each foot. 3. The breadth of the foot must be measured with a curved compass. Most shoemakers fail in this and make the soles too small because they think that the upper leather will stretch sufficiently. 4. The end of the shoe must be round in order to give more room to the toes. 5. The point should be bent somewhat upward in order to pass more readily over uneven stones. 6. The height of the heel must be regulated according to the roughness of the streets and it must be placed so far under the heel of the foot that the center of gravity rests upon it. 7. The buckle should touch the cuneiform bones. Camper demanded soft uppers and discarded cork soles because they were not yielding and did not absorb moisture. Among the ailments which were superinduced by bad shoemaking he submitted the following: callous cuticle, pains at the joint of the great toe caused by too small soles, warts under the nail of the great toe, caused by too short a sole and too stiff leather, and also corns.

That a too narrow shoe was the chief cause of corns was as well known at that time as now. They sought to relieve the presence by a plaster made of several strips of linen with a hole in the middle the size of the corn. Richter promised sure cure in a short time if a resolvent salve or a volatile liniment were rubbed on the corn several times a day and a warm foot bath taken for half an hour morning and evening, the corn being vigorously rubbed with soap. Then the softened corn should be pared off with a dull knife. This treatment repeated daily should accomplish a complete cure in one or two weeks. The number of other remedies was large: Soap plaster, mercury plaster, fat, and an infallible plaster of gummi ammoniacum with yellow wax (ana 2 ounces) and verdigris (6 drachms), etc.

We come to *neoplasms*, in considering which we must not forget that we find ourselves in a period before the time of Bichat, when deep obscurity as to the tissues of the human body still prevailed. Under the word tumor they understood every unnatural elevation upon any part of the body, hence the classification of swellings approaches infinity. Plenk followed the botanists and adopted eighteen species: Inflammation, abscess, carbuncle, callus, edema, thrombus, cyst, excrescence, exostosis, joint swellings, earthy swellings, emphysema, salivary swellings, gall swellings, urinary tumors, swelling of the breast, organic tumors and false hernia. Each species was divided into varieties, so that finally their number reached 120. Thus, for example, he counted among inflammatory swellings phlegmon, erysipelas and angina; among callous tumors scirrhous, carcinoma and scrofula. Richter's classification was simpler, which we will chiefly follow on this subject. He arrayed on one side inflammatory diseases, wounds and ulcers, "the ordinary uninflamed tumor," as his chief division, and to these he added callus and carcinoma, atheroma, exostosis, aneurysm, varices, polyp, warts, corns, edema and emphysema.

The former definition of *scirrhus* as a hard, painless swelling in a glandular part, caused by blood stoppage with a simultaneous tendency to gangrene, Richter set aside and would understand under that term nothing else than a callus which arose on some part, from any cause. Unlike Heister, he did not consider scirrhus as a result of inflammation. The causes were external (contusions), or internal (syphilis, scrofula, gout, passions, etc.). Schmucker complained of the stiff fitting corsets, a legacy of the Marchioness of Pompadour. He read the ladies and "effeminate-men" a severe sermon on their tasteless and uncomfortable fashions in clothes, which were considered beautiful only because they were new. Richter also delivered a little philippic against stays as the most objectionable piece of apparel, but "many a matron who has laced during a lifetime can overcome the entire demonstration of the evil consequences of it. A too strict dietetist is like the rigid moralist who gives rules which he himself never keeps, and which are daily transgressed without harm, and hence he is derided." Scirrhus either remains benign for a lifetime, or it becomes painful, breaks, and changes into an open malignant carcinoma. As opposed to this opinion, Acrel maintained that a benign scirrhus could never become malignant, a malignant one could never have been benign. They sought to scatter the scirrhus or to cut it out. For the former purpose they used hemlock, mercury, belladonna, gummi ammoniacum, digitalis, warmth (rabbit skin), and electricity (already attempted by de Haën for tumors). J. Hunter extolled compression for solid tumors and observed that the farther development of neoplasms was arrested by this means, and sometimes they were entirely exhausted. Desault also dissipated "scirrhosities" of the anus by compression with probes. But since resolution seldom succeeds, one should not be long delayed by these means, especially if there is an immediate danger that the scirrhus may soon become malignant. If it is at all possible an operation should be performed at once, since with the failure of the resolvent remedies every delay is dangerous. As a contra-indication of the operation, Richter allowed those cases in which the scirrhus could not be clearly extirpated, and those in which tumors were present on other parts of the body where an operation could not be made; for all which were left changed invariably into carcinoma. The possibility of a relapse was admitted.

The scirrhus might also turn into a carcinoma. This view was characteristic of that time and had as a result that they regarded scirrhus and cancer as diseases of the same kind. The transformation announces itself by pricking, burning and itching, which by degrees becomes more severe and continuous. The tumor grows and becomes hard, the skin red and blue and the blood vessels in the vicinity swollen. At this stage an occult cancer is spoken of. Left to itself the tumor breaks and an open cancer ensues. The sore is very painful, has a corroded surface covered with fungous or hard excresences and hard edges; it bleeds readily and profusely and exudes an acrid, ill-smelling fluid. But not many cases begin with these symptoms; there is no pathognomonic characteristic by which carcinoma is distinguished from other abscesses, and neither Richter nor Schmucker would trust himself to answer with certainty the question as to how one might recognize a cancer. Hence it happened that many surgeons practiced many abuses in diagnosis; if an ulcer appeared bad, if it would not heal, if the cause was not known, it was called carcinoma. The search for new remedies forced the study of the pathology of the carcinoma entirely into the background. The efforts to spread new light by means of experiments on animals were only isolated. Peyrilhe, who won the prize of 1,200 livres offered by Pouteau of Lyons for an essay on carcinoma poison (1773), came to the conclusion that there is no especial carcinoma poison, but it consists only of a putrid matter which is first formed in the body upon the appearance of the disease. He proved contagion by the fact that a small incision made on a dog became very malignant after an injection of carcinoma fluid. Le Febure found that dogs ate without the least injury bread which had been soaked in carcinoma fluid (1775). Richter also did not believe that the carcinoma proceeds from a specific poison and requires a specific remedy; the generation and course vary so extraordinarily that apparently the causes are also of widely differing kinds. But Richter and also B. Bell had the firm conviction that carcinoma is at first only a local difficulty and that the cachexia does not arise until the corrupt matter has infiltrated into the fluids. The curability of the carcinoma was firmly believed in although it was always accomplished with great difficulty. Pott said in this connection: "We are not yet so fortunate as to possess a medicine which can remove a cancerous condition of the blood; when the whole body is thus infected neither our knives nor our medicines are of any avail; they can, indeed, eliminate the local ailment, but they have no effect upon a general malady in the body. Whoever speaks otherwise speaks untruth and whoever believes anything else is in error." Carcinoma of the breast appeared to be the most malignant of all, and the prognosis in general was unfavorable if the swelling had developed from a scirrhus.

The treatment was directed above all to the causes and against the venereal, scorbutic or gouty origin. But since in the great majority of cases the cause was unknown the operation remained as the only remedy. So thought most of the surgeons: Heister, B. Bell, Camper, Le Vacher, Le Cat, Pouteau, Richter and others. To [illegible] nan [illegible] was clear [illegible] operation would succeed much oftener if it were regarded, not as the last resort but as the first; the operation must be performed as early as possible, while the affection is still local. Other remedies were seldom of any assistance to him: on the contrary, they always occasioned an irreparable waste of time. That physicians acted in a conscienceless and undutiful manner when in the hope of saving the patient by medicine he allowed the precious time to elapse within which the knife could still afford a prospect of certain help. Heister considered a cure by means of medicine as impossible and all nostrums as swindles. Richter was well aware that the operation did not always succeed and that under the most favorable auspices the outcome was often unsuccessful, while under very favorable circumstances it was occasionally of assistance. This determined him to operate in cases of doubtful prognosis and never to hesitate when an operation appeared in any measure to be indicated. If it failed then it still lengthened life. As contraindications, he noted that cases in which the disease was no longer local, but was general, where all the cancerous substance obviously could not be extirpated, where a second swelling not susceptible of operation existed, of finally where another malady had arisen which made the successful outcome of an operation impossible. To eradicate all the cancerous substance clean and carefully, was his watchword. Heister said the same thing: "If a carcinoma can not be entirely removed it should not be touched, because nothing will be accomplished by so doing, the patient will only suffer useless pain and will die sooner than he otherwise would." The skin should be spared as much as possible and an attempt should be made to heal the wound with prima intentio. Some weeks before the operation an artificial sore was created in the neighborhood of the tumor and kept open for a time (Richter and Desault; to the contrary, Pouteau) and the patient was given milk foods before and after. In order to prevent a relapse Heister recommended a good diet during the whole life, forbade acrid, salt and sour foods, and in spring and autumn recommended bleeding and the drinking of mineral water; Pouteau had patients drink ice-cold water.

The utility of the operation appeared for a time to be placed in question by the publication of Monro's unfavorable results, until James Hill restored it to its rightful position. The investigations of the two Englishmen deserve all the more attention because they sought to solve the problem by figures, one of those extraordinarily rare cases in which, in the last century, statistics were appreciated A. Monro, Sr., announced (1752) that of sixty cases operated on, after two years only four were free from a recurrence of the carcinoma at the same point and in the relapsed cases the disease had always made quicker and more violent progress than if no operation at all had been performed. He therefore raised the question whether carcinoma should, in general, be operated for and whether it did not serve better to treat it with palliatives. Twenty years later Hill demonstrated that of eighty-eight patients, for whom within thirty years he had extirpated carcinoma in various parts of the body (among them eighty-four open carcinomas), seventy-eight were thoroughly cured and only ten had suffered relapse. Respecting this enormous difference Richter made the fitting remark that he doubted whether both surgeons had always had the same disease before them. Yet Hill's figures had great weight. From this time on most surgeons approved the earliest operation. Only a few espoused Monro's side and were so discountenanced that they condemned the operation entirely and left the patients to their fate. Thus Acrel asserted that in case of a true carcinoma of the breast the operation availed nothing, and in those cases where success had been attained carcinoma had not existed. In twenty-one extirpations of open carcinoma, Van Gesscher observed not a single cure and therefore declared, as did Rowley, against a too hasty operation on the mammary nodules. The consequence of his observation was that the surgical society in Amsterdam offered a prize of fifty ducats, and later of one hundred ducats for information of a single perfectly authentic observation of a carcinoma cure (1789). The Frenchmen, Campordon and Geoffrey, discarded the operation because the cancerous poison permeated the whole mass of the blood, relapse always followed, therefore the cures were only apparent, and in case of the published cures probably no carcinoma had existed. This was the teaching of the dyscrasic theory, from which the incurability of carcinoma was proclaimed.

Among the empiric remedies most prominent were hemlock, quicksilver, belladonna, quinin, arsenic (the chief component of the specific of Guy and Frère Cosme), aconite, onopordon, the leeching of the sore by toads, and other remedies. In the 70's they began to abandon these; only quacks and dabblers deceived the public with them. The most celebrated was hemlock, prized by Störck (1761). Now, A. de Haën, B. Bell, Hill, Schmucker, Schneider, Lange and Van der Haar asserted that this remedy had never been able to cure a real carcinoma, and at best could only diminish the smell. In order to test this remedy, Schmucker had it brought from Vienna and actually established a separate hospital with thirty patients suffering with scirrhus tumors. After experiments covering five months he declared that hemlock was actually injurious. So it went with almost all remedies. Pouteau denied them all curative properties, and Richter had tried them all and had no confidence in them; Schmucker also, and C. C. von Siebold, and in fact all the good surgeons thought likewise.

(To be continued.)

SOCIETY PROCEEDINGS.

American Public Health Association.

Twenty-fifth Annual Session Held in Philadelphia, Oct. 26-29, 1897, at the Hotel Walton.

TUESDAY—MORNING SESSION.

This meeting, by all who participated, is regarded as perhaps the most important of any yet held. The papers and discussions were of the highest importance. About two hundred members were in attendance and the interest of all was maintained to the close of the session. The city authorities and the Committee of Arrangements had amply provided for the entertainment of all the guests, combining business with pleasure wherever possible.

The Association was called to order at 10 o'clock by the president, Dr. H. B. Horlbeck of Charleston, S. C. After the announcement by Dr. Benjamin Lee, the Chairman of the Committee of Arrangements of the various meetings, and plans for the entertainment of the members, the report of the Executive Committee was read by Dr. Charles O. Probst, secretary of the Ohio State Board of Health, who was made secretary *pro tempore* in the absence of Dr. Watson, who had resigned the position. Each day a number of new members were elected who had signified their desire to join, and had been approved by the Committee.

Dr. Frederick Montizambert, General Superintendent of

Quarantine of the Dominion of Canada, read the report of the Committee on Steamship and Steamboat Sanitation. In connection with the relatively shorter voyage of the steamboat, a few points present themselves which it would seem well to emphasize. Passengers' bedding, those portions which are not regularly laundried, blankets, mattresses and pillows, should be freely exposed to the air, and, if possible, to the sunshine, after each trip. The somewhat common usage on inland steamboats of having the dining room on a deck below the water line is not to be commended. This position renders cleanliness and ventilation much more difficult, and certainly tends to unwholesomeness. The holds of the steamboats are more likely than those of steamships to become the recipients of the storage of perishable articles of food and freight. They therefore need to be frequently emptied, cleansed and freely whitewashed. The Committee can not allow the opportunity to pass without again referring to the all-important matter of the exposure of the traveling public on steamboats, as well as elsewhere, to the danger of contracting disease from fellow passengers suffering from consumption, who in their expectorations scatter broadcast the infectious material. Objectionable and indefensible as it is at all times, with steamboat saloons closed and artificially heated, the expectorator's filthy habit becomes especially dangerous to other passengers. The sputa drying on the deck rises as dust to be inhaled, and to add to the great list of the victims of this fell destroyer of mankind. All spittoons that it may be necessary to provide should contain water or a disinfecting solution, which should be frequently changed. It would be well that all States, provinces and citizens should add to their sanitary codes a prohibition against spitting on the floors and decks of ferry and other steamboats, and should require all steamboat companies to prominently post in their boats printed notices forbidding this spitting, and to enforce the same. This is doubtless a matter rather difficult to enforce, but any measure of success would be a definite and positive improvement upon the existing conditions. With the advancing knowledge on the part of the general public and belief in the contagion of consumption and the methods to be employed to limit and prevent its spread, to which education such printed notices may be made to contribute, an ever increasing degree of success may be confidently hoped for.

The next paper read was by Dr. EDUARDO LICEAGA, President of the Supreme Board of Health of Mexico, and Dr. JOSE RAMIREZ, of that Board.

A CONTRIBUTION TO THE STUDY OF YELLOW FEVER FROM A MEDICO-GEOGRAPHIC POINT OF VIEW.

In the port of Vera Cruz, which can be considered one of the sources in which this disease obtains a spontaneous origin, only three cases have appeared during the period of study and these all came in the month of June. With respect to other points on the Gulf coast and especially the ports we can safely assert that not a single case has occurred during this period. Passing to the Pacific coast and bearing in mind the terrible epidemic that in the year 1884 desolated that coast, we find that the Supreme Board of Health of Mexico has taken special care to prevent the disease from being imported from the Central American countries where, unfortunately, it now prevails as an epidemic. As far as regards ourselves, we have thoroughly proved that no source of yellow fever exists on the Pacific coast of the Mexican Republic; therefore, on receiving notice that fatal cases had appeared that were supposed to be this dread disease, the Board hastened to send to the port of Manzanillo one of its delegates who, through his own scientific knowledge as well as through his long residence in the port of Vera Cruz, has obtained a perfect acquaintance with the symptoms of yellow fever. Dr. Narciso del Rio, the person named, reached the port and made a careful study of the last cases that presented themselves. This investigation showed him that what was suspected to be yellow fever was nothing of the kind. It was probably a paludic fever of hemorrhagic form which, through the exceptional conditions brought about by the putrefaction of a large quantity of dead fish around the town, had assumed somewhat the form of a typhus. After the first days of October no new cases occurred. Other slight epidemics were mentioned. Once more it is necessary to show the difficulties which are encountered in establishing an exact diagnosis between yellow fever and certain forms of paludic infection that in hot countries assume an extremely similar aspect, and the serious character generally borne by that disease, so much so that those persons not accustomed to observe the two affections are often uncertain as to the diagnosis. These doubts will in the future be dissipated if, as we all hope, the discoveries of Dr. J. Sanarelli are confirmed. Dr. Sanarelli appears to have discovered the microbe of the fever, in the city of Montevido. A knowledge of the cause of the disease will not only allow us to establish the diagnosis, but also no doubt facilitate our means for attacking it in a certain manner. The present epidemic now prevalent in some parts of the coast of the United States will give physicians in these localities an opportunity to study under exceptional circumstances the efficacy of isolation and disinfection. The same epidemic has now presented a phenomenon that is unique up to this date, that the port of Vera Cruz, which three months had not suffered from the disease should now be taking serious precautions to avoid contagion from the United States, as at this moment happens when the steamer *Uto* is anchored in that port, having arrived from Mobile with three patients who have been ordered to be isolated and under observation in the Lazaretto of Sacrificio.

Dr. William Bailey of Louisville, Ky., alluded to the case of a man who came to his city from Ocean Springs where the present epidemic appears to have originated. He displayed marked symptoms of yellow fever, and subsequently died in a sanitarium after having shown every symptom of this disease. Notice was sent to the authorities of New Orleans and the latter were advised to investigate the disease at Ocean Springs. Yet in the face of the positive diagnosis of this case, it was decided that the disease at the Springs was not yellow fever. A week later, new cases developed at the Springs, and the epidemic was recognized.

Dr. S. H. Durgin of Boston, alluded to the vast importance of bacteriologic work in making the diagnosis of the disease.

Dr. Roque Maconzet of the City of Mexico, agreed on this point, and especially as to the great difficulty in making the diagnosis of yellow fever.

Dr. P. H. BAILHACHE of the U. S. Marine-Hospital Service said that Dr. Durgin struck the key-note in his remarks. A determined effort to investigate the disease to a finish and an abundant appropriation by Congress to carry on the investigation was the thing needed. Referring to Dr. Bailey's statement regarding a case of yellow fever in Louisville in August last, Dr. Bailhache wished to confirm this statement, as the same facts were known to the Bureau. In regard to the remarks of Dr. Liceaga criticising the report of tne U. S. Consul in Mexico, who stated that there were two cases of yellow fever in Vera Cruz, Dr. Liceaga denying the statement, Dr. Bailhache observed it was an unusual thing to charge consuls with giving too much news regarding the health of their stations, as, on the contrary, they were usually charged with not giving enough. He added that their information was based on the reports furnished them by the medical or sanitary authorities, and not on their own knowledge.

Dr. RAYMOND said that Sanarelli's claims to have discovered the bacillus of yellow fever had not as yet been substantiated, and it was probable that it was the same discovery made by Surgeon General Sternberg.

The discussion was now closed and Dr. A. L. Gihon, U. S. Navy, retired, rose to a question of privilege. In the report of the U. S. Marine-Hospital Service he had found that Dr. Bailhache, when reporting the action of the Committee on National Legislation of the meeting of this Association at Buffalo last year said: "The report of the Committee being of special importance to the Service, I deem it proper to state that said Committee presented to the Association the following resolution, which was referred under the rules to the Executive Committee:

"*Resolved.* That it is the sense of this Association that the Committee on National Legislation be continued and that efforts be made to influence the United States Congress to establish a Department of Public Health at Washington, D. C., and to this end it is recommended that the powers of the Marine-Hospital Service be enlarged and so organized as to provide for an advisory council composed of representatives from the State Boards of Health.

"The Executive Committee returned the resolution to the Association in the following emasculated condition:

"*Resolved,* That it is the sense of this Association that the Committee on National Legislation be continued and that efforts be continued to influence the Congress of the United States to establish a Department of Public Health at Washington, D. C.

"Upon inquiry I learned that a retired officer of the Navy took it upon himself to overslaugh the work of the Committee on National Legislation, whose unanimous recommendation would seem to entitle it to more respect, and upon his individual demand the resolution was shorn of its only practical solution."

After reading the above Dr. Gihon emphatically declared that he was the retired officer alluded to, and called upon Dr. Bailhache to explain what he meant by such a statement.

Dr. **Bailhache** asked Dr. Gihon if he had not struck it out?

Dr. **Gihon** replied that he did not, but that the Committee of twenty-five did so, of which he was only one, and asked if Dr. Bailhache thought the Committee of twenty-four other men were led by the nose by him? Upon being asked if he had not spoken in favor of this striking out, Dr. Gihon said he had.

The question of order being now asked as to two persons thus holding a talk on the floor, the President decided it was unparliamentary, and after both were seated, Dr. Gihon was given the privilege of continuing. In reply, he remarked "that any of the Executive Committee might sustain him in what he said—I am one of those who believe that the Marine-Hospital Service should not be enlarged so as to become a National Board of Health." Here the matter closed, Dr. Bailhache declining to reply.

The report of the Committee on Sanitation, with a special reference to drainage, plumbing and ventilation of public and private buildings, by Dr. J. W. **Hughes** of Montreal, was read by Dr. **Leal**. An exhaustive treatment of any of these subjects would require a volume; therefore he confined himself to the one subject of the ventilation of the plumbing system that serves for the conveyance of the house wastes, the sewage, and that are to be finally disposed of, as far as any building is concerned, when they reach the sewer. He gave technical description of plumbing matters, then continued: It is no more possible to lay down a rule covering every possible contingency called for in scientific plumbing and ventilating than to apply fixed rules to the practice of medicine. If it were, there would be little need of skilled and experienced physicians. The principles of scientific medicine and plumbing are fixed, but the application of these principles calls for the intelligence acquired by education and developed by practice. Much injury has been done by attempting to frame plumbing by laws that will apply to every case. The conditions vary in almost every building, and to adapt the principles to the special requirements requires not only practical but scientific knowledge. If the American Public Health Association would make a study of the general principles covering this question, and embody them in a code having its endorsement, leaving the practical application of these principles to those whose duty it is to apply them, much good would result.

The subject was continued by the reading of a paper on the

DRAINAGE, PLUMBING AND VENTILATION OF PUBLIC AND PRIVATE BUILDINGS,

v Dr. **John L. Leal**, Health Officer of Paterson, N.J. The importance of the subject can not be over-estimated. One of the results of civilization is that a very large proportion of mankind passes its time within four walls. With the advances of civilization these conditions become more and more unlike the primeval condition, and hence more and more harmful. There are three points: 1, every building intended for occupancy should have some special means of ventilation; 2, these means should be commensurate with the requirements of any particular building; 3, the more simple the means the more likely to be their operation. The object of plumbing is first to withdraw from a building immediately all waste products of life, the presence of which would prove harmful to health, then to prevent harm to the inmates arising from these products after removal. Not only are we threatened by the presence of these substances, but we are also threatened by certain dangers inherent in the best systems at our disposal for ridding ourselves of them. He then described at some length the various properly constructed appliances for the carrying out of these plans.

Dr. **A. C. Abbott**, Philadelphia, objected to the interpretations of the conditions to the effect that modern teaching on ventilation as formulated from exact examinations does not justify the belief that there is present, *in improperly ventilated* houses, substances capable of inducing specific diseases, but that the evil results of bad ventilation are principally seen in the personal discomfort to which they give rise. Unless the plumbing is so defective as to allow of leakage into the house of actual infective matters, it is impossible by any scientific method to demonstrate in the air of otherwise badly plumbed houses matters that can be said to stand in causal relation to disease. Experiments on the relation between the gases from sewage have failed to demonstrate that the former stand in any relation as causal of the disease. Statistics show that the health of workers in sewers, on drainage fields, and those employed in and about glue factories, is in general as good as that of the community at large. As to the drainage part of the report, he was fully in accord with the writer, and mentioned the conspicuous instances where improvements of a locality had resulted in improvement of the health of said locality.

Dr. **Durgin** then read the

REPORT OF THE COMMITTEE ON CAR SANITATION,

prepared by Prof. S. H. **Woodbridge** of the Institute of Technology, Boston. It would seem that something like interstate agitation and regulation are needed to any legislative advancement in this field of hygienic improvement. Hence it seems the better way that the movement should originate within, or at least be fostered by, some strong railroad corporation which shall set the pace for other railroads to eventually put themselves in step with. He described a new form of sleeping and parlor car.

ABSTRACT OF REPORT OF THE COMMITTEE ON CAR SANITATION

by **Granville P. Conn**, President State Board of Health, New Hampshire. The committee reported that during the past year more than ordinary interest had been exhibited in this work. That this subject has been discussed by the press, by workmen connected with railways and car construction, and that one State had, through their legislature, instructed their Board of Railway Commissioners to investigate and report upon the availability of various systems of ventilation. The report signified that the aim of the Committee was to give a *résumé* of what had taken place since the last meeting of the Association, in order that the Association may keep in touch with all who are interested in this subject.

The Committee took up first the work of the Railroad Commisioners in Massachusetts, who were ordered to report on systems of ventilation now in use, and who held public hearings at the office of their board in November and December, 1896. Several quotations were made from the report of this Committee, and it was shown that the interest manifested was not such as to cause enthusiasm on the part of the friends of sanitation as the report says: "With the exception of the railroad officials and the patentees of ventilating devices, only three persons made any remarks at the hearings, and no one of these urged the expediency of legislative action."

It was shown that three patented systems for the ventilation of cars were presented at the hearings and represented by the inventors, that "each of these inventors claimed, and apparently with entire sincerity as well as absolute conviction, that his is the 'only perfect system of car ventilation,' and that all other methods are comparatively worthless."

The questions considered by the board were arranged in the following manner:

1. "Are the methods of ventilating passenger cars now in general use reasonably satisfactory?"
2. "If not, are there any methods which have been shown by experience or otherwise proved to be on the whole more satisfactory?"
3. "Is it at present desirable that there should be any specific legislation on the subject?"

It was evident that the Railway Commission took up these questions deliberately and patiently heard all there was to be said regarding their availability, also gave due attention to what was said by railway managers as to the practicability of these devices. The report shows that the Railway Commission were not impressed with the idea that the public were inconvenienced to any great extent, as they say: "The evil does not appear, however, to be by any means so serious as it is sometimes depicted by theorists, valetudinarians, and the inventors of ventilating apparatus; and the present methods, if properly used, would undoubtedly give much better results than they do. The trouble frequently appears to be that the means provided are not intelligently and systematically used by trainmen, or that their use is not permitted by passengers."

The Committee proposed a remedy which was incorporated into their report as follows: "Great improvement could, however, be made in the condition of the air in our crowded passenger cars if the trainmen were compelled to pay proper attention to the ventilators. A regular set of instructions should be furnished them for their guidance and division officers should be instructed to pass through the train at every opportunity and to report cases where the ventilators have been neglected and the air is overheated and foul, to the division superintendent for discipline. The men would then soon learn to attend to this part of their duty. Sleeping car companies should have a code of rules printed and posted in the cars and their porters and conductors should be made to observe such rules."

The conclusion of the Board of Railroad Commissioners was in part as follows: "It has not been made apparent to the Board, by the testimony at the hearings or otherwise, that there is grievous complaint by the traveling public about the ventilation of passenger cars, on either railroads or street railways; or that there is any general demand for radical reform or relief through mandatory legislation. Much more frequent complaints come to our ears of the overheating or underheating of cars, than of their foul or vitiated atmosphere. It is perhaps safe to say that the complaints of bad or insufficient car ventilation are not more numerous or well grounded than those which are heard with respect to many public buildings and places of assembly for whose ventilation experts of high repute have been employed and no expense has been spared; and the problem is less difficult and complex in the latter than in the former case."

"It is evident from all that has been said, that car ventilation is still in its experimental stage, and that no artificial system or method has as yet been so fully perfected and so thoroughly approved by successful use, as to warrant the Board in recommending its general adoption under the constraint or regulation of law. The Board accordingly reports, as the result of its investigation, that no specific legislation on this subject appears to be at present expedient."[1]

After commenting on this report, the Committee in discussing the importance of thoroughly educating men in any and all duties which they are expected to perform, said: "Let us hope in the future the 'School of Instruction' on our railways will be made to include as much of the elementary principles of hygiene and sanitation as to insure not only courteous treatment from trainmen, but also the best possible application of such devices as are being used in heating, lighting and ventilating the coaches. We are ready to admit that no amount of training will furnish brains to any class of people, but to educate men thoroughly in the work they are expected to perform, will insure better results and less disappointment than with untrained employes." .

The Committee gave newspapers great credit for having done a great deal to educate public opinion in the matter of car sanitation, quoting liberally from the Boston daily press in this matter of which the following is an example: "Under the conditions we have just named—the absence of dust, smoke and cinders—traveling by railway in summer would be transformed from a dreaded ordeal into a decidedly agreeable experience. Those who have ridden in the electric cars over a greased track-bed do not need to be told that there is something positively exhilarating in thus rushing through the pure air, particularly on a hot day in summer. The experience would be precisely the same in railway trains if the railway companies would make the relatively slight reforms needed to do away with the nuisances to which we have referred. Under such circumstances the traveler at the end of a 500 miles' trip on a railway train would be just as free from the sense of dirtiness as though he had made the same distance on a sailing vessel instead of a railway train. This improvement is of vastly greater importance to the traveling public than that which consists in having bathtubs and barber shops on railway trains, and is one which, apparently, can be brought about at relatively slight expense. In other words, it is much more a question of efficiency in administration, in using the best methods, than of increasing corporate outgo."

The Committee referred to the fact many large roads have an advertising department complete in all its details, with a competent head to direct its work, and said: "If this department would keep up to date, it must take cognizance of the sanitary condition of trains, stations, yards and grounds. That as people are traveling across the continent and from State to State in the pursuit of health or pleasure, they pay well for their accommodations, and while it is pleasant for them to have the press agent of a road describe in an agreeable manner the resorts to which his road would invite them to make a home, yet, however beautiful such resorts might be when reached, and however much enjoyment might be taken, and rest obtained while sojourning in these elegant and palatial hotels, yet to be carried, to such a place in unwholsome and filthy trains, and waited upon by discourteous servants of the road, will do a great deal toward destroying any influence which the advertising agent may have created."

Reference was made to the epidemic of yellow fever in the south, and said: "It is generally admitted that yellow fever is a preventable disease, and if so, interstate and municipal authorities along the Gulf coast are responsible for its outbreak. It is true that railways, like individuals, have to take their chances of an occurrence of epidemics that will interrupt business relations, yet at the present time, with all the power that is granted by federal and State governments, someone must be negligent or inefficient, to allow a disease of this character to obtain a foot-hold and spread itself over three or four States."

The disinfection of railway coaches was taken up and in the discussion of this question, reference was made to the work of the United States Marine Hospital Corps and of papers read by Surgeon-General Wyman and Dr. Kinyoun, before an Association of Surgeons of the Southern Railway Company, in which Dr. Kinyoun explained the manner of using formaldehyde. The Committee said: "The work of disinfection with formaldehyde can not be left to inexperienced or untrained men. Whenever it is performed by using the formaldehyde gas, it becomes necessary that a trained expert has charge of the work and in mixing the solutions necessary for it to be used as a germicide requires care and experience. There is no doubt but what the chief surgeon of the road might, in a reasonable length of time, educate a good and bright foreman of the cleaning department to that extent, that his work would be fairly reliable; yet, in times of epidemics, when car service was running through an infected section of the country, it would be necessary for a thorough-going expert to take charge of this work. I have had no experience with the use of formaldehyde gas as a disinfectant, but have been cognizant of several failures to do good work by reason of the inexperience of the would-be operators. For more than two years I have used the solution of formaldehyde in surgical work, and consider it far superior to any of the germicides which have yet been brought to the notice of the surgeon. Its power to prevent suppuration, or to lessen its destructive influence where pus was present has been wonderful in its results, and very gratifying to the patients."

The report closed by referring to the work of the Master Car Painters' Association, which held its twenty-eighth annual meeting at Old Point Comfort, Va., Sept. 8 and 10, 1897. The Committee said: "Members of the American Public Health Association as well as of the Railway Surgeons' Association will remember that the writer has always advocated a union of work and an interchange of ideas between the practical mechanic and the sanitarian; and I am very glad to extend a most hearty welcome to these co-workers in sanitary science, and bid them God speed in their endeavor to effect a reform in railway sanitation; for whenever work of this kind is being pushed forward by a demand for reform on the part of the public and has the approval of the constructive mechanic, the power is one of irresistible force, and grand results must naturally follow."

The report gave liberal quotations from the papers and discussions of this convention of mechanics, giving the rules and regulations for cleaning passenger cars at terminals adopted by the Cleveland, Cincinnati, Chicago and St. Louis Railroad. There were thirteen of these rules and regulations, which are too long for a mere abstract of the report. In discussing these rules and regulations the Committee said: "They may be the best and most effective that are possible to be enforced by men who are uneducated in the scientific principles of sanitation; and, of course, they can be amended whenever the advanced education of the train and shop men demand a more effective hygienic service.

"Thus far, nothing strictly of an automatic character has been devised to regulate the heating and ventilating of cars and produce first-class results. As yet these seem to be unsolved problems, and any one who has occasion to investigate these questions is ready to admit that they present some perplexing points that are of great interest, yet are entirely outside the domain of questions pertaining to the hygiene and ventilation of ordinary dwellings and dormitories. The fact that a car is a house on wheels, sometimes standing still and at other times moving at a rate of from ten to seventy five or even more miles an hour, presents obstacles to be overcome in the matter of lighting and ventilation that never have been solved by architects or others having to do with the introduction of heat, light and ventilation in ordinary dwellings. The ventilating and heating of cars running into the north and east must go hand in hand for at least eight months in the year. The sanitarian can easily point out some of the defects, and possibly suggest some ideas that will be of assistance to the practical mechanic in overcoming difficulties in the ventilating and heating of a railway train; but I suppose it will be a long time before any of us will make our fortunes in solving these problems alone, and thereby be deserving of the gratitude of the traveling public.

"However, the great work is slowly going on, and we can well afford to abide our time. As an Association we may without egotism congratulate ourselves that we have been the means of introducing by our educational work the beginning of a great reform in car sanitation, and having enlisted the public, the press, the mechanic and a legislature, we may feel that the work is well begun, and will continue to go on steadily attracting increased force in its onward career."

(*To be continued.*)

WRITE TO US for a copy of Department of Public Health Bill.

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[1] Quotations from the report to the Massachusetts Legislature.

PRACTICAL NOTES.

Acute Intestinal Obstruction.—McArdle (*Dublin Journal of Medical Science*, Oct. 1, 1897) in concluding a paper on this subject offers the following suggestions in case of difficulty in finding the site of obstruction: 1. Follow the engorged coil of intestines upward and downward until the point of obstruction is reached, or turn out all the intestines. 2. Remove all fluid from Douglas' pouch and the loins, by irrigation with sterile water. 3. Restore the color of the bowel, and establish peristaltic movements by heating with neutral saline solution. The removal of the primary cause of intestinal obstruction is not always followed by relief of the symptoms. 4. Should there be difficulty in returning the intestines, elevate the pelvis in the Trendelenburg position, or if necessary, open and wash out. 5. Before all, and above all these conclusions, the following rule should be observed: "When a surgeon is called to a case of complete obstruction of the bowel, with evidence of peritoneal effusion, it is his duty to operate at once."

Diagnostic Importance of the Amount of Chlorids in the Urine.—In chronic affections it seems to be definitely established that progressive or abrupt diminution of the chlorids in the urine indicates a serious phase of the disease, when it is not due to special alimentation. Fieux contributes to the *Arch. Clin. de Bordeaux*, September, a study of the chlorids in the urine of pregnant women, concluding with the statement that the passage of chlorids into the urine is in direct proportion to the permeability of the renal filter for toxic products, and hence, in normal pregnancy or with slight albuminuria the amount of chlorids is always large, averaging 15 grams and never less than 12 grams in twenty-four hours. But if the albuminuria is complicated with vomiting, vertigo, etc., the amount of chlorids is materially diminished, and evidently in parallel proportion to the degree of intoxication. Antouchevitch having observed that the vomiting of pregnancy resembled the symptoms of ani- deprived of salt administered salines in large quantities obtained a prompt, complete and permanent cure. He rted at Moscow that his usual combination is Botkine's mixture, phosphate of lime, Glauber salts and bromids.

Removal of a Retro-bulbar Tumor with Preservation of the Eye.—Weiss (*Wiener Medizinische Wochenschr.*, 1897, No. 42, p. 1958) reports the case of a child, a year old, whose parents had noticed increased size of one eye shortly after birth. The eye was pushed not only forward but also toward the median line. Operation was undertaken, a curved incision being made through the skin above the outer portion of the orbital margin, which was resected and turned outward. A bluish, translucent cyst came into view. In the endeavor to free the wall of the cyst this ruptured and it was seen that it continued far into the orbit in the form of a tube. In consequence of the free hemorrhage the operation was interrupted, to be resumed two days later. The remainder of the cyst, which extended into the optic foramen, was dissected free and divided, leaving some doubt as to whether the whole of the growth had been removed. The wall of the orbit was now replaced and the wound closed. Recovery took place without complication. The exophthalmus disappeared. Ophthalmoscopic examination disclosed a pale papilla.

The Treatment of Hydrocele by the insertion of sterilized catgut within the tunica vaginalis. Van Schaick (*Medical Record*, Oct. 30, 1897, p. 624) reports a group of ten cases of hydrocele treated successfully by the following method: After thorough disinfection the scrotum is tapped with a small trocar in order to secure a rather slow evacuation of the fluid. A catgut ligature of medium size is introduced within the cannula as soon as the serum begins to flow and is rapidly pushed within the tunica through the cannula until about eight inches is passed through it. When all of the liquid is evacuated the cannula is removed and the catgut hanging out of the puncture is snipped off with the scissors as close as possible to the scrotum. By manipulation of the scrotum complete entrance of the catgut within the tunica is secured. The wound is then sealed with collodion. If the asepsis has been perfect there is no possibility of the occurrence of any infection. The rather nauseating pain that sometimes occurs after iodin injections is commonly absent. No febrile action takes place.

Benzosol in Phthisis.—This drug was used in a number of cases of tubercular disease in the Cincinnati Hospital, during the summer and fall of 1896, in the service of Drs. Geo. Fackler and E. W. Mitchell. The gastro-intestinal symptoms were markedly changed for the better; and in this way by limiting vomiting, by lessening the number of stools, the changing the character of the stool from watery to a rather firm consistency, the lives of a number of patients were prolonged; not only this rather doubtful benefit, but the relief afforded by checking the diarrhea, made them more hopeful of the future and banished their mental depression. In the two cases in which a fatal termination supervened, the abolition of diarrhea was the most striking result of the treatment; the stools diminished from six or eight per diem, to one or two. It is but fair to say that these fatal cases had well-marked signs of cavity formation when the treatment was instituted. Two cases of the incipient form of phthisis, who were reported "discharged well," had entered the hospital complaining of diarrhea, and made no mention of any pulmonary trouble. The experience, then, would only go to confirm what is being reported by others, that benzosol is an intestinal antiseptic, and that the good results obtained in phthisis are due mostly to its beneficent action on the gastro-intestinal tract. Benzosol is a benzoate of guaiacol, and it is probably due to the presence of the latter, that such good results were expected of it in the treatment of tuberculosis. It is best given in from five to ten grain doses, three times a day, a quarter of an hour after meals.—*American Therapist.*

A Simple Method to Obtain Separately the Urine from Both Kidneys.—To obviate the dangers attending catheterization of the ureters and other procedures for determining the character of the secretion from each kidney, Neumann (*Deutsche Med. Woch.*, 1897, No. 43, p. 690) has devised an instrument by which the bladder, especially in women, is devided into equal portions, and the urine discharged into each finds its way out of the ureter through separate channels. This appliance consists in a tube of thin metal 4 cm. long, 1 cm. thick, carrying within its lumen a solid septum extending 4 cm. beyond the proximal extremity and thus forming a partition within the bladder and the ureter 8 cm. long. The divisions formed in the bladder terminate at the distal extremity of the tube in two smaller tubes, to which test-tubes can be attached and the secretion from each kidney collected separately. The free proximal extremity of the septum terminates in a blunt point, from which pass off to either side two fine curved wires. The tube and its prolongation are curved after the fashion of Hegar's cervix-dilators, so that the instrument adapts itself readily to the posterior aspect of the symphysis pubis. In the employment of the device the patient sits at the edge of the bed, with the feet supported and the thighs spread far apart. The conical proximal extremity of the instrument is introduced into the ureter with its convex aspect forward. The urine present in the bladder escapes. The viscus is then irrigated with warm boric acid solution and all fluid is removed with the aid of a finger introduced into the vagina. The urine, as it is discharged from either ureter, now collects in the bladder on either side of the artificial septum and is eventually discharged through the small tubes.

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SATURDAY, NOVEMBER 13, 1897.

THE LATE LEPROSY CONGRESS.

The recent International Conference on Leprosy at Berlin does not, so far as reports have been obtained, appear to have developed anything specially sensational, either in its discussions or its findings or resolutions, as perhaps might have been expected to be the case. The conclusions as to the hopelessness of treatment, the recognition of Hansen's bacillus as the cause of the disorder and its non-hereditary character are not startling in any sense; the temperately expressed opinions as to the spread of the disease and the necessity of isolation that seem to have been offered are also in the same line of moderation, and the further rejection of the proposition to establish a permanent international commission on leprosy may also probably be accepted as another indication of the same non-alarmist tendency. There was evidently a considerable degree of individual difference of opinion on certain points, but the general tone of the convention, judging from its utterances as given in the press, was opposed to the excitement of any general alarm on the part of the public as to the possible dangers from this disease, at least as far as the principal civilized countries are concerned. One thing, however, was brought out clearly, viz., that the leprosy-producing organism is extremely abundant in the disease, according to some accounts even pervading the atmosphere around the infected individuals, and yet that there seems to be, in temperate climates at least, an almost universal insusceptibility to the contagion. We say "almost universal," for the conclusions that the disease is not hereditary and the occurrence of leprous foci in Norway, Nova Scotia and elsewhere in temperate climates, must necessarily imply the existence of susceptibility to contagion outside of tropical regions. Just what constitutes this susceptibility does not appear to have been settled by the Congress, but it appears to have been considered as exceptional, and possibly as due to some special conditions of health in the individuals exposed. Against this common immunity we have the fact of the almost infinite opportunities of contagion in the abundance and the diffusion of the bacilli from any source of infection, and taking both facts into account, it would seem reasonable to use precautions against the disease. Even if absolute isolation be unnecessary in this climate, the free association of lepers with the public and their mixing with crowds in cities and in public assemblages is decidedly undesirable. The fact that by isolation the number of lepers in Norway has been reduced very decidedly is evidence of this, and the decision of the Congress that isolation is desirable, and that the Norwegian system is to be recommended, is only what ought to have been expected, and can not be deemed in any way an extreme expression of opinion. The view held and expressed by some dermatologists that leprosy is non-contagious in this climate, and that there is no danger or impropriety in its victims going freely about and being treated with other diseases in hospitals, is hardly supported by the facts here developed. There may be some difference in the degree of contagiousness of the anesthetic and the tubercular forms, but in the latter especially it would seem that precautions against contagion are desirable. The long and variable period of latency of the infection is another point of importance; one can not say with certainty whether he is or is not infected, and it may be within the possibilities that an infection obtained in temperate regions where it remained entirely latent might develop into the complete disease on a later residence in the tropics.

Another fact that seems to have been discussed and admitted in the Congress was the possibility of forms of leprosy existing among us unrecognized; many of the cases of syringomyelia that are reported are, for example, to be looked upon as suspicious, and the same is true of Morvan's disease, in which in Brittany the presence of Hansen's bacillus has been determined by one or more observers. The bacteriologic identification of syringomyelia with leprosy is not so definite, but we have at least one reported observation, that of PESTANA and BETTANCOURT, of the finding in it of the lepra bacillus. It is not impossible that there are other as yet unrecognized modified forms of the leprous infection existing among us.

The assertion positively made that the germ of leprosy is found only in the human species is a satisfactory one, since could it be conveyed by the lower animals, the chances of mischief would be multiplied.

We can satisfy our egoistic and philozoic tendencies together with such facts as this.

It is evident that there are yet many important questions relative to leprosy that are left unsettled by the Congress, among them those of the vitality of the Hansen bacillus, the exact modes of contagion, the reasons for immunity, the exact climatic and dietetic conditions favoring it, etc. The Congress probably acted judiciously in not endorsing any alarmist opinions, while yet advising reasonable precautions against possible contagion and spread of this loathsome disorder.

APLASIA OF THE GALL BLADDER AND THE BILIARY DUCTS.

In 1892 JOHN THOMSON[1] collected all the cases of congenital absence of the gall bladder and the biliary ducts described in the literature, namely, forty-nine, and added a case of his own, making the total number fifty. Recently KR. THUE of Christiania describes a new instance.[2] It concerns a newborn girl, twin birth, the other child being well and living at time of this report. Icterus, present at birth, increased rapidly; the liver enlarged and emaciation progressed, death occurring in two weeks. The postmortem showed an enlarged granular liver of olive-green color, with bands of fibrous tissue ensnaring islands of hepatic tissue. Any gall bladder, biliary ducts or sign of any biliary papilla could not be found. In addition there was a healing pericarditis with a fibrinous exudate. The microscopic examination showed broad bands of fibrous tissue surrounding groups of and also single acini, as well as penetrating into some lobules separating the cells from each other. In the connective tissue were clumps of yellowish-brown pigment and collections of round cells. All the liver cells were yellowish. In the connective tissue were also small ducts lined with a cubical or flattened epithelium, the lumen being filled with yellow clumps. Sections through the fibrous tissue occupying the site of the gall bladder showed no sign of the gall bladder or any part of it. Bacteria were not demonstrable in the organizing pericardial exudate.

The clinical picture of absence of the bile ducts and the gall bladder corresponds to that of retention icterus in general. In the beginning the condition is very apt to be mistaken for an attack of icterus neonatorum. The deep icterus may require from eight to ten days for complete development, because the liver cells do not perform active secretion until some days after birth. Hence the steadily increasing aggravation of the symptoms in case of absence of the biliary passages will be the principal factor in the differential diagnosis of this condition from icterus neonatorum. The average duration of life of the children without biliary passages is about four months; some have lived for eight months, others die a few days after birth.

According to MINOT,[3] the liver is formed from a diverticulum from the intestine, which very soon divides into two. These evaginations consist first of solid columns of cells that afterward separate so that a lumen is produced. The gall bladder is formed from an outgrowth of the right primary diverticulum. Absence of the gall bladder and of the biliary passages may arise from an arrest of development of the originally solid canals or because connective tissue proliferation of inflammatory or other origin gives rise to obliteration of the canals sooner or later after they are formed. LORRER[4] regards syphilis as the most likely cause of these anomalies, perihepatic processes in the porta hepatis leading to obliteration of the passages. JOHN THOMSON[5] regards syphilis as an exceptional cause, inasmuch as in twenty-nine of the fifty cases collected by him nothing is stated pointing to syphilitic infection of the parents. In THUE'S case there were no indications of syphilis.

In the majority of cases described there is a history of evacuations of meconium. Now, the greenish black color of meconium is due to biliary coloring matter and hence it becomes necessary to assume with THOMSON that in these cases the biliary passages have been imperfectly formed and the resulting partial retention of bile gives rise to inflammatory changes that end in a complete obliteration without much, if any, traces to indicate the exact genesis of the anomaly.

The secondary changes in the liver in these cases are of considerable interest. These changes are essentially those of a biliary cirrhosis. The points of difference between this form of cirrhosis and the so-called hypotrophic cirrhosis of the French, which must be regarded as a disease *sui generis* due in all probability to some obscure form of infection, need not be discussed in minuteness at this time. By biliary cirrhosis in the strict sense ought to be designated the forms of interstitial proliferation that depend directly on occlusion or obstruction to the outflow of bile. JANOWSKI[6] made a study of biliary cirrhosis and came to the unequivocal conclusion that it is due to obstruction of the bile and that it can be produced experimentally by the ligation of the ductus choledochus. Now, in congenital absence of the biliary passages, nature has, so to speak, made this experiment. As a rule the clinical history in these cases points to a progressive enlargement of the liver. This enlargement is due to the steady increase in the amount of the connective tissue. On account of the increase in the biliary pressure bile capillaries may burst, the bile is infiltrated among the liver cells and its pressure on the blood capillaries produces anemia of the liver cells, which in conjunction with the direct action of the bile, leads to necrosis of the hepatic cells, followed by an overgrowth of connective tissue. The necrotic areas act as foreign bodies and induce round cell infiltration and connective tissue proliferation. These changes occur more or less irregularly—at times it surrounds many acini, at other times small remnants of acini are found in the connective tissue, generally it manifests a marked tendency to invade acini from the periphery.

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[1] On Congenital Obliteration of the Bile Ducts, Edinburgh, 1892.

[2] Festskrift i Anledning af Prof. H. Heiberg's 25 Aars Jubilaeum, Christiania, 1895.

[3] Human Embryology, Boston, 1892

[4] Virchow's Archiv, Bd 99, 1885

[5] Loc. cit

[6] Ziegler's Beiträge, 1892 Bd xi, p 311

WRITE TO US for a copy of Department of Public Health Bill.

HYSTERIC ACCUSATIONS AND HYPNOTISM.

Hysteric accusations are of perennial interest to physicians, albeit the lawyers occasionally suffer as much from these, and the clergymen even more. Cases of hysteric scandals are exceedingly frequent under the fostering care of the sensation-monger press, and are of late conjoined with crude popular notions of hypnotism, as they were during the hypnotic epidemic of half a century ago in the United States.

Dr. BRIGHAM, of Utica, reported the following case (*American Journal of Insanity*, April 1848): A man was accused, by an hysteric lunatic, of an attempt to murder her. The delusional origin of the accusation was proven by Dr. BRIGHAM, who also recognized the hysteric phase. The patient was hypnotized by a layman "mesmerizer," who did not believe the accusation. Her narration of the story during the hypnotic state varied decidedly from that given in the conscious state. The "mesmerizer," who regarded the woman as a lunatic, testified to these facts. The woman gagged herself, tied herself up, and did analogous hysteric tricks now familiar to neurologists. The accused was acquitted.

This case in certain particulars bears a decided resemblance to the GRACE DARRELL case of Jacksonville, Fla. Two years ago this girl, then at the age of 20, claimed to have been kidnapped, taken to the woods, stripped of part of her clothing and tied to a tree where she was found the next morning. Four young men were charged with the crime, arrested and convicted, but a new trial was granted. The young men were afterward tried in the United States court, charged with sending improper letters to Miss DARRELL.

The prisoners were convicted but again the court set aside the decision. Recently Miss DARRELL made a sworn confession that her testimony was false and that the letters were written by her guardian and others for the purpose of convicting the young men. When this confession become known she was taken to the newspaper offices by the guardian, and there denied ever having made it. She was brought into court and again denied having made the confession, despite the fact that it was witnessed by four prominent and trustworthy citizens. The guardian was present when these denials were made. Miss DARRELL escaping from the guardian's residence, declared the confessions were absolutely true. She says her guardian has a Svengali-like influence over her, and that she is powerless to do otherwise than he tells her to do. To the features of ordinary hysteric accusations, this case adds a by no means improbable charge of suggestion, but this suggestion is not greater and no more criminal than that made to ordinary hysterics by well-meaning but credulous sensationalists, when an hysteric accusation is once started.

Hysterics have far from infrequently indulged in letter-writing performances similar to those of the DARRELL case. This occurred in the following (*Alienist and Neurologist*, Vol. 16): A milliner complained that her store had been fired several times, and that obscene letters had been sent her. She confessed later that she set fire to the store and wrote the letters. She implicated a young man and stated she had been his mistress. He was arrested but she failed to prove her charge against him and he was released. She was then indicted for perjury. In her confession read at the trial she said that she fired her store in order to get money to go to New York and find the young man with whom she was infatuated. Drs. WILLIAM A. HULSE and FURMAN NICOLL testified that the defendant had suffered from hysteria and temporary insanity resulting from dysmenorrhea. Dr. L. C. GRAY testified that under the right and wrong knowledge test of the New York code, she was not insane. The jury acquitted her in clear defiance of the code on the ground of insanity.

LEGRAND DU SAULLE ("Les Hystériques") describes cases where women formed the delusion that they had been struck or stabbed by others after having inflicted blows and wounds upon themselves. In one instance a young woman was found by her husband lying on the floor of her room in a fainting fit, her face covered with blood. She stated that she had been attacked by armed men. The Paris newspapers related the case and within three weeks two similar events occurred in the French metropolis. All these cases proved to be fabricated by the supposed victims. A young girl wounded herself slightly with a pistol. She gave the police authorities the most minute details about an imaginary assassin who, according to her account, fired the shot, but she was found to be highly hysteric, and it was proved that she had wilfully wounded herself. In a third case (in Dr. DU SAULLE's experience) a young woman was found, in a railroad carriage, stabbed in the left side. The incident caused great excitement, but it was proved, contrary to her assertions, that she had inflicted the wounds herself and was a hysteric subject. A housemaid was found lying behind a door bound, gagged and covered with bruises. She stated that she had been brutally attacked by two burglars with blackened faces, but she was a highly hysteric woman and there was conclusive evidence that she had contrived to tie her own hands and gag and bruise herself.

TARDIEU cites the case of a woman of Courbevoie who wished to pose as a victim of political conspiracy which she pretended to have discovered. One night she was found at the door of her apartment in a state of great mental perturbation. She could not talk, but stated in writing that she had been attacked outside her own house by a man, who attempted to garrote her, at the same time striking her twice with the dagger. Only the clothing was injured, the body of her dress and her corsets being cut through but at different levels. She tried to make out that the attempt at strangulation had caused dumbness. TARDIEU remarked in her hearing that this infirmity rapidly disappeared when produced under circumstances of this kind. She soon managed to regain her speech and in a short time admitted that the whole narrative had been evolved out of her inner consciousness.

In a case reported by LEGRAND DU SAULLE, an hysteric female sent five persons to Cayenne (the French penal settlement) on a charge of rape. A member of the French Medico-Psychological Association suspected, from an after-examination of the alleged victim, that the whole story was of hysteric origin. Through his efforts the innocence of the prisoners was demonstrated and they were released.

TOULMOUCHE has reported the case of a young girl given to devotional exercises and much inclined to flagellation and asceticism. She one day cut herself six hundred times on various parts of the body, with scissors. She asserted these wounds were made by a man who tried to outrage her. She finally confessed that the injuries were self-inflicted. HUCHARD has had under observation an 18 year old girl who accused the vicar of the parish of having raped her. She stated that one day, while she was praying in the church, the vicar shut all the doors and requested her to go with him into the sacristy. There (she claims) he made obscene proposals to her and, as she indignantly refused, he pointed a dagger at her, she fainted, and during the faint he (she alleged) violated her. She was questioned during the trial. Her replies to the questions of the medical expert exciting suspicion an examination was ordered (by the court) which revealed that she was still a virgin.

TARDIEU has reported the case of an inmate of a Gascony convent who claimed to have been made the victim of all sorts of outrages therein. Her father, with full faith in what she said, denounced the alleged criminals. Finding, however, that his daughter's story was untrue, he took his life. In another case cited by TARDIEU, a girl charged two young men with having violated her and introduced into her rectum and vagina, stones, splinters and iron, which had to be extracted with great pain. She had convulsive seizures, followed by paralysis. The two men were convicted and had been imprisoned for more than a year when the false nature of the accusation was discovered.

The psychologic *raison d'être* of these accusations has been carefully pointed out by DESCHAMP'S (*Bulletin général de Thérapeutique*, 1891). The The general mental characteristics of hysteria are, he remarks, an absolute want of equilibrium in sensibilities and will power. There exists a mobility of humor in direct relation with facial impressionability to external influence (external ideas or perceptions) or to internal states (intrinsic ideas). The nerves vibrate to all sentiments, coming from within or without, which are registered without proper relations. One fact chased by another is forgotten. Another produces a momentary hyperexcitation which takes the place of truth, whence it is that falsehood is instinctive, but the patient protests her good faith if accused of the same. This lack of equilibrium leads to decided modification of the mental faculties. Intellectual activity is overexcited, but in diverse degrees and in variable ways, according to the particular tendencies adopted. Absorbed by a preoccupation or controlled by an idea, they become indifferent to all else. Their ideas are abundant and they *rapidly pass from the idea to the act. Their vivid* imagination, coupled with a bright intelligence, gives them a seductive aspect, but their judgment *is singularly limited, attenuated or false.* They judge excellently from a non-personal standpoint. They are quick at discovering faults, even of their own relatives, but faults attributed to themselves are repudiated. Their memory is capricious. They forget their faults and their acts done under impulse, albeit these may be consciously done. They frequently make charges of immoral conduct against both men and women, often with a desire of securing notoriety, often, as SPITZKA ("Manual of Insanity") remarks, with the object of indicating their own desires, and equally often from a voluptuous enjoyment of the suffering caused by the accusation. The responsibility for these is legally doubtful. They are often at first vague and indefinite, but are given form by the suggestion of others honestly desirous of punishing a supposed *wrong. In all accusations by neurotics,* this delusional factor must be taken into account legally, both for the benefit of the individual and of society.

WRITE TO US for a copy of Department of Public Health Bill.

CORRESPONDENCE.

Observations on the "Code."

NEW YORK, Oct. 31, 1897.

To the Editor:—The "Code" is noble, a law irrevocable, supreme wherever the doctor wends his way, ruling an army of learned and cultured men. Its genesis is lost in antiquity. It is noble, but not more so than the unified profession whose ethics it formulates, failing only in so far as those whom it would govern are human, and to be human is to fail as well as to succeed. The "Sermon on the Mount" has been attacked, so has the Code. It has been said that a gentleman requires no "rule of conduct;" true, but all are not gentlemen, and so there is need for the rule of ethics as there is need for the "Sermon;" neither will be too old until the time has come when every man does unto his neighbor as he would be done by. However, it is not our purpose to defend; it is not necessary.

Those who as yet are breasting the current, struggling where the rocks are jagged, where the eddies swirl, fain to reach the placid waters beyond, the status of the successful practitioner of merits proved with laurels won; these are the ones who find it most difficult to correlate conduct with the exactions of the "Code."

When one by one the rungs of the ladder of fame have been courageously reached and passed, and there is an infinity between the first and the last, then it is that the individual is best adapted to the "Code." Now, a position is occupied so lofty as to be everywhere easily observed. A chance misstep and the labor of years is all for naught; and again, one now comes to love the "Code," to realize its justice, to acknowledge the verity of the principles on which it is founded. These things hold such an one in loyal and constant obedience to the ethics of "our profession."

But in what manner do its provisions apply to those for whom the top of the ladder is yet a weary climb? They more frequently fail, and the reasons are manifold. Entering on the practice of a profession already overcrowded, finding competition keen and uncharitable in the struggle for sustenance, they see apparently well-founded cause for sometimes disregarding the mandates of a Code which, did they but know, would prove their best, most steadfast friend. In these days of newer economics and rapidly changing ideas, it is difficult to get the younger men to properly regard principles of conduct which some are pleased to term "idealistic" and "not applicable to the times." They forget that the "Code" was made for one and all, makes the weak the equal of the strong, eliminates mediocre competition, is the crystallized wisdom of the army that has gone before; that it never grows old, for, like the drama of Shakspeare, it is founded upon a truthful interpretation of human nature, in which there is little change from Galen's time till now. Even those most prone to break the rule can not but acknowledge its high place.

Our profession is everywhere banded into groups whose object and duty it is to have a proper regard for the general welfare, and to enforce the principles which we know are for the good of all. If an erring brother filches from you your purse, or what means the same, illegitimately deprives you of a patient, do not overlook the action, grow cynical, sneer at the "Code," but rather place the circumstances before the properly constituted society. Then the erring brother will be called upon to walk the "straight and narrow path," and if he chooses not to do so will be branded for what he is. Patient endurance under such circumstances makes he who endures a party to a course of action which, if prevalent, would undermine the very foundations of the profession. So take heed; for upon you who have the way before you much is depending, and let it not again be said that four young physicians of New York City successively bid for an expected *accouchement*, the fourth and successful bidder agreeing to take the case for $5.

E. S. B.

Homeopathy vs. Rational Practice.

LA PORTE, IND., Oct. 22, 1897.

To the Editor:—Yesterday I received from my publishers, the W. T. Keener Company, the JOURNAL for September 25, on pp. 661–2 of which is notice of my little book "Principles of Medicine." Will you permit me to correct the erroneous impression which the closing words of that notice are likely to have made upon your readers? The writer quotes me as follows: "'It is perfectly well known that a very large majority of us homeopathists do not repudiate practices which we think useful, although they are not instances of homeopathy.'" The quotation is (substantially) correct, but his interpretation of it is misleading when he continues: "In other words, according to our author, whatever he is satisfied cures the patient is homeopathy." Look again at his quotation from me: We "do not repudiate practices which we think useful, *although they are not instances of homeopathy.*" Does that bear the interpretation that he has put upon it?

I have great confidence in the utility of so defining the cure sought in any given practice of homeopathy as to distinguish that cure from any sought in rational practice, and in the utility of discussing homeopathy as a matter *of opinion.*

Very sincerely, CHAS. L. MACK, M.D.

A Misrepresentation.

CHICAGO, Nov. 8, 1897.

To the Editor:—In *Leaves of Healing*, dated Oct. 30, 1897, edited by Mr. J. A. Dowie, copies of which have been liberally distributed to Chicago physicians and others, appears the following in the guise of an alleged quotation from a paper read by myself to the Sunset Club:

"The doctors of Chicago are divisible into three classes, the first are liars, the second are damned liars, and the third are experts and they are the biggest liars of all."

At the meeting of the Sunset Club March 1, 1894, I read a paper on "Expert Testimony," in which occurs the following passage (official report, p. 3): "But closer familiarity with the practical workings of the system reveals a still more serious flaw, one which has given rise to the time-honored epigram that witnesses may be divided into three classes: liars, damned liars and experts. Instances of deliberate lying by expert witnesses are not unknown; our real estate friends furnish especially brilliant examples."

A comparison of these two quotations renders comment unnecessary. WILLIAM T. BELFIELD, M.D.

Edema Universalis(?)—Varia.

DETROIT, MICH., Nov. 5, 1897.

To the Editor:—A year or so ago I was called to see a baby three months old having pronounced edema of the extremities, anasarca of the scrotum and a general puffiness of the eyelids, face, etc. The urine on chemic and microscopic examination showed no abnormality to account for the affection. Heart and lungs normal.

Recently Dr. Steinbrecher of this city, in his regular family practice, saw a somewhat similar case, save that there was no anasarca of the scrotum. Heart and kidneys were normal in this case also.

In the literature at my command, containing the most recent and voluminous reference works, I fail to find a description of a similar condition and would therefore ask you whether or not I am justified in calling it edema universalis?

I approve of your continued efforts to establish a department of health. Such an organization would put the medical profession at once on a higher scale, at least so far as the respect from the people is concerned. It would also lead to a uniformity of health laws for each State and Territory of the United States and pr[illegible] or[illegible] the [illegible] physicians, so that one examination should entitle an M.D. to practice throughout the union.

I could in addition to this say a good many flattering things for the JOURNAL, having seen it improve and progress since my arrival in this country, but shall not do so at present save that I wish to sustain you in your position in regard to the newer orthography.

When in Germany some time ago a new orthography was submitted to the Secretary of Education, the number of opponents was immense. But today, in spite of them, German is written more rationally—such words as *todt* being spelled *tot; roth, rot; muth, mut;* etc.

In this connection I wish to say that in my humble opinion we affix our title M. D. to the wrong side of our names. The old Austrian style of putting the abbreviations "Med. Dr." before our names seems to me the correct one, and unless you object to it would like to see my signature put that way.

Respectfully, MED. DR. GUSTAVUS M. BLECH.

The Cure for Dipsomania?

MIDLAND, TEX., Nov. 4, 1897.

To the Editor:—Will you be kind enough to inform me how I can procure the formula for the so called "tonic" that is used by parties in giving the "whisky treatment?" Can you refer me to any issue of the JOURNAL or other medical publication containing it? W. K. CURTIS, M.D.

PUBLIC HEALTH.

A Preliminary Course of Training for Ship Doctors is being organized at Hamburg which will be required of applicants in future. Italy requires proof of a certain knowledge of hygiene and two years' practice, and in France applicants have to pass a special examination in epidemiology and sanitation.

A Possible Explanation.—Beri-beri is said to be particularly prevalent in the Dutch Indies. Dr. Eykmann made an important discovery in the prison of Sourbaya. While on July 1, 1896, 99 prisoners out of 800 had been caught by the disease, this ratio fell gradually from 84 to 13 during the next month when the prisoners received Sumatra rice instead of Saigun rice.

A Pernicious Fever, presumed to be of malarial origin and said to be more deadly than cholera, is ravaging Fashkand, a city in Central Asia, situated in a fertile plain. Numerous gardens and vineyards are interspersed among the mud-built and reed-thatched houses. The fever has raged there for four years and leaves the survivors unfit for work. The disease is spreading throughout Russian Turkestan and Merv.

Sanatoria for Consumptives.—Professor Leyden considers it the duty of society to provide sanitoria where patients can be sent in the early stages and restored cured to their families. One-third are cured and one-third show marked improvement in the sanatoria already established and it is merely a question of increasing the number and bringing them within the reach of the middle and lower classes. He states that the fact is established that pure air is the chief essential and that this can be obtained in the country where the patient habitually resides, disproving the necessity of sending him to a distance and avoiding the dangers of a return from a warm to a colder climate. The King of Sweden has given the 2,200,000 kroner presented to him on his twenty-fifth jubilee to found sanatoria for phthisics in Sweden.

Prophylactic Hygienic Measures in Barber Shops.—The Paris authorities have distributed a circular among the barbers and hair dressers of that city containing directions for disinfecting their instruments, etc. It recommends that metal combs be substituted for ivory, etc., and that they should be immersed in boiling soapy water immediately after being used, while the razors, brushes, scissors, etc., should be placed for half an hour in an oven heated to 100 degrees C. or in an air-tight box over a solution of 50 grams of formic aldehyde and 200 grams of salt. Rice powder should be applied with a dry spray or bellows. The hands should be washed with soap before passing to another client and the floor sprinkled with moist sand when cutting hair, which should be swept up at once and all burned together at the close of the day.—*Revue Médicale*, October 20.

Value of Street Sweepings, Garbage and Sewage.—The Secretary of Agriculture has authorized an investigation of the extent of the use of these materials as fertilizers in this country, the results that have attended their use and the best method of applying them to the soil. It is a well-established fact that where sewage must be turned into a stream it is better that it first be allowed to percolate through a layer of soil, the soil being either a specially prepared filter bed or only an ordinary farm, with or without underdrainage. Opinions as to the extent of the danger of disseminating pathogenic organisms among men and animals by the use of sewage for the irrigation of field and garden crops will be of value to the Department. Knowledge of any evidence of the spreading of diseases in this manner and date concerning published reports of such may be forwarded to H. W. Riley, U. S. Department of Agriculture, *Division of Chemistry, Washington, D. C.*

A New Sanitarium for Incurables in New York.—Buildings are being erected in Forestburg, N. Y., by the Sisters of St. Dominick to be used as a sanitarium during the summer season for patients from St. Catherine's Hospital, Williamsburg, Long Island, and as a permanent home for incurables. The site is 1,947 feet above the sea level. Patients in the first and second stages of phthisis will be received in order that they may have the benefit of the high altitude. The estate covers an area of 1,173 acres and the various buildings are separated from each other by a distance of from 1,000 to 3,000 feet. The architecture is of medieval monastic style and the buildings will be provided with all modern improvements, heated by steam and lighted by electricity. When completed the establishment will be the largest of its kind in the United States.—*Medical News*, October 23.

An Antitoxin Circular of a State Board of Health.—The Massachusetts State Board of Health has found it necessary to remind physicians of the reciprocal duties they are expected to perform in return for the furnishing of antitoxin facilities for the bacteriologic diagnosis of diphtheria, etc., by that body. In a circular recently issued they are reminded that the antitoxin is furnished gratuitously, to be used in the cases of persons unable to pay for it, and on condition that a description of the case and the effect of the remedy be furnished the Board of Health in return. The State Board of Health will withhold future supplies of antitoxin from local boards which fail to secure compliance with this rule. Care in the storage and distribution of antitoxin are also enjoined upon the local board, and instructions in the use of the diphtheria culture tubes are given. With regard to the examination of sputum, the State Board will receive for examination only specimens forwarded in the receptacles furnished by the board. Leaky receptacles endanger all persons who handle them. Material sent by mail will be rejected. Cover-glasses for the examination of blood with reference to malarial infection, with instructions for their use, will be sent on application, to any part of the State. Examinations of cultures, sputum, etc., will be made gratuitously by the Board's pathologist, if the conditions of transmission are complied with, and not otherwise.

New Argentine Law in Regard to the Sale of Medicines.—The Congress of the Argentine Republic is expected to pass a law creating a national board of health (or Department of Public

Health, as it is called officially). The law will become effective in a short time. This board of health will have complete control as to what medicines or compounds shall be allowed upon the Argentine market, as will appear from the following two articles of the law:

> Article 36.—It shall be lawful to sell or to expose for sale in any pharmacy or apothecary's shop or store such specialties or compounds only whose component parts are clearly specified upon a visible part of the package thereof, setting forth also the doses of the active substances contained therein.
>
> Article 37.—The Department of Public Health will authorize the sale of the medicines referred to in Article 36, when the required conditions have been fulfilled, without which authorization such goods can not be offered for sale.
>
> Failure to comply with the requirements of these two articles will be punished by a fine of from $100 to $200.

It will therefore become necessary for American manufacturers exporting medicinal compounds and specifics to the Argentine Republic to obtain the required permit from the Department of Public Health and to state the composition of the medicine on each package. Full information concerning the further requirements for securing the above permit will be supplied upon application to the editors of this paper.—*Scientific American*, October 30.

The Tracadie Lazaretto.—The Canadian lazaretto in Tracadie, Gloucester County, N. B., is finely located. It is on the shores of the Tracadie River, overlooking the Bay of Chaleur, which is part of the Gulf of St. Lawrence. It is very different from the pestiferous island of Molokai or the open sepulchres about Jerusalem in which the Scriptural lepers had their abodes. But circumstances were not always so favorable for the poor lepers at Tracadie as now. At that time the lazaretto was so badly kept that the lepers tried to remain in concealment among their own families as long as possible. On being discovered they were lassoed and dragged or driven with long poles to the lazaretto, where men and women were indiscriminately herded together. The lepers' food was placed on the ground, and they helped themselves to it as best they could. One of the Sisterhood of the Hotel Dieu, in Montreal, heard of the pitiable condition of the Tracadie lepers, and volunteered to start a mission among them. She induced the government to build a new lazaretto, and she was placed in charge of it, having several other sisters under her. The lazaretto is a fairly commodious building, partly of logs and partly of planks, and, while hardly conforming to our idea of what a government building for this purpose should be, it is kept scrupulously clean, while the inmates are well fed and well cared for. There is a small farm which the lepers cultivate, and they also own boats, from which they fish. Tracadie itself is a small settlement of log huts. The population is chiefly French Canadian, and the families are large and badly crowded. Various stories are told of the origin of the disease in Tracadie. One says that 140 years ago a Syrian bark was wrecked near that place, and some of the crew, who were affected with leprosy, remained in Tracadie and married there—G. H. Fox, M.D.

Yellow Fever.—The anticipated betterment of the yellow fever condition from the cold wave prevalent in the fever district, at the closing of our last report, was tardy. The dispatches are as follows: November 3, New Orleans, 5 deaths and 39 new cases; Montgomery, Ala., 1 death and 7 new cases; Memphis, 1 death. November 4, New Orleans, 7 deaths and 40 new cases; Mobile, 1 death and 11 new cases; Edwards, Miss., 2 new cases; Nittayuma, 1 new case; Bay St. Louis, 5 new cases; Montgomery, 1 death and 2 new cases; Biloxi, 6 new cases; Scranton, 2 new cases; Memphis, 1 death and 3 new cases. November 5, New Orleans, 10 deaths and 31 new cases; Cayuga, Miss., 1 new case; Memphis, 1 new case; Mobile, 1 death and 11 new cases; Montgomery, 1 death and 2 new cases; Whistler, Ala., 2 deaths. On November 4, Dr. Olliphant, President of the Louisiana State Board of Health, promulgated the following order, to take effect immediately: Quarantine against all points is raised, except that passengers from Mobile, Montgomery and coast points coming to New Orleans will be required to have certificates from health officers or from reputable physicians, that for ten days past there has been no yellow fever in house where such passengers have resided. And it will further be required that all baggage and household effects from these points be disinfected at the Rigolets station under supervision of quarantine officers. The Mayor of Birmingham, Ala., also raised quarantine against all yellow fever infected points, and on November 5, the Southern Pacific Railroad Co. reopened their "Sunset Route" for through business to New Orleans. November 6, New Orleans, 5 deaths, 23 new cases; Memphis, 1 new case; Mobile, 1 death, 5 new cases; Montgomery, Ala., 3 new cases. November 7, New Orleans, 7 deaths, no report as to new cases. November 8, New Orleans, 7 deaths, 14 new cases; Mobile, 2 deaths, 4 new cases.

An Epidemic of Cerebrospinal Meningitis.—Francis H. Williams, M.D., reports briefly concerning his experience at the Boston City Hospital with an epidemic of cerebrospinal meningitis during last winter and spring. The first case entered the hospital Dec. 30, 1896. The records of the hospital from 1880 to Dec. 30, 1896, include thirty-nine cases, with a mortality of 59 per cent. From the latter date to June 1 there have been forty-seven cases, forty-two of which entered in March, April and May; that is to say, during the past five months there have been more patients with this disease in the hospital than in the previous seventeen years. The tabulation of these forty-seven cases by localities, shows that one part of the city has not been more affected than another. The patients have been youths and adults; and the form of the disease has been very severe. It has been characterized by sudden onset, with an average duration of about thirteen days in the fatal cases, and the very high mortality in the forty seven, the whole number of cases, of a little over 72 per cent. The prominent symptoms have been intense headache, delirium, a stiffness of the muscles of the back of the neck, retraction and stupor; in some cases there have been diplopia, strabismus, deafness and vomiting; in eleven cases herpes labialis; in seven cases some form of eruption, but this does not justify the name of spotted fever, which is sometimes given to this disease. In twelve cases a blood count was made and in most of these there was leucocytosis. The serum test for typhoid fever was tried in eight cases and found to be negative in all. Lumbar puncture was done in thirty-two cases, and judging from these this puncture does no harm and it readily establishes the diagnosis when fluid containing pus and organisms is found. "In the seven cases in which I performed the operation it yielded a positive result in all. The operation, under strict antiseptic precautions, is readily done by using a small trocar to tap the sac surrounding the spinal cord and draw off some of the fluid; the point of insertion is between the third and fourth lumbar vertebræ. I have usually chosen a point slightly lower than the lowest part of the spinous process of the second lumbar vertebra and one inch outside of it, and inserted a small-sized trocar, somewhat downward and inward, to a depth of rather more than two inches. I have always used a trocar instead of a needle, as the latter is liable to be bent or broken off and is too small to allow the thick pus that is present in some cases to flow through it easily. The lumbar puncture is very serviceable for diagnosis, as often there is no history and the symptoms may be few. It may also relieve pressure temporarily. That there is pressure is shown by the fact that the fluid is apt to squirt out at first with some force, and sometimes two ounces may be readily withdrawn. The diagnosis has been established in more than one-half of these forty-seven cases, either by examination of the fluid obtained by lumbar puncture or by autopsy. The present treatment of the disease is wholly unsatisfactory, but the fact that we have the means of making an early diagnosis in many cases, and that the organism is not a robust one and seems to be short-lived in the body, offers the hope that better treatment may soon be found."

Increase of Insanity in England.—A letter in the *American Practitioner and News* contains the following data bearing on the increase of accommodations required for the great City of London:

> "During the year 1896 the Asylums Committee of the London County Council was responsible for 13,526 persons of unsound mind as compared with the 10,104 in 1890; or an apparent increase of 33 per cent. in six years. Pending the com-

pletion of a new asylum at Bexley Heath, 600 beds have had to be provided in temporary buildings at Banstead and Colney Hatch, and like accommodation for 400 female patients is in progress at Hanwell. Last month an estate of 1,060 acres was purchased for $200,000, on which a seventh county asylum will be erected for 2,000 beds. The weekly rate for maintenance remains at $2.55 per week per patient, chargeable to parishes and unions in the county. The pathologic laboratory at Claybury is fully equipped, and arrangements have been made whereby clinical instruction can be given to students from four of the London medical schools. The English statistics are not always so kept as to allow very exact inferences to be drawn from them; but we notice that where the effort has been made to sift out the old cases, the increase in new cases is apt to be greater than where the traditional way of reporting 'first admissions,' which may be of persons insane for twenty years, is followed. In the County of London, where only the 'new names' are computed for five years, the actual gain in these first admissions was 711 from January 1892 to January 1896, a gain of 28 per cent. in five years, or much beyond the gain in population. The officials giving these figures, however, wish to make certain allowances (which may or not be required), after which, they say, 'it will be found that occurring insanity has not increased so greatly out of proportion to the population as appears at first sight.' This may very well be true, since no one acquainted with the facts believes that there is a rapid gain in new cases of insanity beyond what the gain in population would require. But there is no other way for accounting for the very steady and now enormous increase of new cases. Thus the proportion of registered insane to population, which was but 18.67 in 10,000 in 1859 (one in every 535), was in 1896, 31.38 in 10,000 (one in every 319). Here there was a large gain in the whole population, though much less than the gain among the insane. But in counties where population has been losing, and in whole countries, like Ireland, where this is so, we still see a gain in the new admissions of the insane. Thus in Nottingham, where the population in ten years (1886 to 1895) fell off more than 6,000, or 2.5 per cent., the yearly insane admissions went up from 100 to about 150. The first requirement for statistic accuracy in this matter, which excites increased interest everywhere, is to compute carefully the first attacks, as distinguished from old or relapsed cases. Until this is done for some considerable area of country, where the population is reasonably permanent, great cities showing a disproportionate increase, for several reasons, the labor of investigation among discordant and incomplete statistics will hardly furnish a basis for inference of any value."

NECROLOGY.

Charles M. Roth, M.D., New York City, October 27, aged 72 years. He was born in Giessen, Hesse-Darmstadt, Germany, and was graduated from the university there in 1852 as Doctor of Philosophy. He came to America in 1860 with the intention of occupying the Chair of Chemistry in Irving College, Manchester, Md., which position he had obtained through his friend and teacher, the celebrated Dr. Just. von Liebig. He attended the lectures at the College of Physicians and Surgeons and received his diploma from that institution in 1866. He contributed many articles on medical science to German and English periodicals, and was a frequent contributor to the *New York Medical Record*. He was recognized as an authority on gynecology, and was a member of the County Medical Association.

Sir Rutherford Alcock, K.C.B., D.C.L., F.R.C.S., Nov. 2, aged 80. Sir Rutherford was on the medical staff of the British auxiliary forces in support of Isabella II. against the Carlists and in Portugal in support of Marie II. against the Miguelists. For his services in the peninsula he received honors, and a number of decorations from the English, Spanish and Portuguese governments. In 1844 his government appointed him consul at Foochow. Two years later he held a consulship at Shanghai and in 1858 took the same position at Canton. He was then sent as minister to Japan. He was created K.C.B. in 1862. In 1865 he was transferred to Pekin as chief superintendent of trade in China remaining there until 1870. Some of his books are "Notes on the Medical History of the British Legion in Spain," 1838; "Elements of Japanese Grammar," 1861; "The Capital of Tycoon," 1863, and "Familiar Dialogues in Japanese," in 1878. In 1876 he was president of the Royal Geographical Society, and presided over the health department of the Social Science Congress held in 1882.

M. Roony, M.D., who died at Quincy, Ill., September 10, (*vide* Journal, p. 660) aged 60 years, was a graduate of the Miami Medical College, 1866, and of the Long Island Medical College, 1874. He practiced in Quincy from 1871 and was physician to St. Mary's Hospital and many other Catholic institutions in that city. He was a member of the Adams County Medical Society and at one time its president. His death was due to perforation of the ileum at the site of a band of adhesion which obstructed the bowel.

Charles Anson Fox, M.D., College of Physicians and Surgeons, New York, 1881, disappeared May 17, 1896, after having gone out for a short walk. His home was in East Hartford, Conn., where he had retired a few years ago owing to mental trouble. On October 31 last his body was found buried in about three inches of leaves in the woods on the road to Bolton, Conn., 300 feet away from the highway and about one mile east of Manchester Green. The clothing and flesh crumbled from the skeleton, but a gold watch, an Odd Fellow's pin and a memorandum book established its identity. There were no indications of suicide or foul play.

Joseph Edwin Culver, M.D., College Physicians and Surgeons, New York, 1849, who was born at Croton, Conn., Feb. 9, 1823, died at his home in Jersey City, N. J., November 1. He had been treasurer of Hudson City for some length of time, up to the consolidation of the cities mentioned, and was one of the organizers of the Hudson County (N. J.) Medical Society, besides having held the superintendency of the public schools for a number of years.

Frederick L. Braun, M.D., Cleveland, Ohio, October 31, aged 51 years. When the Civil War broke out he enlisted in Company A, West Virginia Cavalry and served three years, receiving an honorable discharge. He then entered the medical department of the University of Pennsylvania. His record there warranted a post-graduate course at Heidelberg. Dr. Braun practiced at various times in Pittsburg, Toledo and Cincinnati.

George F. Matter, M.D., Jefferson 1866, of the Two Hundred and Tenth Regiment Pennsylvania Volunteers and a hospital steward during the war, died at Shenandoah, Pa., of cerebro-spinal meningitis, October 22, aged 57 years.

Charles Hudson Avery, M.D., Long Island College Hospital 1865, for many years secretary of the New York County Medical Society, died at his home in the Borough of Manhattan, N.Y., November 3. He was born in 1834 in Perryville, N. Y., and had been for thirteen years an invalid. A widow and a daughter are his survivors.

Frank L. Sallade, M.D., Jefferson 1866, at Womelsdorf, Pa., October 24.——Arthur L. Hummel, M.D., University of Maryland 1884, of Hummelstown, Pa., medical journalist, at Denver, Colo., October 26, aged 40 years.——A. H. Ayres, M.D., Urbana, Ohio, October 31, aged 65 years. The Doctor was formerly superintendent of the Columbus Insane Asylum, and during the Civil War he served as surgeon of the Thirty-fourth Ohio Volunteer Infantry.——Isaac D. Conrad, M.D., Newton, Kan., October 26.——W. D. Cooper, M.D., Morrisville, Va., October 29, aged 77 years.——George W. Langford, M.D., Williamston, Mich., October 28, aged 57 years, a graduate of the medical department of the State University.——Elijah R. Mendenhall, M.D., Indianapolis, Ind., November 3, aged 82 years.——Louis Meyer, M.D., Cleveland, Ohio, October 29.

SOCIETY NEWS.

The Indian Territory Medical Association will hold its semi-annual meeting at Muskogee, I. T., Dec. 7 and 8, 1897.

The American Electro-Therapeutic Association will hold its next annual meeting in Buffalo, N. Y., Sept. 13, 14 and 15, 1898.

Tri-State Medical Association.—Owing to the quarantine now being enforced against Memphis, which will hold at least ten days after the first killing frost, the meeting of the Tri State

Medical Association has been postponed until December 15 and 16.

The Association of Military Surgeons of the State of Illinois held its annual meeting at the Great Northern Hotel, Chicago, November 4. The following officers were elected: President, Col. Nicholas Senn; vice-president, Major Truman W. Miller; secretary and treasurer, Major Charles Adams. A banquet in the evening ended the session. Colonel Senn acted as toastmaster.

The Medical Association of Central New York opened its thirtieth annual convention at Buffalo, N. Y., October 19, with an attendance of about one hundred physicians. The discussion of greatest general interest was that on "The Value of Expert Testimony in Medico-Legal Cases." Tracy C. Becker, a lawyer, presented the argument from a legal point of view and read opinions from many judges of the supreme court of this State. All the judges admitted the necessity of expert testimony, but agreed that the present system of obtaining it made it worse than valueless. The report of the Committee on Remedial Legislation in regard to expert testimony was in favor of a change of the statutes to require all medical testimony to be brought in by a commission to examine the subject and the matters to be brought to the jury in the trial, the medical experts being appointed by the court as referees, and are to be paid by the county, without being allowed to receive fees from either the defence or the prosecution.

MISCELLANY.

The Western Medical and Surgical Gazette, Vol. i, No. 1, November, 1897, has come to our exchange table. The editors of this new journal are Wm. N. Beggs, A.B., M.D., and Lincoln Mussey, M.D., and the office of publication, Denver, Col. The *Gazette* will appear monthly. Subscription price, $2 per year.

Hemotherapeutics in Chlorosis.—De Dominicis considers a form of diabetes affecting principally the red corpuscles. He treats it with the usual tonic regimen or with the direct transfusion of blood from a dog, with which he has secured remarkably favorable results. No benefit was derived from venesection.—*Therap. Woch.*, October 1.

Disinfection of the Conjunctiva.—Albin Dalen reports in the August *Nordiskt Med. Arkiv*, the results of much experimental research in this line. He asserts in conclusion that the disinfecting power of the physiologic salt solution is fully equal to that of sublimate in disinfecting the conjunctiva; also that bacteria continue to proliferate beneath a bandage moistened with 1 to 5,000 sublimate, and that it has no possible advantage over a dry sterile bandage; also that the introduction of iodoform has no perceptible effect upon the development of the microbes.

Extirpation of a Fistula in the Neck through the Mouth.—Professor Hacker describes in the *Cbl. f. Chir.*, of October 16, his extirpation of a complete congenital fistula in the right side of the neck of a boy of 8 years, leaving only a slight lineal scar. The fistula allowed the passage of milk, which appeared in the throat between the right tonsil and the arch. He found the canal easily movable its entire length, and by inserting a fine silver wire through the fistula with a hook in the end and a thread he succeeded in pulling the entire canal loose and drawing it out in two parts through the mouth like the evulsion of a finger of a glove.

Highly Decorated.—According to a secular exchange, Sir William MacCormac, president of the Royal College of Surgeons in London, is well recognized. He has the Order of Medjidie, the Crown of Prussia, the Ritter Kreuz of Bavaria, the Dannebrog, the Crown of Italy, the Cross of the Takavo of Servia, the Order of Merit of Spain and Portugal, and the Star of Sweden. He is also Knight of Grace of the Order of St. John of Jerusalem. Sir William was born in 1836, has taken part with the volunteer medical corps in the Franco-Prussian, Turko-Servian and Russo-Turkish wars. He is an enthusiastic fisherman and golf-player.

For the Benefit of Dr. Laporte.—A subscription has been started for the benefit of Dr. Laporte by the medical journals of Paris, which have been most emphatic in their denunciation of the arrest and criminal proceedings instituted against this young physician. He is one of the medical men on the night service furnished free to the poor, and was summoned hastily to a confinement case which he found complicated with a deformed pelvis, but as it appears, the patient had already borne five children. Natural delivery being difficult and the child already dead, he performed craniotomy with a cold chisel, wood mallet and a mattress needle, not leaving until delivery had been accomplished. Peritonitis developed later and death ensued. At the necropsy the bladder was found to have been perforated in two places. He was arrested and condemned to three months imprisonment.

A Death by Football Play.—The death of a New York football player, from a broken back-bone received while the game was in progress, will revive the discussion of the dangers of this game. It is true, the accident was the result of violence, but it is so unusual that it is hardly fair to draw any sweeping conclusions from it. It has been asserted that the young man had some kind of structural weakness of the vertebræ and did not know it. The doctors say that the fracture was caused by a sudden thrust of the head forward, the bone snapping in consequence, but they admit that the same result would probably not follow once in a thousand times. An abnormal brittleness of the bones is a possible condition, and the moral of the case is that young men who play football should be thoroughly acquainted with their physical condition.

Progress at Craig Colony During the Past Year.—The Craig colony for epileptics at Sonyea, Livingston County, N. Y., closed its fourth fiscal year Sept. 30, 1897. There were at that time 214 inmates in the colony, the majority of whom had been transferred from the various county houses throughout the State. New buildings are in course of construction which, when completed, will enable the colony to accommodate 140 additional patients, making the total population about 350. It is estimated by State charity officials that this number represents about one-third of the total number of epileptics now on public charge throughout the State. The medical superintendent, Dr. William P. Spratling, reports a great increase in the value of agricultural and industrial products of the colony over last year, so that the ratio of earnings of the patients to the cost of their maintenance is even larger than that of last year, which was a little over 50 per cent. A laboratory for the use of a pathologist and pathologic chemist is being constructed. Dr. Christian A. Herter of New York has been appointed pathologic chemist and Dr. Ira Van Gieson of New York consulting pathologist to the colony. Dr. Frederick Peterson of New York was re-elected president of the board of managers. The managers, at their annual meeting, decided to ask the coming legislature for $200,000 for dormitory buildings in order that they may increase the residence capacity of the colony for patients.

Unreliability of our Present Bacteriologic Tests in Diphtheria, is emphasized by Prof. Spronck in a contribution to the *Semaine Méd.*, of September 29. He states that macroscopic and microscopic examination of colonies developed in serum is not absolute, and that nothing but the inoculation of an animal will decide the question positively, except in the severest cases or during epidemics. W [illegible] ous injection of 2 c.c. of fresh culture in b [illegible] ing 300 grams, but only causes a more or less marked edema, the bacillus has nothing in common with the diphtheria bacillus except a superficial resemblance in the vast majority of cases. Absolute certainty can only be attained by a previous preventive inoculation of 0.5 to 1 c.c. of active antidiphtheria serum at 1 to 10,000 injected under the skin of the inside of the thigh of a guinea pig weighing about 300 grams. Six hours later this animal and another of the same size, are both inoculated with 2 c.c. of the culture, in the abdomen. If the bacillus is the true diphtheria bacillus, the immunized animal will show no traces of edema, but if not, both animals have edema. The test does not require more than twenty-four hours if the materials are at hand. By thus scientifically eliminating all pseudo-diphtherial cases, we will only have to resort to serum treatment where it is actually required. He adds that the preliminary immunization will not be necessary if the result of his recent research is confirmed, that the attenuated diphtheria bacillus can not live in the human organism.

The Antivivisection Bill.—The following letter was recently sent to every county medical society in Indiana, in response to request made in the article on "Antivivisection" in the Journal of Aug. 14, 1897: "At a regular meeting of the St. Joseph County Medical Society, a committee was appointed to draft resolutions, disapproving U. S. Senate Bill 1063, instigated by the antivivisectionists, now on the Congressional Calendar, for the next session. The committee was instructed to correspond with the local Congressmen and the United States Senators of Indiana, urging them to refuse their support of the above bill. The committe was furthermore instructed to send a copy of the resolutions to the Congressmen and the United States Senators and also to advise every county society in the State of the action of the St. Joseph County Medical Society urging them to take a similar stand on this important question. The committee would be pleased to learn the attitude of your Society concerning this bill, also to know what action taken.

Yours fraternally, H. F. Mitchell, Secretary.
South Bend, Ind.
J. B. Berteling, H. T. Montgomery, F. P. Eastman, Com."

Anatomic Changes in Eclampsia.—A study of 500 cases by Prutz, a large proportion personal, shows that hemorrhage is the distinguishing feature of the changes found in the various organs and that among the complications bronchopneumonia and cerebral hemorrhage are the principal causes of death. Bacteriologic investigation results negatively except in mixed infection. Chemic investigation of the blood and of the toxicity of the urine and serum is still in the preliminary stages, and our present knowledge of eclampsia does not justify sweeping conclusions in regard to its etiology. In 368 cases only seven had sound kidneys (these not certain); there was nephritis in 46 per cent.; chronic inflammatory processes in 11.6 per cent. Changes in the liver mostly hemorrhagic, were noted in 213 cases. Cerebral hemorrhage into the brain was noted in 28.4 per cent.; intracranial, 35.3 per cent. The stomach, intestines, spleen, pancreas, suprarenals and genitalia are also frequently found to have been the seat of hemorrhage, and even the skin, mucous membrane, muscles, serous surfaces and the thyroid gland.—*Deutsche Med. Woch.*, September 30.

Celloidin Threads for Sutures.—A fine, solid thread that is flexible, ties easily, does not knot, and is inexpensive, is made by boiling pieces of hemp or linen thread in a soda solution, rinsing in cold water, and boiling them twice again at an interval of six to eight hours, five minutes at a time, in ordinary water, dipping them afterward in alcohol and drying. The threads are then rolled on glass spools and immersed for twenty-four hours in a mixture of equal parts alcohol and ether, with 25 to 30 per cent. celloidin and 1 per cent. sterile castor oil. The thread is then wound on a wooden frame and the excess of celloidin removed, after which it is wound on the spools, and sterilized just before the operation by boiling it twice in a 1 per cent. solution of sublimate. It is made to resemble silkworm gut by impregnating it again with celloidin until it is the required size, treating it the last time with a 5 per cent. solution of celloidin. De Goubaroff adds that it does not act like a drain, which is one of the disadvantages of silk.—*Sem. Méd.*, October 6.

Gleanings.—St. Vitus dance cured with massage, combined with baths at 27 degrees R. and iron-arsenic medication 10 cases—(*Wratsch*, August 14).——Clamp forceps recommended instead of a ligature for the funis neonatorum, applying them perpendicularly, close to the umbilicus, and leaving them in place for twenty-four hours, wrapped in cotton. Bar claims superior results by this simple and certain method.—(*Presse Méd.*, September 8).——Nineteen cases of Madura foot successfully treated by stretching the nerve. Nine observations of zona as premonitory symptoms of tuberculosis.—(*Ann. de Derm.*, September.)——Tendency of wounds in the stomach to heal spontaneously. Expectant treatment advised unless alarming symptoms occur.—(*Gaz. d. Osp. e d. Clin.*, September 28.)——Band iron recommended for bandages instead of plaster casts, in military compaigns.—(*Münch. med. Woch.*, No. 33.)——Euchinin recommended, especially for children; "harmless, tasteless and as effective as quinin."—(*Gaz. d. Osp. e d. Clin.*, October 3.)——Remove the odor of iodoform from the hands by rinsing them in orange-flower water.—(*Sem. Méd.*, September 29.)——The remarkable attenuation of syphilis in the hot dry belt of Mexico noted by Carbajal.—(*Revista Médica*, September 15.)——Another medical saint added to the calendar by the Pope: Anthony Zacaria, Pavia, 1520. The other physicians already on the calendar are St. Luke, Cosmo and Damien.——A course of training for disinfectors inaugurated at Breslau by the Prussian government in charge of Professor Flügge.

Surgery of the Kidneys.—Israel leads in the number of operations performed on the kidneys to date, 191, with a mortality of 20 per cent. in 79 nephrectomies, although his mortality in 24 cases of malignant neoplasms was only 12.5 per cent. Seven relapsed of the 21 cured at first, but the rest, 60 per cent., have shown no signs of relapse in three years. He ascribes this progress to improved diagnosis by palpation and cystoscopy and the extirpation of the adipose capsule and glands. He disproves of exploratory incisions unless strictly indicated. Küster states that palpation is insufficient when the tumor is in the center or at the upper pole, and may lead to metastasis. *He distinguishes three groups of malignant neoplasms: Carcinoma*, a late palpable tumor on the borders of the organ, early breaking through the capsule, hard to move; *sarcoma*, occurring principally in childhood, forming large tumors early, breaking through the capsule late, with only inflammatory adhesions; *struma suprarenalis*, usually leaving one pole intact, but may remain stationary for years and then develop suddenly, very malignant. *In obscure cases open up the kidneys freely on both sides.* Easily movable tumors can be removed through a lumbar incision; those harder to move should be reached by a laparotomy, and those absolutely fixed should not be operated on. Tuffier reports 156 surgical interventions on the kidneys. He agrees with Israel that wandering kidney is only a symptom of complex enteroptosis and performs very few nephropexies for this cause. He advocates extreme conservatism in traumatic lesions and performs nephrectomy early *in primary tuberculosis (fifteen cases) to avoid a later operation.* He has treated intermittent hydronephrosis most successfully with nephropexy. Küster states that the mortality in the 263 operations on record for malignant neoplasms of the kidneys is 41 per cent., but of the 155 patients that survived only 9 are permanently cured, that is, without recurrence for more than three years.—Moscow Congress.

Recovery Allowed for Injuries Sustained before Birth.—A novel question was decided by Judge Chetlain of the superior court of Cook County, Illinois, Sept. 24, 1897, in the case of Allaire v. St. Luke's Hospital. The question was whether a child after it is born has a right of action for injuries sustained by it *en ventre sa mère*; or, in other words, whether a child unborn is a person in being, so as to be entitled after its birth to maintain such an action. It was averred that the defendant was in the business of conducting a hospital and of accepting for accouchement for hire, women about to be confined; that the mother of the plaintiff, three or four days before his birth in the regular course of nature, applied to the defendant and contracted with it, upon a compensation then and there agreed on for it, for the latter to shelter, attend, treat during confinement and care for her and her child, then *en ventre sa mère*, during the period of childbirth and convalescence thereafter; that in pursuance of that agreement the mother paid such compensation, and was accepted at the hospital; that the servants of the hospital then and there placed her in an elevator for the purpose of taking her and the unborn plaintiff to an upper floor of the hospital for shelter, care and treatment, and that such servants so negligently and unskilfully conducted and operated the elevator that the plaintiff was permanently injured. The question of law applicable to the facts of this case does not appear to have ever been decided, either in this country or in England. From a careful study of such authorities as he could find bearing at all upon it, the judge came to the conclusion that, as a general principle, the child *en ventre sa mère* is considered as born or *in esse* when it is for its benefit, and especially so when the application of the doctrine will work no hardship. He further thinks that the rule should be applied in personal actions: 1. Where a person inflicts an injury upon a woman with child, knowing her to be such, and for the purpose of inflicting an injury upon her unborn child, whereby such child suffers permanent injuries. 2. Where a mother or other person contracts, upon a valuable consideration for, in reference to, or on behalf of the unborn child, for care and attention or other service for the benefit or safety of the child, or of both the mother and child, where the duty arises out of contract and from the relative situation and circumstances of the parties at the time of the occurrence of the acts of negligence. So, here, the judge holds that there was a good cause of action stated.

Hospitals.

PENNSYLVANIA.—The D. Hayes Agnew Memorial Pavilion of the Pennsylvania Hospital, Philadelphia, held its opening ceremonies October 15. It was erected at a cost of $150,000, is 154 feet in length and 184 feet in depth, and is furnished with the latest surgical instruments. A feature of the third floor is a private room with a wainscoting of mirrors for optical cases. The new building has 120 beds.

BY THE WILL of the late George M. Pullman the following bequests were left to hospitals: St. Luke's Hospital, $20,000; Hospital for Women and Children, and Presbyterian Hospital, each $10,000.——The new hospital at Niagara Falls, N. Y., was opened October 30, with appropriate ceremonies.

Societies.

The following meetings are noted:

Illinois.—Peoria City Medical Society, October 28.——The Springfield Medical Club, October 27.

Indiana.—Annual meeting of the Big Four Railway Surgeons, Indianapolis, November 11.——Cass County Medical Society, Logansport, October 29.——St. Joseph County Medical Society, South Bend, October 27.——Tippecanoe County Medical Society, Lafayette, November 10.

Kentucky.—Southern Kentucky Medical Association, Bowling Green, November 3 and 4.

Massachusetts.—Union Medical Society, Springfield, October 29.

Minnesota.—Hennepin County Medical Society, Minneapolis, November 1.

Missouri.—St. Louis Medical Society of Missouri, St. Louis, November 6.——Southern Surgical and Gynecological Society, St. Louis, November 9, 10 and 11.

New York.—Academy of Medicine, Syracuse, October 26.——Suffolk County Medical Society, Patchoque, October 28.

Detroit.

THE HEALTH REPORT for the week ending November 6 is as follows: Deaths 85, of which 30 were children under 5 years of age; births 42, of which 35 were females; 30 cases of diphtheria, 46 cases of scarlet fever; deaths from diphtheria 4; scarlet fever none.

AT THE REGULAR MEETING of the Wayne County Medical Society October 28, Dr. S. E. Sanderson read a paper on "Asepsis in Barbering." The writer said: "What barbering is today, practically, barbering always has been. True, the styles of hair and beard may change, but the barber's methods never. And what a source of contagion these methods must be! What eager crowds of malevolent pathogenic bacteria must lurk within the folds of his towels, between the teeth of his combs and on the blades of his scissors and razors! What an opportunity for the streptococcus of erysipelas to enter the *locus minoris resistentiæ*, as the incision from a barber's razor! The micro-organisms of furuncle would rejoice at such an opportunity, while the bacillus of anthrax would consider itself highly favored with such a field for propagation. Would any of us run the gauntlet of menace from such diseases as tinea, scabies or phtheiriasis by putting ourselves unreservedly into the hands of a barber in one of our third-rate shops? Yet every time we commit ourselves to the tender mercies of even our best tonsorial artists, we face the possibilities of becoming inoculated with syphilis or lupus, and we can not say when we are free from infection of favus, trichophytosis, impetigo contagiosa, and even carbuncle, glanders, leprosy, diphtheria, smallpox, and in fact any contagious disease. True, these last named diseases are rarely if ever so contracted, but even so, what one of us can say he shall therefore be fortunate enough to escape. Barbering as it is practiced today is a menace to the public health. A process like barbering, which is so often attended with an opening of the cuticle with an edged tool, should be done under conditions which make it certain that such tool and the surroundings of such a wound will not prove a source of infection. In other words, we should have aseptic barbering. The sanitary authorities of Paris have taken action in this matter and have instituted regulations to require barbers to use aseptic tools and sterilized towels, and to keep their hands clean by washing for each customer. A later report from France says that these regulations are rigidly enforced, as the new law has already brought down the penalty upon at least one offender. What shall we do in this matter? There is only one right course. France has taken the initiative step; America should not be slow to follow. Every barber should be required to use only such combs, scissors, razors and brushes as can be thoroughly sterilized by boiling or by the application of some antiseptic solution. Each towel or napkin should be used but on one customer, after which it should be thrown into the wash. The barber's hands should be kept scrupulously clean by being carefully washed before each sitting, and then dipped into an antiseptic solution. In addition to this, all dusting powders and other means of holding and spreading contagion should be abolished, and the face of the customer treated with some such mild solution as listerin. The lather, brush and soap should be rendered sterile also."

Louisville.

THE ANNUAL REPORT of the Board of Safety has just been submitted and contains some interesting matter. It calls attention to the fact that the death rate in Louisville during the past year was only 14.4 per thousand, the smallest within thirty years. In bringing about this state of affairs, three sanitary police were appointed during the year and assigned to duty at the health office, in addition to which the entire police force has acted in conjunction with it. The report states "there is but one thing wanted in this department to render its work more efficient, and that is the employment of an experienced chemist and bacteriologist, for whose peculiar work there is a large field, and such work would surely result in a still further reduction in our death rate." The salaries paid in the department of health are as follows: Health officer, $2,000; secretary of board of health, $420; physician in eastern and western district, $1,800; live stock inspector, $1,200; assistant live stock inspector, $900; incidental and emergency fund, $1,000; total, $7,320, which will show perhaps one of the smallest amounts allowed any health department of a city of the size of Louisville in the United States. Attention is called to the work of the City Hospital, with upward of fifty physicians and surgeons attending and twenty-two female and two male nurses. The hospital has now a modern ambulance service, which is run at a cost of $1,510 per annum. The total cost of the hospital is $40,510.65. The actual cost to the city for officers, repairs, employes and patients has been less than $0.48⅔; cost per diem for rations, $0.14½; daily average of patients 156, the largest in the history of the institution. In regard to the Home for the Aged and Infirm, the report says: "After four years of unremitting effort, we have succeeded in erecting a hospital for the sick and an asylum for pauper idiots for the use of this institution." This is a good work and the Home is in splendid condition. It is recommended that an elevator be erected as soon as possible, as at present the inmates are compelled to walk up and down three flights of steps several times a day. The institution is run at a cost of $21,800. A farm run in connection with the institution has had a splendid yield. There are 317 inmates, 279 white, 36 colored; there were 25 deaths during the year; the average cost for each person, per diem, 12⅓ cents. The nurses of the training school of the City Hospital receive $5 per month during their stay in the hospital and $75 at the time of their graduation. The city physician's report is as follows: Number of visits paid by the physician in the eastern district, 496; number of prescriptions, 1,726; number of visits paid by physician in the western district, 387; number of prescriptions filled, 432. It is recommended that the location and office hours of these physicians be placed in the daily papers as an advertisement at regular intervals so they will be the more accessible to those needing attention. The city dispensary is located at the City Hospital, all prescriptions for the poor being certified by the city physicians or the health officer and are promptly compounded, free of charge. There were 1,891 prescriptions filled during the year. The cost of maintainance of the Eruptive Hospital for the year was $2,908.52. This is strictly a smallpox hospital. At the morgue there were 71 dead bodies received; number claimed by friends, 8; number of bodies given to the medical colleges, as provided by law, 63. This institution is conducted by the Medical Department of the University of Louisville, free of charge to the Board.

BANQUET.—The physicians who contributed to the fund for the entertainment of the members of the Mississippi Valley Medical Association in this city October last, met at the Louisville Hotel around the banquet table, to celebrate this most successful meeting. It was a fitting wind-up of a most enjoyable occasion, and the expression of opinion was that the twenty-third annual meeting of the Mississippi Valley Medical Association would be remembered with the greatest pleasure.

KENTUCKY SCHOOL OF MEDICINE.—An important change has taken place in this institution, in its amalgamation with the Kentucky University, becoming its medical department. Formed as it was by a consolidation, completed at Lexington in 1865, of Transylvania University, chartered as a seminary in 1783 and organized as a university in 1799, and Bacon College organized in 1836, this institution has had an honored career of more than a century. The University comprises four colleges, each under the government of its own faculty, and an academy or preparatory department, in charge of a principal and assistant.

CHANGE OF ADDRESS.

Blech, G., from 119 Miami Ave. to 15 W. Columbia St., Detroit, Mich.; Boytam, J. E., from 97 E. 3d St. to 319 Broadway, Cincinnati, Ohio; Brown, D., from 40 E. 57th St. to 254 W. 54th St., New York, N. Y.

Clark, J. F., from Fairfield, Iowa, to 411 Michigan St., Toledo, Ohio.

Dunn, B. S., from Los Angeles, Cal., to 419 Boylston St., Boston, Mass.

Gresens, C. W., from 821 Lincoln Ave. to 688-Fullerton Ave., Chicago.

Harris, S. M., from San Juan to Grass Valley, Cal.

King, Thomas, from Cincinnati to 106 W. Water St., Piqua, Ohio; Kuszynski, J., from 19th and Hoyne to 151 W. Blackhawk, Chicago, Ill.; Kunz, E., from 314 Sedgewick St. to 81 Lincoln Ave., Chicago, Ill.; Klapp, W. P., from 622 Spruce St. to 1716 Spruce St., Philadelphia, Pa.

Murrell, T. E., from Denver, Colo. to Tucson, Ariz.

Ricketts, B. M., from 137 to 415 Broadway, Cincinnati, Ohio; Riley, E. A., from Huron, Kansas to Starfield, Mo.; Ravogli, A., from cor. 7th and Vine to 5 Garfield Pl., Cincinnati, Ohio.

Seiler, Carl, from Philadelphia to 203 Jefferson Ave., Scanton, Pa.; Strueh, Carl, from 643 W. 12th St. to 540 Ashland Ave., Chicago, Ill.

Taylor, J. J., from 3709 Brown St to 12th and Walnut Sts., Philadelphia

Williams, R. F., from Warm Springs to Franklin and 3d Sts., Richmond, Va.; Wolfe, J. G., from 322 Center Ave. to 403 Jackson Boul., Chicago, Ill.

LETTERS RECEIVED.

Atkinson, W. B., Philadelphia, Pa.; Antikamnia Chemical Co., St. Louis, Mo.; Ahlstrom, A. E., Minneapolis, Minn.; American Dental Weekly, The, Atlanta, Ga.

Bromberg, F. G., Mobile, Ala.; Bluhm, Geo. J., Chicago, Ill.; Bullock, E. S., New York, N. Y.; Brodie, B. M., Washington, D. C.; Bell, Clark, New York, N. Y.; Byers, J. Wellington, Charlotte, N. C.; Boehringer, C. F., and Soehne, New York, N. Y.; Benziger Brothers, New York, N. Y.

Cokenower, J. H., Des Moines, Iowa; Clum, F. D., Cheviot, N. Y.

Davis, Gwilym G., Philadelphia, Pa.

Esterly, D. E., (2) Topeka, Kansas.

Free Press Printing Co., Mankato, Minn.

Gahm, J. P., Ellisville, Ill.

Hanley, J. J., Boston, Mass.; Hutchins, M. B., Atlanta, Ga.; Hektoen, L., Chicago, Ill.

Jamar, John H., Elkton, Md.; Jenkins, J. F., Tecumseh, Mich.

Knopf, S. A., New York, N. Y.: Kenniebrew, A. H., Tuskegee, Ala.; Kuy-Scheerer Co., The, New York, N. Y.

Lewis, LeRoy, Auburn, N. Y.; Lehn & Fink, New York, N. Y.; Lewis, H. K., London, England; Longmans, Green & Co., New York, N. Y.

Menefee, E. L., Granbury, Texas; Mulford, H. K. Co., Philadelphia, Pa.; McBride, M. A., Yorktown, Texas; Milliken, Jno. T. & Co., St. Louis, Mo.; Moore, Dwight S., Jamestown, N. D.; Merrill, W. S. Chemical Co., The, Cincinnati, Ohio; Meisenbach, A. H., St. Louis, Mo.; Mattison, J. B., (2) Brookyn, N. Y.; Moore, Dwight S., Jamestown, N. D.; Mason, J. S., Pennfield, Ill.

New York Polyclinic, New York, N. Y.; Neuneker, Henry, Elberfeld, Ind.

Oxford Retreat, Oxford, Ohio; Oakland Chemical Co., New York, N. Y.

Patterson Home, Grand Rapids, Mich.

Rooney, Abby Fox, Cambridge, Mass.; Rood, C. A., Reedsbury, Wis.

Shoup, Jesse, Washington, D. C.; St. Louis Medical College, St. Louis, Mo.

Whittaker, James T., Cincinnati, Ohio; Wandless, Henry W., Dallas, Texas; Wingate, U. O. B., Milwaukee, Wis.

PAMPHLETS RECEIVED.

Headaches from Nasal Causes. By S. F. Snow. Paper. 12 pages. Reprinted from the Medical News.

Medical Department of the University of Vermont, 45th Annual Announcement. Paper. 32 pages. Burlington, Vt.

Report of two Cases of Syphilis with remarks relative to Ptyalism. By C. F. Drennen. Paper. 6 pages. Reprinted from the Medical News.

Some Observations on the Surgery of the Gall Tracts with Report of Cases. Is the Gall Bladder a Rudimentary and Useless Organ? By J. E. Allaben. Paper. 20 pages. *Reprinted from the North American Practitioner.*

Sprains; Report of 123 Recent Cases Treated by Massage, By A. E. Gallant. Paper. 20 pages. Reprinted from the Medical News.

Trade Pamphlets.

Correct Diagnosis; the Postal Circulation, St. Louis. Peacock Chemical Co.

Diphtheria Antitoxin Serum. Present status of, Philadelphia. H. K. Mulford Co.

Disinfectant and Deodorizing Lamp. New York. Schering and Glatz.

The Twentieth Century Movement. Chicago Am. Electric Vehicle Co.

Tri-Elixiria. Memphis. Tri Elixiria Remedy Co.

THE PUBLIC SERVICE.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the two weeks ending November 6, 1897.

P. A. Surgeon Adrian R. Alfred, detached from waiting orders at his home, Jeddo, Mich., and ordered to marine recruiting rendezvous, San Francisco, Cal.

Surgeon P. Fitzsimons, ordered to duty as a member of the board of inspection and survey, Washington, D. C., November 5.

Asst. Surgeon G. D. Costigan, detached from the "Lancaster" and ordered to the "Indiana."

Medical Director W. K. Van Reypen, detached as member of board of inspection and survey, and made chief of bureau of medicine and surgery.

Asst. Surgeon T. W. Richards, detached from the "Maine," ordered home to Washington and granted two months' leave.

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ADDRESS.

THE NEEDS AND RIGHTS OF OLD AGE.

Doctorate Address Delivered at the Commencement Exercises of the Hospital College of Medicine, McCauley's Theater, Louisville, July 1, 1897.

BY I. N. LOVE, M.D.

ST. LOUIS, MO.

In this old Kentucky home of oratory, where the very atmosphere is charged with eloquence, where every individual from the moment he is able to articulate until the time when he tenders his resignation to the Great Ruler, is able to speak with the rhetorical skill of a Demosthenes, where the cattle on a thousand hills give forth their lowing in sounds of melody, it would be an error on my part to attempt to speak to you in an off-hand manner. I have instead elected to present to you a few thoughts jotted down at my leisure regarding a subject which I trust will not prove uninteresting. The topic which I have selected is "The Needs and Rights of Old Age."

One that is not far removed from the middle mile-post of life in discussing "The Needs and Rights of Old Age," can surely not be charged with indulgence in "special pleading," as the lawyers would say, but since every one of us, if we live long enough, will be classed within the ranks of the aged, self-interest is not entirely eliminated from the argument, for at the rate that the mile-posts are speeding by in this life's journey of ours, it will be but a short time until we will all be either old or dead. The statement can not be denied that each individual born into the world, who dies from any other cause than simple old age, or a gentle drifting away from life in so easy a way as to in no manner suggest death, has not received his just dues. In other words a proper death is inevitable and just as natural and physiologic as birth.

At the present rate of advancement the time will soon come when no one need die before his allotted time, save by accident. When we realize that the bulk of those who die in the world to-day, in spite of the progress of the sciences, die before they are five years old, we can see how much is left undone, and we are safe in saying that if the laws of health were properly observed and there was a proper application of the definite knowledge that we now have, all of these deaths prior to the age of five years need not occur at all.

CARELESS LIVING INVITES EARLY DEATH.

More and more we are having impressed upon us the fact that various microscopic forms of life, known as microbes, are present in the world here, there and everywhere, seeking whom they may devour, and as time advances and investigation is more complete, we find more and more that many diseases, particularly in the early periods of life, are dependent upon these micro-organisms. It is pretty clearly established that not only are the infectious diseases to which children are peculiarly susceptible dependent upon special germs, but many others are now found to come under the head, notably tuberculosis, the great "white plague," the disease from which one-seventh of all humankind die, the plague which would make the "black plague" of the ancient régime turn pale with envy. And yet we must remember that every individual, of no matter what age, would be able to resist this invading army, and the diseases resulting therefrom would be unknown, were it not for the fact that the victims have invited the enemy by their own indiscretions. In other words, all would be safe, even against infectious germs, did they observe the rules of health and not develop in themselves susceptibility to attack. Commencing then at an early period of life we are safe in saying that the individual is rendered susceptible to disease in general, and incompetent to cope with the dangers that surround him, only on account of not having husbanded his resources. By errors of diet, improper clothing, and the failure to correctly regulate the heat of the body, conditions are developed which invite disease and death, so we are safe in saying emphatically that from the beginning did we all eat proper food at the proper times in the proper way, and properly clothe ourselves and guard against inequalities of the temperature, "Othello's occupation" as related to the doctor would be gone.

This ideal condition can not be secured, but it may be approximated just in so far as hygienic laws are respected, while the individual progresses favorably along the lines of development, maintenance and repair. Let us recognize ourselves, then, as animated mechanisms, needing constant regulation; and to the extent of this regulation will we live healthy happy lives and progress to a delightful old age.

No person properly equipped in a proper state of health should want to die, nor should we have any other thought than that life is worth living, and that this is a beautiful world filled with very pleasant people.

We should all eat to live, certainly not live to eat, recognizing our bodies as a mechanical apparatus, an engine, as it were, with furnace attachments for the reception of fuel, said fuel to furnish force to run the mechanism. Let it be understood that this fuel should be properly selected and properly prepared for its proper consumption. Not only is this necessary, but in addition we must remember that there are no conditions yet developed in any force-giving mechanism where the fuel can be supplied in such perfect form as not to leave after its consumption a débris that is unavailable and which must be removed. The furnace must have removed from its interior the ashes of combustion which remain or we will have an interruption in its work. So with our bodies. The alimentary canal, the chief part of which is generally supposed to be the stomach, but which is not, is the receptacle for fuel in the form of food. The excretory organs, the chief ones of which are the kidneys and the skin, remove the unused materials and, in addition, the products which accumulate from the waste resulting from the various activities going on within the body.

CAUSE OF DISEASE IN MIDDLE LIFE.

It is becoming more and more evident every day that nearly all the diseases of middle and older life are interruptions in what is called metabolism, or tissue building, some break in the equilibrium of the process of nutrition. The food must be properly eaten, well digested and then assimilated, and the debris, together with those poisonous materials which accumulate in the system as the result of work upon the part of the various parts of the body, should be eliminated. Since the days of Garrod, the medical profession has appreciated to the fullest the fact that most of the diseases of adult and advanced life are gouty in their character. It is a popular idea that gout belongs only to the high liver and that it is generally manifested in one or both of the great toes, but it is exceptional for it to manifest itself in so localized a way. It is established that it is a universal condition, that it is dependent upon accumulation in the system of poisons (uric acid, etc.) that should be eliminated, and that said poisons may effect any one or all of the vital organs of the body. Particularly are the lining membranes of the heart and the blood vessels endangered, as they are similar in their construction to the lining membranes of the joints. Many so-called organic diseases, such as Bright's disease, cancer, diabetes and many of the distressing and dangerous diseases of the stomach are associated with the accumulation of uric acid in the system which is the disturbing factor in gout. At least these diseases are associated with the gouty condition, so that we are safe in saying that if we eat the proper food in the proper quantities and give due attention to its digestion and assimilation and have a thoughtful regard for the eliminative organs, the animated system of sewerage of the body, if you please, a ripe old age is sure to follow.

ESSENTIAL ELEMENTS OF FOOD.

I feel that I am in deep water in approaching the subject of diet, for voluminous books could be written upon this alone, but it is safe to present a few general principles. We must keep in mind the chemic constituents of the body and the fourteen elements going to make up this combination, viz., oxygen, carbon, hydrogen, nitrogen, calcium, phosphorus, sulphur, sodium, chlorin, fluorin, iron, potassium, magnesium and silicon.

There are seventeen combinations of the fourteen elements of food: Water, gelatin, fat, phosphate of lime, albumin, carbonate of lime, fibrin, fluorid of calcium, phosphate of soda, phosphate of potash, phosphate of magnesium, chlorid of sodium, sulphate of soda, carbonate of soda, sulphate of potash, peroxid of iron and silica. "The processes of life in the body have the following divisions: First, the governing portion, the brain; second, the executive portion, the muscular system; third, the fuel, which in a chemic sense, keeps up the supply of heat, which is the source of all activity and motion. Food must supply these three great divisions of the process of life in the proper proportion, or something will soon go wrong, though nature allows a wide margin. Of the fourteen elements needed in the body, and which must be supplied in the food taken to satisfy the three great demands, vitality, strength and heat, I shall classify under the general terms as follows (the words being used in their proper and not chemic sense): The phosphates, in which phosphorus predominates, supply vitality, or brain, nerves and bone; nitrates, in which nitrogen predominates, supply the muscles with strength; carbonates, in which carbon predominates, supplying heat and making fat."

The best brain foods, or phosphates, are lean meats, fish, cheese, crabs, wheat, barley, oatmeal, almond nuts, southern corn, beans, potatoes, figs and prunes. The best carbonates, or heat-producers, are fat meat, sugar, butter, rice, rye, chocolate, dates, buckwheat, northern corn, white flour. Excess in this branch is the cause of poor health, poor blood and bad skin. The best nitrogenous foods, or muscle makers, are vermicelli, eggs, cheese, meats (particularly beef), southern corn, salmon, beans and peas. Phosphatic food for persons of strong mentality and those who study much, can not be too strongly urged. The best food is the cheapest. It is well to remember that in hot weather we should avoid carbonates, or heat makers, such as fats, rich cereals, sweets, etc. A liberal fruit diet at such times is well.

Shakespeare truly says: "Dainty bits make rich the ribs, but bankrupt quite the wits." Fat paunches make lean pates. "How can one be expected to study or work well who eats a breakfast in warm weather, consisting of ham and eggs, white bread and buckwheat cakes. He complains of a tired feeling and biliousness and is dosed for malaria, when all he needs is a mild cathartic, change of diet and perhaps some pronounced exercise such as a half cord of wood to saw."

IMPORTANCE OF EXERCISE.

In this connection let me say a word in favor of exercise, judicious, temperate exercise. Proper elimination or removal of waste matters on the part of the individual absolutely demands muscular activity, but in securing this let us not misdirect our energies. The aggregated force which is lost in gymnasiums and other forms of exercise, together with bicycles, would move mountains and help build up the waste places of the earth if properly directed. The bicycle temperately used is a good thing for both sexes, but unfortunately it is so alluring as to be used to excess in the majority of cases. I am disposed to think the bicycle is a good deal like alcohol in its various forms, all right if used right, but under existing conditions neither the one nor the other is apt to be used right, particularly by the young.

The excessive use of coffee and tea are responsible for many nervous diseases, indeed far more than alcohol. The former can be used to enormous excess and the excess be within the limits of respectability, whereas the excessive use of alcohol soon disgraces the individual and thus many are under restraint.

Good teeth.—The well-to-do and those who are not forced to limit their supply of food are eating too much. Yes, it is true, that man is daily digging his grave with his teeth. If the stomach could talk it would call upon us to listen to a terrible tale of woe. How our sympathies would be aroused. Cultured and refined people (eventually the world at large will follow in their footsteps) have an appreciation of the dental profession and patronize it liberally and this is tending in the direction of longevity. The gateway into the nutritive system of the body is the mouth, and the teeth in their grinding capacity go to make up the keystone in the arch of digestion. The parent should have the child's teeth carefully guarded by the family dentist from early infancy. The world is living to eat rather than eating to live, and we all know that it is living too fast and that it is eating too fast. Every one conversant with the numerous stomach disturbances will testify that the first essential for good eating and good digestion is a good healthy supply of teeth. I presume that if the truth were known it would be found that the Bismarcks and the Gladstones and their progenitors have been possessed of good teeth.

Do not ignore the palate.—I do not believe that it is safe to ignore the palate. I think the tickling of the same helps digestion, gives a gentle comfort and pleasure which favors assimilation, and yet this is not at all incompatible with due consideration for the proper chemic make up of the food. Would to God that the strong-minded women of the world, those reaching out for higher education, those believing, and very properly, that woman has a right to the highest seat in the forum and sanctuary, and the highest hat in the parquette, and to the most elevated position in the community alongside of man in every relation of life—would to God that they would devote their minds, not less to Browning and other literary fads, but concentrate themselves more upon the problems related to nutrition, to the proper feeding of the world. A recent vagabond poet correctly expressed it when he said:

"Fair woman, could your soul but view the intimate relation
'Twixt food and fate, ther'd be a new and higher dispensation.
Could you but see for 'destiny' a synonym in dinners
And what the kitchen's alchemy could make of mortal sinners,
You'd leave odd fads and learn to bake a loaf and cook a 'tater,'
To roast a joint or broil a steak, than which no art is greater."

"What deeds of fame are left undone,
What thoughts are left unspoken,
What waiting laurels ne'er are won,
What grand resolves are broken,
Because of soggy bread and pies
And viands spoiled in broiling,
Of sickly tarts and greasy fries
And coffee left a-boiling!"

Let men rule the world as it is now planned, while woman by her sweetness governs man, but let a part of that sweetness tend in the direction of catering to the best interest of his stomach, and she will find that her governing power will be greatly enhanced. If the women of the world would devote themselves to the study of the chemistry of food, to the beauties and advantages of asepsis or absolute cleanliness in the kitchen and to the philosophy of digestion and nutrition, they would be much better equipped for being good mothers and helpful wives. I would gladly give to woman the ballot if she would be willing to confine herself in its use in the management of our public schools. Surely she could manage them better than they are managed in some sections today, and when the time comes that she has them under control, I trust that she will at once introduce into every school in the land a manual training department where all will be taught how to use their hands to good advantage in the direction of becoming bread winners and bread makers. Let every boy be taught the principles of some trade and every girl the elements of housewifery, such as cooking, sewing, etc. This training will the better fit them both for becoming homemakers.

A tranquil old age.—But we are drifting away from the needs of old age, and yet I am confident that these points and many others which might be presented for the good of the rising generation, would also be for the betterment of the aged. We should study constantly to evolve knowledge of that which will be conducive to a tranquil old age. The term old age is a relative one. It is said that a woman is as old as she looks and that a man is as old as he feels, but science is correct in the statement that every individual is as old as his arteries. In other words, the condition of the arteries, the vessels which carry the blood which goes to make up the circulation; their elasticity, their ability to dilate and contract in the proper way, is the expression of age or youthfulness. Let us strive to pursue the course of life most disposed to retard the appearance of old age. While this unquestionably involves good digestion and proper assimilation of food, in other words due regard to all that pertains to nutrition, to waste and repair, something more is needed. Young and old need to know that there are very few of us in this world, whether engaged in physical or intellectual labor, injuring ourselves by overwork. Neurasthenia or nervous exhaustion, so-called, is more frequently nerve poisoning, and indeed we may class those apparently diseased conditions of the nervous system, along with neuralgias and many others, under the head of gout, and these and nearly all the rest can be prevented by proper attention to diet.

Need of exercise and rest.—Advancing age needs to know the importance of proper exercise, that every muscle and part of the anatomy must be worked in order to maintain its functions. As the unused door hinge and lock become rusty and useless, so too with various parts of the animal mechanism. Proper exercise is essential, but we must have due regard for rest and rest at the proper time. As the individual passes along down the other side of the hill where the shadows lengthen he needs more sleep; he needs to know himself now if ever and feel within himself the peace of heaven and earth, a still and quiet conscience. This has to be accomplished by a good and worthy life on general principles. He with the silvery livery of advanced age, whatever his past life has been, is generally willing to be more correct, less frivolous, with a higher regard for morality and a greater contempt for the vices of civilization, and this is fortunate.

Fifty, the "Prime of Life."—As we advance in years let us be in line with Fleming in Longfellow's "Hyperion," when he says: "For my part I am happier as I grow older. When I compare my sensations and enjoyments now with what they were ten years ago, the comparison is vastly in favor of the present. Much of the fever and fretfulness of life is over. The world and I look each other more calmly in the face. My mind is more self-possessed. It has done me good to be somewhat parched by the heat and drenched by the rain of life."

A worker in any field, whose age is near either the shady or the sunny side of fifty, should consider himself in his prime, good for another half century of temperate judicious work. Mr. Henry King (now managing editor of the *St. Louis Globe Democrat*) of St. Louis, one of our best writers, has recently written: "However much men may distinguish themselves before they are 55, they sho [illegible] qualified for better work than any [illegible] ously done. Their triumphs do not convey the idea of completion so much as that of preparation. They have become well versed in the philosophy of success; they are masters of the situation by virtue of their experience; they are on friendly terms with fate because they have not failed to draw a profit from the things they have seen. The accumulation of years counts affirmatively and not negatively with respect to the ability of such men to promote the public interests and protect society against the errors of pretenders and ex-pretenders. They are not old men except in seniority and practical wisdom and in contrast with those who have yet to learn the beneficial lessons that only time and stress can impart. It is absurd to say that they lag superfluous when in fact they are at the zenith of their power. The fire does not burn as brightly in their case as it once did, to be sure, but the moderate glow is steady and well directed, and there is more to be expected from it than from the eager and unrestrained flame which is all promise with no assurance of performance."

Temperate living.—Immoderate drinking of whisky (*Brit. Med. Jour.*), like immoderate drinking of tea, or for that matter immoderate eating of bread, will shorten life; but what evidence is available on the subject seems to show that a strictly temperate use of alcohol tends to prolong life, for the excellent reason that it assists digestion, and thereby promotes health. The most trustworthy statistics on this subject are those of Sir Geo. Humphrey. Of forty-five cases of centenarians collected by him, only twelve were total abstainers while thirty were moderate drinkers. Of one hundred persons between 80 and 100 years of age, in Sir Geo. Humphrey's table, only a fraction over 12 per cent. were heavy drinkers. The abstainers would appear from these figures to have only a slight advantage over the the non-abstainers. The real secret of long life is well expressed by Sir Geo. Humphrey when he says: "The prime requisite is the faculty of age in the blood by inheritance. In other words, if you wish to live a hundred years you must, as Oliver Wendell Holmes said of another matter, begin by going back two or three hundred years and securing for yourself a sound and long-lived ancestry.

While heredity is of importance, bear in mind that the deficiencies of heredity can be made up by correct living. Given an individual with a poor inheritance, a fair physique and intelligent appreciation of the laws of health, who governs himself, and he is a safer risk for a life insurance company than one with an ideal heredity and equipment, careless and reckless.

Brain work conducive to longevity.—One of the brightest and best men in America today, a man who earns a salary of $50,000 per year as the manager of a great railway system, and who yet seems to have more leisure to make after-dinner speeches, etc., than any other man in America, Mr. Chauncey M. Depew, who recently celebrated his sixty-fifth birthday, affirms that he is now able to do more and better work with less fatigue than at any other time in his life. His career has been a busy one, with a constant drain upon his energies, but it has not yet made an old man of him. The record of multiplied years in his case does not carry with it the penalty of exhaustion and superannuation. It has been afternoon with him for twenty years, and still it is not sundown. He has trained himself to do a maximum of service with a minimum of effort; he knows how to concentrate his mind upon the essentials and to dismiss the non-essentials with a smile. Indeed, there can be no question that men who use their minds, in other words, brain workers, in consequence of the discipline through which they have passed, are better equipped for longevity than others. An enormous list could be given which would demonstrate the truth of this statement. It is interesting, however, to note that no one has outdone Michael Angelo in old age. Humboldt ceased at 85, but we find Angelo reaching further on and touching the verge of 90.

At 71 he drew the design for the rebuilding of St. Peter's and superintended that work until he was 89 years old, when he died. And during the first four years that he gave to the design, which has been a revelation of genius to all that have seen it, he painted his masterpiece "The Conversion of St. Paul." In the ten years preceding, he did "The Martyrdom of St. Paul" and the "Last Judgment." He died in harness at nearly 90, with the strange regret that he should have fallen so young. Titian lived to greater age than Angelo, almost reaching his one hundredth year. The thought of death never troubled Titian. "It is so far off." he said "there will be plenty of time to think of it by and by." He thought he was quite young at 80, and promised himself twenty more years of hard labor. At 78 he finished his "Martyrdom of St. Lorenzo," the last of that long list of great paintings that Titian executed. At 80 he set to work on the "Last Supper," but he had not gone far, about one year, when he saw that his ideal was escaping him. The old man turned from his work in despair, but afterward resumed it and was 87 years old when he finished that picture. It is called a masterpiece, but Titian himself did not think so. Stradivarius made his last violin in 1736, when he was 90 years old. His sight failed at 85, but he still made fiddles. At almost one hundred this man, who had never known rest, and who at the same time had never worked excessively, spent one year doing nothing and then died. It will be noticed that he held out two years longer than Michael Angelo. De Beriot is said to have owned the last violin made by Stradivarius, which he thought the finest instrument in the world.

It is interesting to know that C. A. Stephens, M.D., of the Boston University Medical School, is reported as saying he is convinced that the progress of brain science will enable mankind to successfully overcome decay and its climax, death. He further states his belief that death at 70 years or therabouts is due to the fact that generation after generation is born into the world expecting to die at that time and therefore die. He expresses the opinion that if children were brought up to believe they would live indefinitely, the life limit would gradually be extended in the course of several generations.

Keep the heart young.—As we grow old we need to know that we will remain young if we keep the heart young, and this we can do by mingling with the young. All who have seen Sara Bernhardt, at an age close to 60 years, have marveled at the youth that glowed in her face and permeated her lithe and willowy form. When asked for her secret, "I have my art" she replied, "I work, work, work. In work I take my greatest pleasure. It is a tonic; a delicious preventive of age. I sleep, and I never drink wine. I act. There you have it all."

This is the very concentration of wisdom; enthusiasm, work and sleep, these are the trinity making and keeping men and women always young and always useful, and let it be remembered that enthusiasm and joy in work is of most valuable import, and we can, if we will, cultivate enthusiasm for our work. Truly the worker is happier than the idler at all times, even though the latter be possessed of millions. M. Huret once asked Baron Alfonzas de Rothschild for his views of happiness; whether he thought that wealth brought happiness, and in answer the millionaire said: "That would be glorious. Happiness is something that people toil for." I suppose, he added reflectively, "some advantages do attach to money or people would not give themselves so much trouble, but believe me the truest source of happiness is work." It will be noted the world over that the world's greatest workers, who give attention in a reasonable way to the laws of health, are much more apt to live to an advanced age than the drones. People of advancing years who try to look young in the social world retain their youth by so doing. Let grandma wear bright ribbons and gaudy gowns if the colors become her, and grandpa be dudish as he pleases with flashy neckties and cheerful garb; both will be the younger for it and, besides, it is in harmony with nature. The trees take on their brightest colors as the winter of their life draws near. The older one becomes, the more they should avoid dark and somber hues, and this includes the capillary covering of the heads of both sexes. Gray hair is honorable, that which has been dyed is an abomination before the Lord.

Cultivate thankfulness, cheerfulness and love.—Cultivate thankfulness and cheerfulness. An ounce of good cheer is worth a ton of melancholy. "A merry heart doeth good like a medicine, but a broken spirit drieth the bones." Cultivate to the last the ability to love, realize to the fullest that the greatest thing in the world is love. Be like the curate of Olney, who said of himself, "he could live no longer than he could love." Without love there is no joy in life. Let us as we grow older realize the need not only of work, a proper physical and mental occupation, but of play, recreation and study. Let the work be as far as may be in the direction of helping others to help themselves. Nothing keeps one young like thinking of and having a sympathy for others. Canon Farrar was right when he said : "We often do more good by our sympathies than by our labors, and render to the world a more lasting service by absence of jealousy and recognition of merit than we could ever hope to accomplish by the straining efforts of personal ambition. In the cultivation of a sympathetic heart we do ourselves more good than those we serve. As we grow old let us cultivate a sympathy for the world at large, for its weaknesses, for the young, and the returns will come to us a hundred fold. The world ever gives us freely that which we give to it. As Shakespeare puts it, let us consider the capacities of those that are young and not measure the heat of their livers with the bitterness of our own galls.

No sweeter epitaph was ever written for an aged one on marble shaft than one noted, I think by Oliver Wendell Holmes, a tribute of an aged husband to his life companion, viz.: "She was so pleasant." Yes, let us, like the author of the first epistle to the Corinthians (which, by the way, is the sweetest love-letter ever written by mortal man or woman), determine to grow old gracefully along the lines of love. It will be remembered (says Drummond) that in the beginning love was not the strongest point of Paul, indeed his hand was stained with blood; but the observing student can detect a beautiful tenderness growing and ripening all through his character as he gets old, inspiring that same hand to write, "And now abideth faith, hope, love, these three; but the greatest of these is love." As we grow old let us not forget that "we shall pass through this world but once. Any good thing, therefore, that we can do, or any kindness that we can show to any human being, let us do it now. Let us not defer it or neglect it, for we shall not pass this way again."

Regard for youth.—Old age needs to appreciate the importance of consideration and respect for youth, that it is in the line of its duty and its own interest to treat the young gently, kindly, sympathetically, to advise them in such a manner as to invite their advice rather than to attempt to direct and conduct. I would say with Thackeray:

> "We suffer and we strive not less, not more, as men than boys,
> With grizzled beards at sixty-five as erst at twelve in corduroys."

Indeed, in the affairs of life extreme old age should be willing to assume a position of consulting engineer rather than that of director-general. As Max Nordau says, there are men born to rule, who refuse to bear another's yoke or to submit to another's control. They want their heads and their elbows free. They are only able to yield to the discipline of their own will and judgment, never to those of another. They submit because they choose or think best, never because they are compelled to do so. These individuals never meet with a barrier that they do not demolish or ride over. Life does not seem worth living to them unless they experience that satisfaction produced alone by the unchecked play of all their capabilities and inclinations. The consciousness that a large part of their horizon is obscured by some alien consciousness removed alike beyond their influence and observations, destroys their enjoyment of it; they look upon *ego* as a cramped and wretched *ego*, incapable of stretching and asserting itself; their very existence appears insupportable to them if they consider it impelled and guided by alien forces. Such individuals require room. In solitude they find it without effort or difficulty. If they are anchorites, if they are hermits or fakirs, Canadian trappers or pioneers of the backwoods, they can live out their lives without conflict with others. But if they are to remain in the society of man, there is but one place for them, that of leaders.

Such a one this century has had in the German Prince Bismarck, and there are others. It is difficult for such to adjust themselves to the changed conditions of advancing years. Unless they have a care, the latter years of their life will be very unhappy. All such need to bring their strong minds to the contemplation of ways and means of growing old gracefully, and not mar a magnificent record by the unpleasant shadows of their latter years. Such are apt as parents to always look upon their progeny as children and are never willing to give up controlling them.

Cultivate a religious or philosophic spirit.—Philosophy or religion should enable such to make their last days among the most attractive of their lives. Who will not say that the magnificent fight on Mt. McGregor by the grand "Old Commander" was greater than any with which he was connected from Fort Donelson to Appomatox? And a more glorious victory was never won by mortal man. The sweet gentleness and patient resignation with which he bore the suffering, the majestic courage that enabled him to write the book that drove the wolf from the door of the home that he loved so well; no grander event looms up on the records of history. A noble mind, soothed and comforted by faith, a consistent religious belief was his prompter. Religion, it is unquestionably that which is making the last days of England's "Grand Old Man," Gladstone, bright, cheery and helpful.

A sweet and noble faith it was that enabled one of St. Louis' ablest and best doctors, L. Charles Boislinière, to live a long and useful life and accept the sorrows, disappointments and agonies of prolonged illness in the latter months of his nearly four score years and ten, and receive his last summons in the same gentle graceful way that he would have received a message of love from the sweetheart and wife of his younger days and his ripened age. Yes, many a day will come and go before a brighter, better member of the medical guild will live as well-rounded and beautiful a life in our midst, and drift out as gracefully, calmly and beautifully into the great ocean of eternity as Dr. Louis Charles Boislinière, who recently went from among us. This good and heroic one, whose remains found a resting place 'neath the shadow of the cross on the silent slopes of Mt. Calvary, is in evidence in favor of a graceful old age being assured to the well-trained mind sustained by religious convictions.

Keep the mouth shut.—As a guard to health old age needs, and by the way, people of all ages as well need to know that it is necessary to keep the mouth shut, for it was not intended for breathing purposes, the nose being essential to this purpose and having the advantage that it warms the air and strains from it irritating matters injurious to the lungs. Remember, the mouth is exclusively needed as a port of entry for food and a port of exit for crystallized thought, the chief medium of communication between man and man. It is well for all to remember, though unfortunately, the sick and suffering and the aged, should especially remember that, save in rare exceptions, unkissed kisses are the best. Indeed, in this connection let me say that the kiss is only good for family use, and since we know that more than one hundred varieties of microbes have their home in the average undisinfected mouth, I insist that the aseptic kiss is the only permissible one anywhere.

The rights of old age.—Undoubtedly if old age pays due regard to those things classed under the head of needs and grows old in a smooth and easy way, accepting changed conditions in a proper manner, the rights to which they are entitled will be more willingly granted, but whether they do or not they are entitled to many rights which too often are denied them. Old age has a right to be guarded, protected, respected, to be treated with every possible consideration. Indeed, I feel that the second childhood demands even quite as much tenderness, patience and thoughtfulness as the first. Let us remember that in the equipment of the old the head yields before the backbone, that the judgment, the ability to reason well, soonest flutters in the battle of the cells that are tending deathward, and the emotional centers, together with a firm spinal column, are soon all that is left; in other words, the unyielding will, undirected by reason, soon assumes a very unpleasant form of stubbornness. But all this should be met cheerfully and patiently, because it will be but a little while until it is over and the memory of kindness and service of the past should inspire in the direction of reciprocity. Our aged ones have a right to claim our veneration, our love, and we should constantly give them the evidence of it.

> "Oh, friends, I pray tonight keep not your kisses
> For their dead, cold brow.
> The way is lonely, let them feel them now.
> Think gently of them, they are trouble worn,
> Their faltering feet are pierced with many a thorn.
> Forgive, oh, hearts estranged, forgive, they plead;
> When dreamless rest is theirs they will not need
> The tenderness for which they long tonight."

Respect for authority on the part of the young.—We need to preach a gospel to the young of America, calling for more respect for authority, a greater respect for age. The very air in our country is charged with democracy. The spirit of the Declaration of Independence has permeated every fiber of our population and we must have a care or sorrow will come. We must teach that reverence is not servility. Chancellor Hoyt very truly said thirty-three years ago, and it is more true today: "We do not in the intensity of our independence discriminate between reverence and its counterfeit presentment. The dread of appearing servile has led us to be irreverent alike to the aged, to station and to things sacred." Sacred history relates that in the entertainment given by Joseph to his brethren, they sat before him the first-born according to his birthright, and the youngest according to his youth. Herodotus tells us that the young men of his country and time yielded the road to age and rose from their seats before the hoary head. It is a noticeable fact that Demosthenes, the foremost man in the Athenian senate, was compelled to apologize, in his first philippic, for rising to speak before all the older members had delivered their sentiments. The liberty and national existence of Greece were at stake, every heart was glowing, every ear was erect to hear the burning words of the greatest orator in the world, and yet Attic patriotism was subsidiary to Attic politeness. Xenophon has recorded liberally the evidence in favor of the custom of the Greeks being uniformly deferential to the aged. The only exception to this rule being that old bachelors were not considered by the Greeks as entitled to the ordinary courtesies and amenities of social life, and to them, therefore, boys and girls alike might be as saucy as they pleased without fear of punishment. So it seems that even in the classic times the old bachelor was left to paddle his own canoe. But no intelligent man should remain a bachelor until he is old, unless he can furnish excellent reasons for doing so.

Cicero has recorded that respect which is paid to age forms an infallible criterion by which to determine the moral advancement of a people. We all recall the fact that the Greek and Latin races considered morals and manners as synonymous terms and even now the proper thought is that ill manners are not only vulgar but positively wicked. Young America will be happier as youth, adult or patriarch, if he is taught to know his place and to respect his elders. He must be trained in the direction of making proper genuflections and now and then to gracefully bend his back and droop his eyelids with respectful regard. He must also be taught to know that there is such a thing as rank in America as well as elsewhere, that while all men may have been created free and equal, they do not remain so, and their rank and station depends upon their achievements. It is with feelings of sadness that I see men and even boys sit in the presence of ladies standing, and I sometimes fear that our "new" woman is somewhat to blame for it. But we must cultivate and stimulate a different spirit, not only polite consideration for woman, in that no matter how low her place, she stands as a representative of sister, wife, daughter and mother; but due respect for place and power; due regard for worth and work, and a proper reverence for things sacred. I am disposed to believe that we Protestants have protested too much; that in stripping the church of the decorative features and various forms which we thought smacked too much of barbaric idolatry, we have gone too far. The bowing of the head in the presence of the Cross, even extremer forms of worshipful regard for things which are suggestive of the eternal, are better than irreverence.

The previous reference to the respect for age on the occasion of the feast given by Joseph to his brethren, brings to my mind the thought that we all could learn a lesson from the Jews in their home life, in their regard for old age. The dear old mother and grandmother of the Jewish home, and the patriarch with the bowed form and grizzled beard, has the seat of honor on all occasions, and no corner of the house is too bright, cheerful, warm and cozy for them.

Are we not justified in believing that the most attractive feature of the Jewish people, their home life, their disposition to make the entire earth, including the Gentiles, contribute to the joy and comfort of their home, has been largely brought about by the reverential regard for old age which has been a part of their history through all the centuries of the past?

Reciprocity.—All of us should have a prompting in the direction of recognizing the rights of the aged, for the time will come when we will wish to have such rights accorded to ourselves; so we should be somewhat actuated by the same sentiment as the individual referred to by Holmes who is recorded as having written his own epitaph, as follows:

"Here lie I, Martin Elginbrodde,
Have mercy on my soul, Lord God,
As I would do were I Lord God,
And ye were Martin Elginbrodde."

To the young then we would say, be ever thoughtful of the feelings and rights of your elders, for whether you expect it or not, you are apt to receive in return, before the end of life, that which you give to others. "Now gird thee well, my youth of twenty year, against the marching morrows that fill the world with fear."

Politeness.—The parent can not begin too young to inculcate the truest politeness, which, after all, is but consideration for the rights of others. A reverential regard for gray hairs can be made so completely a part of the education of the home by precept and example as to make it come easy as the years pass. I think it is a good plan to take the child from time to time, to the house of the aged and impress him that it will be but a little while until his own parents are quite as old and helpless as those about him. His sympathies can be drawn upon easily, and if proper effort is made it will not be long until even "unlovely old age" will receive due consideration. In the daily walks of life the child should be taught, if the means of the parent at all permit, that no beggar with gray hair should ever be permitted to escape without receiving something. Indeed, I am disposed to think that a refusal to relieve any form of need should never be expressed in a child's presence, unless a complete explanation be given for the refusal. Never failing to make a proper effort to stimulate and develop a proper ambition in the child he should soon be taught that "at best we are all mendicants waiting along the roadside in the sun, tatters of yesterday and shreds of tomorrow clothe us everyone."

Close of life means rest.—A ripe old age gracefully and gently approaches the final hour with a weary feeling, ready and willing to take rest the moment that it comes, and in response to the query, "What is death"? it can realize that it is "a rest from vibrations of sensations and swayings of desire, a stop from the ramblings of thought, a release from the drudgery about our body." It can say with the old tent-maker of Arabia, "Why, if the soul can fling the dust aside and naked in the air of Heaven ride, were it not a shame for him in this clay carcass cripple to abide?" May that soul not believe with the same old pagan tent-maker that,

"We are no other than a row
Of magic shadow-shapes that come and go
Round with this sun-illumined lantern held
In midnight by the master of the show.
And that inverted bowl they call the sky,
Whereunder crawling, cooped we live and die,
Lift not your hands to it for help—for it
As impotently rolls as you and I."

But rather have an abiding faith that all is well. But, whether you have that faith which is so satisfying to those who possess it or not, you at least can be satisfied as the pagan philosopher, feeling safe in that he who ordered the first scene in your life, now gives the sign for shutting up the last. You for one, therefore, can retire well satisfied, for he by whom you are dismissed is satisfied also. But after all,

"As a fond mother when the day is o'er,
Leads by the hand her little child to bed,
Half smiling, half reluctant to be led,
And leaves his broken playthings on the floor,
Still gazing at them through the open door,
Not wholly reassured and comforted
By promises of others in their stead,
Which, though more splendid, may not please him more,
So nature deals with us, and takes away
Our playthings one by one, and by the hand
Leads us to rest so gently, that we go
Scarce knowing if we wish to go or stay,
Being too full of sleep to understand
How far the unknown transcends that we know."

May each and everyone of you live to a ripe old age in harmony with the last words of the great Victor Hugo, "Winter is on my head and eternal spring is in my heart. The nearer I approach the end, the plainer I hear around me the immortal symphonies of the worlds which invite me. For half a century I have been writing my thoughts in prose, verse, history, philosophy, drama, romance, tradition, satire, ode, song; I have tried all. But I feel I have not said the thousandth part of what is in me. My work is only a beginning. The thirst for infinity proves infinity."

May you have troops of friends, prattling children clinging lovingly about your knees and necks, and when the final summons comes and your last good-byes are said, may you wander over upon the other side of the beautiful hills of eternity, happy in the thought that you will greet many more loved ones there than you leave behind.

Let us have a Department of Public Health!

ORIGINAL ARTICLES.

NEUROTIC ATROPHY OF BONE.

BY ARTHUR E. PRICE, M.D.
AWARDED THE J. W. FREER MEDAL, RUSH MEDICAL COLLEGE, CHICAGO, 1897.

The study of neurotic atrophy of bone as a pathologic research, may be outlined in general in the same manner as ordinary atrophy of these structures; not necessarily depending on the causes of the latter, but resembling each other greatly in the characteristic state of degeneration. The change is a structural one in which certain portions of cells that properly should combine with oxygen are thus rendered soluble and remain; a fatty degeneration ensuing.

Thomas Curling of London, was the first to differentiate between concentric and eccentric atrophy of bone, by experiments with electricity, on degenerated nerves, and by cutting off the blood supply to bones. He demonstrated that the nutrition and also the vital powers of bone, being suspended, a process of resorption of the harder or more component parts occurred, and the compact structure changed into one closely resembling cancellous tissue. The gradual softening and loss of weight and size, he termed concentric atrophy, but closely allied however to eccentric atrophy, in which the medullary and Haversian canals enlarge and become porous (osteoporosis) with a corresponding diminution of weight and size. The atrophy progressing steadily, leads to diminished activity and cessation of function.

It is proposed in this article to classify the various changes which take place in connection with neurotic atrophy of bone, from an etiologic standpoint. 1. Tropho-neurotic changes occurring in paralysis of muscles in connection with bone, and a lack of exercise, resulting in atrophy. 2. Neuropathic conditions of the central nervous system and its tributaries.

In order not to deviate from the subject allotted, and to limit myself to the classification already made, it will be essential to keep in close relation to the medium along which the neurotic atrophy of bone is brought about, viz., the cerebrospinal and sympathetic nervous system.

1. *Tropho-neurotic changes.*—Bone may atrophy from mere want of exercise, due to certain nervous diseases which cause paralysis of the muscles; such changes occurring in progressive muscular atrophy, anterior poliomyelitis, locomotor ataxia, etc., illustrating the characteristic manner by which bone atrophy is accomplished.

Pathologic changes occurring are evidenced by the large ganglionic cells of the anterior cornu of the spinal cord becoming pigmented and atrophied; also extension of lesions along the anterior or motor nerve fibers, resembling the degeneration following nerve section in the lower animals and resulting in the breaking up of the medullary sheath, disappearance of the axis cylinders and proliferation of the nuclei in the walls of the sheath of Schwann.

The paralyzed muscles undergo fatty degeneration of the muscular fibers, so that their functions are abolished and the result is atrophy of bone and other tissues, resulting in deformity of limb and more or less loss of function. Lack of use, therefore, is thus followed by an arrest of development, and also by resorption of the more essential elements of bone.

The increase of the earthy salts, elimination of the cellular elements and diminution of vascularization tend to make the bones brittle (fragilitas ossium), from which condition, if far advanced, fractures occur from most trivial causes, such as multiple fractures, so generally regarded as conspicuous clinical features. Landerer reports a case of locomotor ataxia in a man 23 years old, who had suffered eight fractures, and in each instance the fracture was the result of an insignificant injury.

Again, heredity and insanity seem to be etiologic factors in fragilitas ossium. Pauli gives an instance of the former in which for three generations certain individuals of a family had suffered from extraordinary fragility of bones.

Jarvis S. Wight of Brooklyn, gives an interesting account of a case of fragilitas ossium with multiple fractures and vicious union and deformity corrected by osteotomy. Boy, 18 years old, fell and broke his right femur near the middle and came to Long Island Hospital, Oct. 28, 1890. On examination the bones of the thigh were found to be very much deformed and near the lower end bent considerably backward, the toes of both feet pointing directly downward. The history as given by the father developed the fact that his son had always had poor health and had been subject to fits and convulsions, and that this was, in his estimation, the cause of his crooked bones. The boy had already sustained several fractures of the long bones before entering the hospital. It is worthy of mention that he was an inveterate smoker and on ceasing this he appeared to improve rapidly for several months, without sustaining any more fractures. He however resumed the habit and rapidly grew worse and soon received two more spontaneous fractures; one near the middle of the femur, the other, of the radius. Shortly after this he died of intercurrent pulmonary disease.

Investigations show that in some instances bony union occurs in a shorter time than under ordinary circumstances, while in others the nutrition is so impaired that the callous formation is imperfect or entirely wanting. The usual treatment for fractures, to obtain bony consolidation with the limb in a useful position, should be observed in fragilitas ossium. Long confinement in bed should be avoided, by use of plastic circular splints, which will enable the patient to go out and enjoy the outdoor air and exercise within two or three days after the injury. Appropriate diet and good hygienic and sanitary surroundings should be recommended, and the internal use of potassium iodid in cases of defective callous formation.

Buzzard of London, presents three cases of locomotor ataxia, illustrating the resorption and friability in atrophy of bone:

Case 1.—A man in whom the hip joint was completely disorganized, the neck and head of the femur disappearing within a limit of three months.

Case 2.—Woman presenting typical clinical features of tabes dorsalis. While walking slowly along in the ward of a hospital the femur was fractured near its neck.

Case 3.—Woman; dislocation of left leg outward and backward on the femur. The bones could be brought into apposition, but the patient before putting on a leather casing, had to bandage them together. "It seemed as if the condyles had been beveled off and the end of the femur turned into a rounded and smooth stump."

G. T. Morton of Philadelphia describes a case of acute anterior poliomyelitis with atrophy of the bones of the lower extremity in a boy 4 years old. The child was born with club-foot. On examination he was found to have pure valgus of the right foot and the plantar arch also missing, giving rise to pes planus or flat foot. The right calf measured seven and one-half inches, the left eight inches and the right leg three eighth of an inch shorter than its fellow.

The following case occurred in Prof. Nicholas Senn's clinic March 16, 1897:

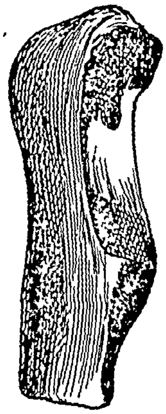


Fig. 1.

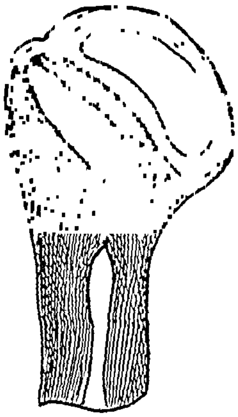


Fig 2.

Fig. 1.—Head of humerus from a case of acute ant poliomyelitis. Fig. 2—Healthy humerus for comparison.

Girl, 6 years of age, in which a probable diagnosis was made of acute anterior poliomyelitis. On examination the left leg was found to be an inch shorter than the right and evidence of displacement of an inch upward of the trochanter, by applying the Roser Nélaton line. The child was placed under an anesthetic and more careful examination of the parts revealed an atrophy of the acetabulum, with difficult coaptation of the head of the femur. The dislocation was reduced and the femur retained in position by plaster of-paris dressing. In conclusion; he stated that serious mistakes have been made by competent surgeons in operating for chronic joint affection by resection or amputation, mistaking the atrophy for an extension of the disease from the joint to the bones, removing consequently too much tissue, often necessitating an amputation for an intended arthrectomy or resection.

Charcot presented several casts to the Pathological Society of London, illustrating the friability and readiness to spontaneous fracture of bones in locomotor ataxia. Cast 1 showed the wearing away of the upper part of the femur, associated with an ununited fracture of the neck of that bone. Cast 2 showed extreme shortening of a femur after a fracture. Cast 3 showed left humerus to be dislocated beneath the clavicle, and head of bone apparently unaltered. The opposite humerus was dislocated on to the dorsum of the scapula and the head of the bone partly absorbed; also dislocation of the right knee joint (the tibia and fibula being twisted outward and displaced upward behind the femur), the lower end of the latter bone being partially absorbed.

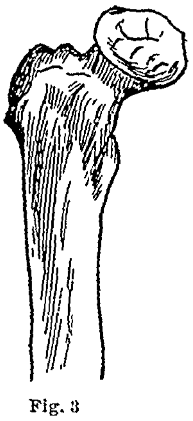


Fig. 3

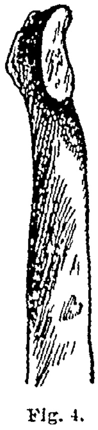


Fig. 4.

Fig. 3.—Normal femur. Fig. 4—Atrophied femur in a case of locomotor ataxia.

Charcot found in his researches in this direction, that the exact pathologic cause of these lesions was difficult to ascertain, for the reason that in some cases the ganglionic cells in the anterior cornu of the spinal cord were found atrophied on postmortem examination, while in others there was no associated muscular atrophy and the cells were found in a healthy state.

Friedreich, however, draws different conclusions, and adheres to the myopathic theory for progressive muscular atrophy, in which he asserts that there is an intramuscular inflammatory process, beginning with hyperplasia of the interstitial connective tissue, terminating in atrophy and fatty degeneration of the muscular elements. This chronic myositis he believes is capable of producing secondary disorders of the nervous system, by extension of the lesion to the intramuscular nerves and by a neuritis extending along the nerve trunks to the spinal cord.

Cruveilhier, Tardieu and others have demonstrated that the cells of the anterior cornu are primarily involved, as noted clinically by pain in the dorsal region, increase of reflexes, spasm of muscles, and peculiar reaction of muscles and nerves to the galvanic current. These symptoms coming on insidiously and later completely disappearing when the trophic disturbances appear in the form of atrophy of bones and joints.

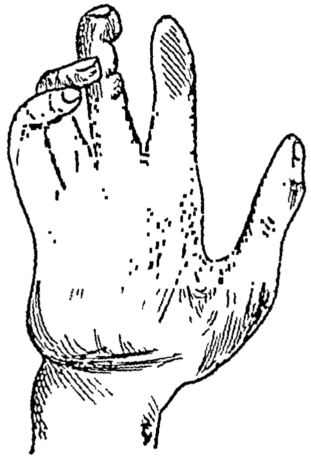


Fig. 5.—"Main en griffe"—injury to ulnar nerve (Duchenne.)

INJURIES TO NERVE TISSUE IN GENERAL.

The nerve trunks are exposed to various kinds of traumata, such as section, tearing, crushing, violent concussion, luxation, persistent compression, cauterization and suppuration, the immediate effect of which is an interference with the conducting power of greater or less extent and duration, according to the kind of injury sustained. With a continuation of loss of function paralysis of the part with wasting and atrophy ensues. In this manner it will be seen how easily a neurotic atrophy of bone could develop after gunshot and other wounds.

Schiff, in his experiments on section of nerves in the lower animals, found that the diameter of bones diminished considerably, the apophyses rounded, the medullary canal enlarged and the amount of calcareous matter greatly diminished.

Some of the worst cases of neurotic atrophy of bone may occur in connection with the upper cords of the brachial plexus, one or all of them being crushed by falls upon the shoulder, often leaving permanent paralysis of the corresponding bone.

Contractures and paralysis of muscles constitute the most rebellious motor disorders of traumatic origin. The contractures are due to a tonic spasm of the antagonists, caused by a paralysis of certain muscles from nerve lesions, crutch paralysis for example. The stiffness of the joints which occurs after fractures or other accidents, is due to forced immobility of the limb in an immovable apparatus, and in such cases we may prevent the bad effects (leading to an atrophy in course of time) by passive movements performed frequently and carefully. Paralytic contractures of the knee, the hip, and especially of the hand, where they may follow injuries of the ulnar, median and musculo-spiral nerves, are comparatively common.

Duchenne collected 100 cases in which the musculo-spiral nerve had undergone degeneration from septic and traumatic causes, and in every case all the parts supplied by this nerve became paralyzed, resulting in marked atrophy of bones of the hand and forearm.

Injuries to the spinal cord, such as fractures and dislocations, produced mainly by forced flexion (the head and neck being bent forward on the chest, or the thorax upon the pelvis), and severe traumatism to the brain are sometimes followed by a neurotic atrophy of bone in accordance with the motor area involved.

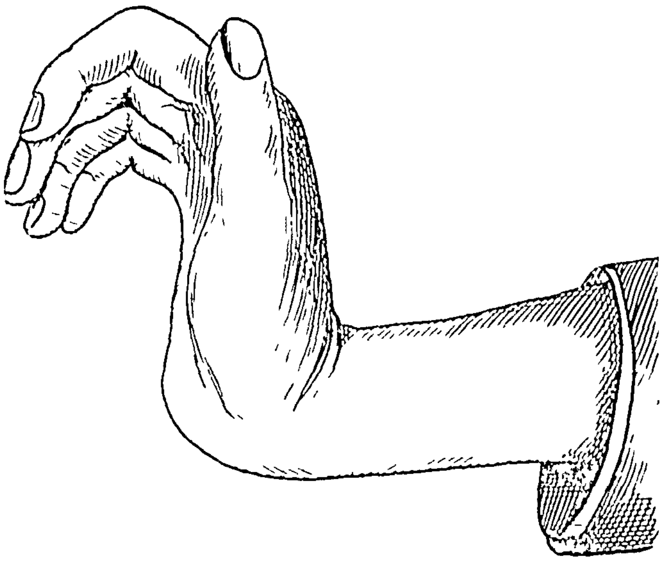


Fig. 6 —Position of hand in pachymeningitis cervicalis, affecting lower part of cervical enlargement

If the faradic excitability of the muscles persist the injury is in all probability slight, but if the faradic excitability disappears and remains absent for over a year the chance of recovery is small, and ensuing paralysis begins followed by atrophy of bone. The prognosis should be guarded, and means taken to preserve the nutrition of the part, viz, warmth, friction, massage, stimulating liniments and galvanism.

2. *Neuropathic conditions* brought about by action of pathologic changes, such as tumors of the cord, spinal hemorrhage, chronic inflammation of the cord, external and internal pachymeningitis, multiple cerebro-spinal sclerosis, infantile spinal paralysis, tubercular meningitis, syringomyelia, syphilitic gummata, progressive bulbar paralysis, *cerebral palsies*, *insanity*, etc., are all liable to eventuate in a neurotic atrophy of bone. The resorption of the essential elements of bone with shriveling, bending and brittleness, also occur under this class.

Paralytic contractures in certain cases followed by marked deformities, are exemplified in infantile spinal paralysis, the latter disease coming on without prodromata and with fever (104 to 105 degrees F.) followed by stupor and convulsion. Paralysis develops rapidly during the fever, but soon diminishes, leaving a permanent palsy, generally monoplegic and confined to one limb. Within two weeks faradic excitability is lost, followed by contracture of certain muscles and steadily progressing atrophy of bone. Characteristic contortions observed for the most part in the foot are pes equinus paralyticus and pes calcaneus paralyticus.

In the region of the spinal column paralytic contractures often take the form of lateral curvatures (paralytic scoliosis), or by flexion and extension contractures (paralytic kyphosis and lordosis). No doubt pressure upon the paralyzed part, by the weight of the body during standing and walking, aids somewhat in producing these deformities.

In syringomyelia the disease is for the most part localized in the cervical portion of the cord, followed by atrophy of bone of the upper extremities. In locomotor ataxia the atrophy is generally limited to the lower extremities. Traumatisms often play a predisposing part in connection with the neuropathic changes. Analgesia is always pronounced and large joints have been resected without the use of anesthetics. This analgesia is moreover the chief factor in furthering the development of disturbances of nutrition which is present in bones and joints.

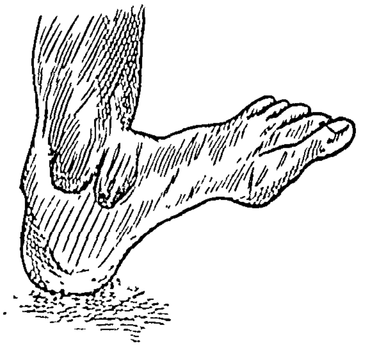


Fig. 7.

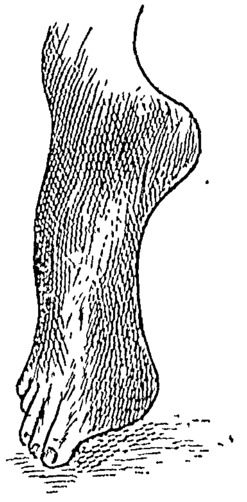


Fig. 8.

Contortions in infantile spinal paralysis. Fig. 7.—Pes calcaneus paralyticus. Fig. 8 —Pes equinus paralyticus.

The deficient nutrition is an impairment of the normal supply of blood, whereby the functions of the nerves are deranged. Aside from the physical and mechanical irritants (which are not a continuous process), the organized irritants, viz., anthrax, malignant pustule, glanders, and the more general diseases such as syphilis, tuberculosis, leprosy, typhoid fever, anemia and the like, are some of the prime disturbances in deficient nutrition. They permeate the system, spread wider and wider, invading the tissues farther and farther, and by so doing lowering the vitality of important nerve trunks and branches, until their energy is spent, or meeting with some part sufficiently nourished to resist.

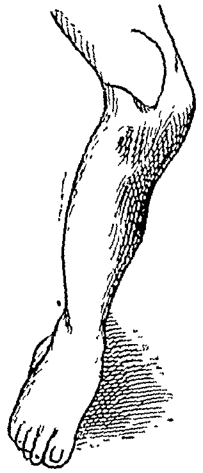
Virchow reports a case of progressive muscular paralysis and atrophy of bone after typhoid fever, ensuing without any evident nervous affection. He thought that it was in this quarter that pathologic anatomy might usefully direct its energies.

Dr. Vandyke Carter states that syphilitic lesions somewhat resemble those of leprosy, especially in regard to results. He cites a case of syphilitic thickening of the ulnar nerve near the condyle of the humerus, producing a paralysis of the interossei muscles, and later on atrophy of the corresponding bones.

In the new museum joining the École Pratique at Paris is a skeleton in which most of the bones of the body are anchylosed, resulting from a syphilitic gumma of the brain. Marked atrophy of the bones of the lower extremity is revealed, the femur being scarcely larger than an ordinary radius.

This vascular neurosis seems therefore to be an important etiologic factor in the neurotic atrophy of bone, and whether acting independently or conjointly with the trophoneurotic and neuropathic conditions, atrophic degeneration becomes the ultimate termination.

The treatment of neurotic atrophy of bone should be local and general. Of the former, fixation and orthopedic appliances are often followed by improvement. Firm anchylosis in a good position is preferable to a loose joint which is rapidly ground to pieces by friction, and arthrodesis performed in the early stages results in marked benefit. Should extensive destruction or suppuration occur, the question of arthrotomy, resection or amputation would arise.



F g. 9.

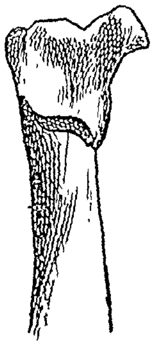


Fig. 10.

From a case of syphilis. Fig. 9.—Anchylosed limb. Fig. 10.—Atrophy of femur.

The general treatment should comprise those means best adapted to the special cause. Good hygienic surroundings, nutritious diet, with plenty of outdoor air and sunshine. In cases of strumous diathesis, cod liver oil and general tonics, such as Fowler's solution of arsenic and the syrup of iodid of iron, for anemic and enfeebled patients. When dependent on syphilis, daily inunctions of mercury and the use of iodid of potassium. Stimulating liniments, massage and electricity, are all excellent for the paralyzed muscles; weak galvanic currents may be applied to the spine for five minutes at a time every other day, and if the paralyzed muscles should respond, the interrupted galvanic current may be used.

Summary.—It has been the aim in this article to present the various forms of bone atrophy which occur in connection with nervous disorders, and to eliminate all other atrophies not depending on the causes of the latter. It would seem almost impossible, were it not for the general conclusions deduced (clinical and anatomo-pathologic) which have been presented, to differentiate from ordinary atrophy of bone. The gradual diminution, loss of weight, deformities, fragility, etc., are all characteristic features. Under these circumstances a positive diagnosis of neurotic atrophy of bone would be difficult, were it not for the otherwise *chronic course*, and *abolishment of pain*, *reflexes* and *electric excitability*, which are as a rule present to a greater or less extent in ordinary atrophy of bone.

Our knowledge, at present, in regard to the exact pathology of bone atrophy from nervous causes, is too meager to warrant any positive conclusion. Whether the degenerated and nutritive changes affect primarily the muscles, the peripheral nerves or the motor cells in the anterior horn of the spinal cord, is as yet undecided. There seems to be a consensus of opinion by some excellent authorities, as previously quoted, that the spinal cord is primarily involved.

It is also a question whether the spinal diseases such as syringomyelia and locomotor ataxia should be regarded as the direct causes of neurotic atrophy of bone, or only as predisposing. Charcot has lately adopted the view that certain localized processes of disease in the diaphyses and epiphyses, in conjunction with the spinal troubles are the sole factors in producing the bone atrophy.

It must be admitted, however, there is need of some more definite and positive theory, which, if substantiated by chemic and microscopic research, would shed light upon much that is obscure in the relations of the different affections included under the head of progressive muscular and bone atrophy.

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TREATMENT OF COLLES' FRACTURE.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY EDWARD A. TRACY, M.D.
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FELLOW OF THE MASSACHUSETTS MEDICAL SOCIETY.

In 1814, Colles of Dublin published his observations on the fracture which today deservedly bears his name. Previous to that time this injury practically masqueraded under the description of backward dislocation of the wrist or forward dislocation of the lower end of the radius (!), for such dislocations were considered common by the masters from Hippocrates down. The nearness of the fracture to the wrist joint, the peculiarity of its anatomic surroundings, the absence of the characteristic sign of fracture unless specially sought for, and finally the teaching of the masters, all served to hinder the recognition of the actual occurrence in this injury, fracture. Therefore, to Colles will ever be due our appreciation and gratitude for the correct diagnosis of this injury, for correct treatment in surgery is depe[illegible] right diagnosis to even a greater degr[illegible]cine.

In this paper the writer will quote the views of eminent surgeons who have written on the treatment of Colles' fracture. It will be seen there has been a considerable change from the earlier days of over treatment to that in vogue at present, when the real nature of the injuries is better known. Sir Astley Cooper, after describing a method of dressing now obsolete, writes: "The arm should be placed in a sling. This position is to be preserved for three weeks in young persons and for four or five in the aged before passive motion be attempted. The recovery in these cases is slow, and six months will sometimes elapse before the motion of the fingers is completely restored."

John H. Packard ("Notes on Fracture of the Upper Extremity," p. 57) writes of a modification of Bond's splint, to which in some cases was added a dorsal splint, each with an elaborate padding of compresses. He says: "Very great care should always be taken to make these compresses of exactly the right thickness, and to lay them over the precise spots at which their effect is needed. An evenly applied bandage, making just the requisite degree of pressure, is necessary to the maintenance of the splint and compresses in their place. And I think that if, as a rule, the apparatus now described were kept on for at least six weeks we should have fewer cases of deformity after those fractures than at present. Often, indeed, I believe it might be retained with a gradual lessening of the size of the compresses for a much longer time, to the great advantage of the patient.

Swinburne ("Treatment of Fracture of Long Bones by Simple Extension," p. 43) employed a straight splint over the back of the forearm and hand, with a pad over the carpus and another near the elbow. The splint was attached to the hand and forearm by adhesive plaster, in a fashion that Swinburne believed produced extension of the parts involved. The writer is dubious of the extension produced by such means, but believes that Swinburne got the fragment into good position by manipulation, and that his simple splint and dressing kept it there. There was no interference with the fingers, and the dressings were discarded sometimes as early as the fifteenth day, generally from twenty-one to twenty-five days. Swinburne reported excellent results.

Bryant ("Manual for the Practice of Surgery," Philadelphia, 1885, p. 992) writes: "(The surgeon) ought to guard against stiff joints in the treatment of those injuries by employing passive movements earlier in the progress of the cases than he has been wont to do."

"After this form of fracture the wrist joint rarely recovers its normal movement, some deformity permanently remaining, and of this the patient ought to be warned" (p. 880).

Moullin ("Surgery," Philadelphia, 1895, p. 413) writes: "It is always necessary to warn patients that Colles' fracture is liable to be followed by stiffness affecting both the fingers and the wrist, especially if there is any tendency to gout or to rheumatism. It is due in many cases to strain and adhesion of the flexor tendons, but it is made worse by rigid confinement. So far as the fingers are concerned it can be generally avoided. Passive motion must be commenced and thoroughly carried out from the first day. With the wrist it is more difficult, but on several occasions I have begun gentle manipulations on the fourth or fifth day with excellent results."

Walsham ("Practical Surgery," p. 427) writes: "Practice passive movement from the third day, as in this form of fracture the tendons, where they cross the back of the radius, the seat of the fracture, are apt to become adherent to their grooves. Remove the splints in about four weeks, and employ shampooing, friction with stimulating liniments, etc., till any stiffness of the joint or fingers has disappeared."

McClelland ("Civil Malpractice," New York, 1877, p. 8) writes: "Notwithstanding the exhibition of the utmost care in the treatment of fractures in the lower third of the forearm, there is always more or less stiffening of the wrist and fingers, a result due, almost, if not entirely, to fibrinous exudations into and around the sheaths of the tendons, and to the adhesions which necessarily follow this fibrinous exudation when the parts are kept at rest for a long time."

Professor Agnew (*Clinic*, Oct. 25, 1871) said: "Difficulty of motion in the neighborhood of joints was a common sequel of this fracture, and, even under the most careful treatment, was found to exist in a majority of cases. He thought it due, not so much to injury of the joint itself as to adhesions of the tendons over the seat of fracture, by which their play was restricted."

It can thus be seen that, since the recognition by Colles of the real nature of this injury, there has been a marked tendency till within recent years to overtreat it with more or less baneful results. Sir Astley Cooper advised that four or five weeks be let elapse before passive motion, in the aged, be attempted. He remarked that recovery is slow, it sometimes being six months before the finger motions were restored. Agnew, Bryant, Moullin, Walsbe and McClelland all recognize that the stiffness of the wrist and fingers is due to fibrinous exudations around the tendon sheaths about the seat of the fracture. Bryant states that passive movements ought to be employed by the surgeon at an earlier period than has been wont; but that time he does not specify.

Moullin advises passive motions of the fingers from the first day, stating that this generally prevents stiffness of them. With the wrist, he states, it is generally more difficult (to prevent stiffness), "but on several occasions I have begun gentle manipulations on the fourth or fifth day with an excellent result." The writer believes that Moullin's very definite instruction in regard to passive movements of the fingers to be begun at once, and of the wrist joint on the fourth or fifth day, is good practice and that it ought to become general. All surgeons probably will agree with Roberts ("Fracture of the Radius," Philadelphia. 1897) that "the displacement (in Colles' fracture) is the result, not of muscular action but of the vulnerating force," and further, that "the muscular surroundings have little to do with the causation or continuance of the distortion." For this reason the fracture, if reduced, has no tendency to again separate. It would seem, therefore, that all that is needful after reduction of the fracture is some simple appliance that will protect the parts from accident during reunition, and that will not interfere with passive motion of the fingers from the first day. Swinburne's practice of many years ago, referred to above, was good, though his explanation of it, by the principle of extension applied to the parts, faulty. The writer in several cases, after reduction, has molded a piece of wood-fiber splint material over the dorsum of the forearm and hand in a semiprone position, the hand in line with the forearm. This, bandaged over the parts, he finds sufficient protection for them. It does not interfere with passive motion of the fingers, and is readily removed and reapplied to permit of passive motion of the wrist joint. It is molded directly over the skin, and requires no padding or compress. In these cases he has carefully caused passive motion of the wrist joint from the fifth day, and discarded the splint on an average of about twenty-one days.

The writer believes that the treatment of Colles' fracture could thus be formulated: 1, Reduction, not always easy; 2, protection by a simple retentive appliance while correct reunition of the bone takes place; 3, passive motion of the fingers from the first day; of the wrist, carefully, from the fifth day.

99 Broadway.

THE PASSING OF PLASTER.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY EDWARD A. TRACY, M.D.
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At the Atlanta meeting of the ASSOCIATION, in a discussion before this Section, Prof. Thomas H. Manley of New York made the statement that "plaster-of-paris, as a routine treatment for fractures, should be discarded." The advanced ground taken by that able surgeon is certainly welcomed by the writer, who believes that plaster-of-paris, as a routine means of surgical fixation is doomed, and that its wane will be rapid because of its inherent defects and of the advantages possessed by its rival, wood-fiber splinting.

It will hardly be gainsaid that at present, particularly in the hospitals, plaster-of-paris holds sway as the routine treatment for most fracture cases. Routine, unless perfection has been reached, is baneful to progress in all fields of human endeavor. It can be so in surgery. Happily, however, in this field of activity, there are willing minds and hands to welcome whatever tends toward improvement in their art, and hence the power of routine is weakened; it can not strangle a new method without a trial by honest observers. It may seem an unimportant point whether plaster-of-paris or something better be used in cases requiring surgical fixation, but fractures are frequent and we shall always have them with us; any amelioration in their treatment or results deserves the attention of the profession.

In this brief article the writer proposes to state facts relative to the use of plaster-of-paris as a means of fixation, and of wood-fiber splinting used for the same purpose. A comparison of these facts will render obvious his reasons for believing that plaster, at no distant time, will be relegated to its proper place, a means of fixation to be employed only when more efficient materials can not be had.

1. *Facts of plaster-of-paris treatment of fractures.*—*a.* Plaster-of-paris is dangerous and sometimes deadly to the encased limb. F. H. Hamilton's testimony on that point is sufficient; many living surgeons can verify it.

b. It does not, as generally supposed, *immobilize the enclosed parts.* A moment's consideration makes one clearly understand how futile it is to expect immobilization of limbs swathed in soft and compressible cotton by a rigid bandage outside the cotton. Supposing the fixation to be efficient at first, it is soon destroyed by subsidence of swelling and, later, by tissue atrophy that always takes place in an idle limb.

c. It is destructive of the joint functions of injured joints, by preventing the timely application of passive motion to them. The timely application of passive motion to injured joints is an important indication in fracture treatment.

d. Plaster dressing prevents the surgeon's ready inspection of the parts treated, a condition not tolerated in an ordinary wound, and which, for as grave reasons, should not be tolerated in fracture cases.

Addenda—Dangers of plaster.—The dangers of plaster dressings can not be emphasized too much. Limbs have been lost by its use. The loss of a limb from any cause is fearful; from such a cause, horrible and indefensible. It could not occur if the treatment of such cases were to apply accurately molded splints retained by bandages, which should be removed daily as a matter of routine, until every iota of danger from pressure be gone. Such removal of bandages is easily and speedily accomplished, and allows the surgeon to *know* the condition of the parts he is treating—an impossibility with most plaster-of-paris treatment. Also, such removal of bandages permits of their snug reapplication over the limb and splint, thus producing and maintaining efficient fixation.

The writer recalls the experience narrated by an excellent surgeon at a medical meeting a short time ago, in which he told of a case of simple fracture done up in plaster. Everything apparently went on well, it being particularly noted that the patient's temperature remained normal, and yet, when the plaster was removed, the man's tibia was projecting through the skin and the limb bathed in pus. This could not have occurred if the case had been treated with wood-fiber splinting as above indicated.

The writer has seen a surgeon at a hospital remove a plaster dressing and find considerable bowing of the leg bones, necessitating a rebreaking of the partially united bones with great pain to the patient. In other cases permanent deformities have resulted. Wood-fiber splinting prevents such deformity by the efficiency of its fixation, or permits it to be detected in its incipiency, to the comfort of both patient and surgeon.

2. *Wood-fiber splinting.*—Before stating facts relative to the surgical fixation produced by wood-fiber splinting, a short description of the material and the mode of its application may be of interest. The writer described this material (the results of personal experiments, made in a pulp-mill) at the Milwaukee meeting of the ASSOCIATION in 1893. He was first to advocate its use in surgical splinting (at that meeting and again in a paper read at the Pan-American Medical Congress, Washington, 1893).

The material is made in large sheets, of two thicknesses, to serve all cases of splinting. A splint can be made by cutting a suitably shaped splint-blank from a sheet of the material, moistening it with water and bandaging the moistened splint-form over the part to be splinted. The shape of the blank varies with the case treated. The correct shape for the blank is readily gotten by cutting a paper pattern so as to enfold the parts in the manner we wish the completed splint to enfold them, and then, following this pattern for a guide, by cutting the splint from a sheet of the splint material.

In earlier papers, the writer advised the use of stif-

In this paper the writer will quote the views of eminent surgeons who have written on the treatment of Colles' fracture. It will be seen there has been a considerable change from the earlier days of over treatment to that in vogue at present, when the real nature of the injuries is better known. Sir Astley Cooper, after describing a method of dressing now obsolete, writes: "The arm should be placed in a sling. This position is to be preserved for three weeks in young persons and for four or five in the aged before passive motion be attempted. The recovery in these cases is slow, and six months will sometimes elapse before the motion of the fingers is completely restored."

John H. Packard ("Notes on Fracture of the Upper Extremity," p. 57) writes of a modification of Bond's splint, to which in some cases was added a dorsal splint, each with an elaborate padding of compresses. He says: "Very great care should always be taken to make these compresses of exactly the right thickness, and to lay them over the precise spots at which their effect is needed. An evenly applied bandage, making just the requisite degree of pressure, is necessary to the maintenance of the splint and compresses in their place. And I think that if, as a rule, the apparatus now described were kept on for at least six weeks we should have fewer cases of deformity after those fractures than at present. Often, indeed, I believe it might be retained with a gradual lessening of the size of the compresses for a much longer time, to the great advantage of the patient.

Swinburne ("Treatment of Fracture of Long Bones by Simple Extension," p. 43) employed a straight splint over the back of the forearm and hand, with a pad over the carpus and another near the elbow. The splint was attached to the hand and forearm by adhesive plaster, in a fashion that Swinburne believed produced extension of the parts involved. The writer is dubious of the extension produced by such means, but believes that Swinburne got the fragment into good position by manipulation, and that his simple splint and dressing kept it there. There was no interference with the fingers, and the dressings were discarded sometimes as early as the fifteenth day, generally from twenty-one to twenty-five days. Swinburne reported excellent results.

Bryant ("Manual for the Practice of Surgery," Philadelphia, 1885, p. 992) writes: "(The surgeon) ought to guard against stiff joints in the treatment of those injuries by employing passive movements earlier in the progress of the cases than he has been wont to do."

"After this form of fracture the wrist joint rarely recovers its normal movement, some deformity permanently remaining, and of this the patient ought to be warned" (p. 880).

Moullin ("Surgery," Philadelphia, 1895, p. 413) writes: "It is always necessary to warn patients that Colles' fracture is liable to be followed by stiffness affecting both the fingers and the wrist, especially if there is any tendency to gout or to rheumatism. It is due in many cases to strain and adhesion of the flexor tendons, but it is made worse by rigid confinement. So far as the fingers are concerned it can be generally avoided. Passive motion must be commenced and thoroughly carried out from the first day. With the wrist it is more difficult, but on several occasions I have begun gentle manipulations on the fourth or fifth day with excellent results."

Walsham ("Practical Surgery," p. 427) writes: "Practice passive movement from the third day, as in this form of fracture the tendons, where they cross the back of the radius, the seat of the fracture, are apt to become adherent to their grooves. Remove the splints in about four weeks, and employ shampooing, friction with stimulating liniments, etc., till any stiffness of the joint or fingers has disappeared."

McClelland ("Civil Malpractice," New York, 1877, p. 8) writes: "Notwithstanding the exhibition of the utmost care in the treatment of fractures in the lower third of the forearm, there is always more or less stiffening of the wrist and fingers, a result due, almost, if not entirely, to fibrinous exudations into and around the sheaths of the tendons, and to the adhesions which necessarily follow this fibrinous exudation when the parts are kept at rest for a long time."

Professor Agnew (*Clinic*, Oct. 25, 1871) said: "Difficulty of motion in the neighborhood of joints was a common sequel of this fracture, and, even under the most careful treatment, was found to exist in a majority of cases. He thought it due, not so much to injury of the joint itself as to adhesions of the tendons over the seat of fracture, by which their play was restricted."

It can thus be seen that, since the recognition by Colles of the real nature of this injury, there has been a marked tendency till within recent years to overtreat it with more or less baneful results. Sir Astley Cooper advised that four or five weeks be let elapse before passive motion, in the aged, be attempted. He remarked that recovery is slow, it sometimes being six months before the finger motions were restored. Agnew, Bryant, Moullin, Walshe and McClelland all recognize that the stiffness of the wrist and fingers is due to fibrinous exudations around the tendon sheaths about the seat of the fracture. Bryant states that passive movements ought to be employed by the surgeon at an earlier period than has been wont; but that time he does not specify.

Moullin advises passive motions of the fingers from the first day, stating that this generally prevents stiffness of them. With the wrist, he states, it is generally more difficult (to prevent stiffness), "but on several occasions I have begun gentle manipulations on the fourth or fifth day with an excellent result." The writer believes that Moullin's very definite instruction in regard to passive movements of the fingers to be begun at once, and of the wrist joint on the fourth or fifth day, is good practice and that it ought to become general. All surgeons probably will agree with Roberts ("Fracture of the Radius," Philadelphia, 1897) that "the displacement (in Colles' fracture) is the result, not of muscular action but of the vulnerating force," and further, that "the muscular surroundings have little to do with the causation or continuance of the distortion." For this reason the fracture, if reduced, has no tendency to again separate. It would seem, therefore, that all that is needful after reduction of the fracture is some simple appliance that will protect the parts from accident during reunition, and that will not interfere with passive motion of the fingers from the first day. Swinburne's practice of many years ago, referred to above, was good, though his explanation of it, by the principle of extension applied to the parts, faulty. The writer in several cases, after reduction, has molded a piece of wood-fiber splint material over the dorsum of the forearm and hand in a semiprone position, the hand in line with the forearm. This, bandaged over the parts, he finds sufficient protection for them. It does not interfere with passive motion of the fingers, and is readily removed and reapplied to permit of passive motion of the wrist joint. It is molded directly over the skin, and requires no padding or compress. In these cases he has carefully caused passive motion of the wrist joint from the fifth day, and discarded the splint on an average of about twenty-one days.

The writer believes that the treatment of Colles' fracture could thus be formulated: 1, Reduction, not always easy; 2, protection by a simple retentive appliance while correct reunition of the bone takes place; 3, passive motion of the fingers from the first day; of the wrist, carefully, from the fifth day.

99 Broadway.

THE PASSING OF PLASTER.

Presented to the Section on Surgery and Anatomy, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY EDWARD A. TRACY, M.D.
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FELLOW OF THE MASSACHUSETTS MEDICAL SOCIETY.

At the Atlanta meeting of the ASSOCIATION, in a discussion before this Section, Prof. Thomas H. Manley of New York made the statement that "plaster-of-paris, as a routine treatment for fractures, should be discarded." The advanced ground taken by that able surgeon is certainly welcomed by the writer, who believes that plaster-of-paris, as a routine means of surgical fixation is doomed, and that its wane will be rapid because of its inherent defects and of the advantages possessed by its rival, wood-fiber splinting.

It will hardly be gainsaid that at present, particularly in the hospitals, plaster-of-paris holds sway as the routine treatment for most fracture cases. Routine, unless perfection has been reached, is baneful to progress in all fields of human endeavor. It can be so in surgery. Happily, however, in this field of activity, there are willing minds and hands to welcome whatever tends toward improvement in their art, and hence the power of routine is weakened; it can not strangle a new method without a trial by honest observers. It may seem an unimportant point whether plaster-of-paris or something better be used in cases requiring surgical fixation, but fractures are frequent and we shall always have them with us; any amelioration in their treatment or results deserves the attention of the profession.

In this brief article the writer proposes to state facts relative to the use of plaster-of-paris as a means of fixation, and of wood-fiber splinting used for the same purpose. A comparison of these facts will render obvious his reasons for believing that plaster, at no distant time, will be relegated to its proper place, a means of fixation to be employed only when more efficient materials can not be had.

1. *Facts of plaster-of-paris treatment of fractures.*—*a.* Plaster-of-paris is dangerous and sometimes deadly to the encased limb. F. H. Hamilton's testimony on that point is sufficient; many living surgeons can verify it.

b. It does not, as generally supposed, *immobilize the enclosed parts.* A moment's consideration makes one clearly understand how futile it is to expect immobilization of limbs swathed in soft and compressible cotton by a rigid bandage outside the cotton. Supposing the fixation to be efficient at first, it is soon destroyed by subsidence of swelling and, later, by tissue atrophy that always takes place in an idle limb.

c. It is destructive of the joint functions of injured joints, by preventing the timely application of passive motion to them. The timely application of passive motion to injured joints is an important indication in fracture treatment.

d. Plaster dressing prevents the surgeon's ready inspection of the parts treated, a condition not tolerated in an ordinary wound, and which, for as grave reasons, should not be tolerated in fracture cases.

Addenda—Dangers of plaster.—The dangers of plaster dressings can not be emphasized too much. Limbs have been lost by its use. The loss of a limb from any cause is fearful; from such a cause, horrible and indefensible. It could not occur if the treatment of such cases were to apply accurately molded splints retained by bandages, which should be removed daily as a matter of routine, until every iota of danger from pressure be gone. Such removal of bandages is easily and speedily accomplished, and allows the surgeon to *know* the condition of the parts he is treating—an impossibility with most plaster-of-paris treatment. Also, such removal of bandages permits of their snug reapplication over the limb and splint, thus producing and maintaining efficient fixation.

The writer recalls the experience narrated by an excellent surgeon at a medical meeting a short time ago, in which he told of a case of simple fracture done up in plaster. Everything apparently went on well, it being particularly noted that the patient's temperature remained normal, and yet, when the plaster was removed, the man's tibia was projecting through the skin and the limb bathed in pus. This could not have occurred if the case had been treated with wood-fiber splinting as above indicated.

The writer has seen a surgeon at a hospital remove a plaster dressing and find considerable bowing of the leg bones, necessitating a rebreaking of the partially united bones with great pain to the patient. In other cases permanent deformities have resulted. Wood-fiber splinting prevents such deformity by the efficiency of its fixation, or permits it to be detected in its incipiency, to the comfort of both patient and surgeon.

2. *Wood-fiber splinting.*—Before stating facts relative to the surgical fixation produced by wood-fiber splinting, a short description of the material and the mode of its application may be of interest. The writer described this material (the results of personal experiments, made in a pulp-mill) at the Milwaukee meeting of the ASSOCIATION in 1893. He was first to advocate its use in surgical splinting (at that meeting and again in a paper read at the Pan-American Medical Congress, Washington, 1893).

The material is made in large sheets, of two thicknesses, to serve all cases of splinting. A splint can be made by cutting a suitably shaped splint-blank from a sheet of the material, moistening it with water and bandaging the moistened splint-form over the part to be splinted. The shape of the blank varies with the case treated. The correct shape for the blank is readily gotten by cutting a paper pattern so as to enfold the parts in the manner we wish the completed splint to enfold them, and then, following this pattern for a guide, by cutting the splint from a sheet of the splint material.

In earlier papers, the writer advised the use of stiffening solutions, and several were designated, for moistening the material with. Water, however, is all sufficient, the material being made so rigid as to require no added stiffness. In compound fracture cases, a strong corrosive sublimate solution may be used to moisten the splint-blank.

The splint, having been made and applied correctly, will hold the parts to which it is applied in fixation from the moment of its retention by a roller bandage. It should be allowed to dry upon the limb, and after twelve hours the author's practice is to remove it, and then to reapply it, thus getting ocular testimony as to the condition of the parts.

Facts relative to wood-fiber treatment of fracture.—*a.* Wood-fiber is adapted to the treatment of fractures of all the limbs, it being moldable directly upon the patient's limb.

b. It produces immobilization of parts, because molded directly on them and retained thereon, without the intervention of cotton batting, which defeats our object if it be fixation. This efficient immobilization is easily maintained by keeping the roller bandage snugly applied over the resilient splint; thus, subsidence of swelling, or tissue atrophy need not interfere with the fixation produced by wood-fiber material.

c. It permits the surgeon to inspect at any time the fracture he is treating, by the simple unwinding of a roller bandage. The reapplication of the splinting is easy, there being no pads or compresses to become disarranged.

d. This ready removal of the splinting permits the timely application of passive motion to an injured joint. The preservation of the functions of neighboring joints should be a most important consideration in the treatment of fractures. When these joints are not involved in the injury which the limb has suffered, this consideration is not so necessary, for normal joints can be immobilized for a long time without serious damage to their functions. When, however, the joints are injured, and this is frequently the case in fractures, it is a serious matter to immobilize them as is done in the plaster-of-paris treatment. Passive motion of the joints involved at the earliest moment consistent with safety is the imperative indication, for both preservation of function, and the earliest return to normal use of the joint.

e. Wood-fiber material is lighter than any other splinting, and no complaint is heard from the patient because of its weight, even in cases where the hip and knee are together immobilized.

f. Wood-fiber material is strong, rigid and durable; splints made from it having been worn in some cases (hip fixation) for eleven months. The material is porous, clean, and does not irritate the skin; in many cases splints having been worn for weeks immediately in contact with the skin, and without excoriation of the skin resulting.

g. No padding is required with splints molded from wood-fiber material; in most cases it is applied directly over the skin. This is important, for how plaster-of-paris or other material can produce immobilization of the bones in a limb swathed in cotton batting it is hard to comprehend.

h. Wood-fiber material permits of rigid antisepsis in the treatment of compound fractures, both of the wound, always accessible by removal of the bandages, and also of the splint material by moistening it with a strong solution of corrosive sublimate. Plaster-of-paris as ordinarily applied is neither aseptic nor antiseptic.

i. Wood-fiber material is most pervious to X-rays, and does not interfere with fluoroscopy.

j. The mastery of wood-fiber splinting.

This mastery readily comes to one possessing a modicum of mechanical ability and who faithfully follows the simple directions given above. No more skill is required to attain it than is necessary to recognize and manipulate ordinary bone and joint injuries; if the practitioner has not that, he ought to let wood-fiber, plaster-of-paris and such injuries alone.

Besides this modicum of ability, the faithful following of the simple instructions is needful. This is illustrated by the experience of an orthopedist of considerable practice to whom a piece of the splint material was sent to be tried. He soaked the material in a pail of water, though the instructions directed that it "be moistened with water until semiplastic." For a result this gentleman had failure; he frankly acknowledged afterward to the writer, his recognition of the cause of his failure.

Though this mastery of the material were difficult to attain, it would be well worth the effort, for the compensatory complaisance which the practitioner enjoys in the conscious power to be able to splint any case that presents itself, he molding the splint to meet the indications of the individual case. Such splinting is scientific, since it presupposes that the practitioner *knows* the indications that should be met in a given case, and that he knows how to meet them. It contrasts strongly with the employment of manufactured splints, of which there are several varieties on the market, finely formed with beautiful curves and convenient angles; as a rule, however, we find that our patients have not been made to fit these machine made splints. An appreciation of this and of the practicability of employing wood-fiber led H. O. Marcy to state the rule, which it is believed will yet govern this branch of surgery, "The surgeon must make a splint to fit the limb, not the limb to the splint."

A demonstration of the practicability of living up to this rule is furnished in the splints here shown, each of which was molded directly upon the limb of the patient treated, and made of wood-fiber material moistened with water.

(Splints shown were used upon patients for fixation of the toes, ankle, bones of the leg, knee, hip, hip and knee together, thumb, fingers, wrist, bones of the arm and forearm, the elbow and the shoulder.)

In conclusion, the writer does not imagine that his poor efforts can change the general practice in the treatment of fractures much; but he hopes that some day the masters will cease for awhile their labor of climbing the Olympian heights of surgery to consider the facts of this fracture-treatment question. Their teaching, ultimately, he doubts not, will break the sway of the plaster idol, to the comfort and betterment of the injured.

99 Broadway.

DISCUSSION.

Dr. McFarland of Pittsburg—I agree with the author in the treatment of Colles' fracture, but I can not coincide with him in so far as plaster of paris is concerned. We owe too much to it to discard it. The author laid much stress upon the cotton padding, but so far as my experience goes with fractures of the lower extremities the ordinary Buck's extension apparatus and the sand bag work very well. When the limb is in apposition and there is no disposition to displacement we apply plaster-of-paris. So far as the cotton is concerned, we put it on with an ordinary roller bandage. It is very thin and will apply itself accurately to the contour of the limb just as well as wood fiber. Even in compound fracture it is possible to do very excellent work with plaster. It is inexpensive and to one who is familiar with it, it is not difficult to apply. Its weight does not enter greatly into the matter. With reference to the ambulatory treatment you must use plaster-of-paris, and it gives us good results. Plaster-of paris has stood the test of time.

Dr. McConnell of Pennsylvania—The author objects to plaster of-paris because it does not immobilize the joint that is injured. I think a number of the bad joints that we have today are due to the too early commencement of passive motion. I think I would be opposed to plaster-of-paris if I used it the way they do in Boston. I do not put cotton batting next to the limb and I believe a very few of us do. We apply a piece of canton flannel first, then four or five folds of plaster-of-paris bandage, placing the soft part of the flannel next to the skin. On the outside of the plaster we place another piece of the flannel. When we want to examine the limb we can take the anterior part off for this purpose. I do not think there is anything against plaster-of-paris, but the fault is the lack of brains of the operator.

Dr. Murray of Michigan—I have used plaster considerably, and have also used silicate of soda, especially in compound fractures. I take the injured limb, measure the limb of a well child of about the same size, make my plaster of-paris bandage over the limb of the healthy child, and after a few hours remove it and apply it to the injured limb. I apply the plaster to the under surface and hold it in place with adhesive plaster. This makes a light plaster and the person can walk around with perfect ease. To my mind the silicate is better than plaster-of-paris. So far as thickness is concerned, from four to six bandages are sufficient. Any old piece of cotton that you can find around the house will answer for the purpose. You can apply it at once in any ordinary fracture, or the second day after you have made your bandage over a healthy limb.

Dr. R. H. Sayre—I would like to say a word about Dr. Swinburne's method of making extension of the fragments. He would apply plaster upon your arm and make traction upon the hand until he has the bone adjusted. The great point in the treatment of a fracture is to reduce the bone first. He would then reverse the two ends of his adhesive plaster, so as to hold the bone in position. With regard to the question of plaster-of-paris, I think a great deal of unjust blame has been put upon it by the reader. It seems to me the blame should be put upon the surgeons who apply it. Concerning the statement that plaster-of-paris has caused limbs to be lost, the sloughing which has occurred took place before the application of the plaster or the blood supply was suddenly interfered with. If the plaster was not put on too tight there would be no sloughing. A simple string around the finger will stop the circulation and bring on sloughing, and silicate of soda or anything else will do the same thing when improperly applied. It is said that plaster-of-paris does not immobilize the joint, but that depends upon the way in which it is put on. If you have a very fat woman with very small bones and you put on plaster-of paris, unless you tie it down her bone will certainly wobble. If you put the plaster on outside of the stocking it will often answer perfectly well. Instead of taking six hours to dry, it takes but fifteen minutes. With a jack knife you can cut it from one end to the other and take it off at your pleasure. If the case is a very fat one you can remove a sufficient slice from each side and thus make it fit admirably. In some cases you want more resistance than this particular kind of splint will give you. I have never seen a leg like these splints seem to have been applied over. This material is excellent and is lighter than plaster-of paris, which is an advantage, but I think it is unjust to speak against any material that may be used, if the fault is in the mode of applying and not with the material itself. Regarding the advantages claimed for this material, the plaster-of-paris seems to have the same advantages.

Dr. McClelland of Ohio—I have used this material in my practice for many years, but I now use plaster-of paris more than ever. Other surgeons in my town have used both. I agree with our Chairman that the trouble seems to be more in the way the surgeon handles the case than the material. Sometimes bad-results will follow, no matter what the material that is used.

Dr. Hill of Vermont—One of the great advantages in the applying of plaster-of-paris is that you need not handle the broken limb. To persons who are nervous, this is certainly a great advantage. Another good point is that we see our fractures come out of the plaster in good condition. This is due largely to the fact that nature has been left entirely alone and given an opportunity to complete her work. It is often difficult in the country to hold a limb in exact juxtaposition. We owe a great deal to plaster, for we need not feel anxious after we have properly applied it.

Dr. J. McFadden Gaston of Atlanta—If the bone is kept too quiet we sometimes fail to get good results, and this is especially true where the plaster-of-paris is applied under certain conditions. I sometimes rub the ends of the bone together so as to set up an inflammation, and then put on the plaster afterward. I always leave an opening in the plaster so that the limb may be inspected. Pasteboard splints are most admirable substitutes for plaster-of-paris. Silicate of soda is the most admirable dressing. It makes a light splint and is well adapted to all fractures. It can be applied at any time. In discussing the use of splints, we must not forget that the two leading parts in the treatment of fractures is first, to properly reduce them, and second, to keep them reduced.

Dr. G. G. Davis of Philadelphia—Silicate of soda bandage is very good, but it must be used in a certain way. I prepare my bandages by means of a bandage roller. I make a V-shaped box with a handle at the top and a ledge near the bottom. This box is filled with silicate. The bandage goes over the edge of the box and is wound on the winch. Bandages made in this way will keep indefinitely and are always ready for use. This is especially advantageous for those who do not have ready access to a drug store. When I take them out I roll them up in wax paper. In applying them I simply put a layer of cotton next to the limb and then put on one of these silicate bandages. I use strips of rubber or something like that to prevent the bandage from wrinkling. I then apply additional silicate but not too much, and after this another bandage is applied. The leg is allowed to remain on the surface of the clothes, and the next morning the bandages are dry and hard. You can readily make openings in this if you wish to remove it. If you wish to reapply one of these dressings as is frequently desirable in the after-treatment you can very easily do so. This method also does very well for a brace for a child. It can also be applied in such a way that it may be laced with a corset string so that it can be taken on or off at will. By applying shellac they are made much more durable. You must adapt your dressing to your case, and I do not think plaster-of-paris is as well adapted for this treatment as the silicate.

Dr. Fowler—The fact is that about three-quarters of malpractice suits are brought for bad results following the treatment of fractures. It is important to be able to inspect the injured parts after the bandage is applied, but this is not an objection to plaster-of-paris. In many instances bad results are due to carelessness of the patients. Plaster-of-paris and pasteboard might be employed together, or at different stages both may be used alternately. This is a subject too vast to be discussed fully here. The use of silicate of soda is open to the objection that unless there is something to hold it in place it is almost impossible to prevent the distortion of the parts and the occurrence of unsightly and uncomfortable wrinkles. An attempt has been made to make a spinal jacket of silicate of soda and the result was the combining together of silicate of soda and plaster-of-paris. The method is to first apply an ordinary silicate of soda dressing and over this a dry bandage; then the plaster-of-paris is applied. This is allowed to stay until the silicate of soda is hardened, probably some days. At the end of this time the plaster-of-paris is cut away and the silicate of soda then assumes the entire responsibility. It is useful in some cases where the person is weak and broken down by disease. Without the plaster of-paris it would not have been possible to achieve success in the treatment of fracture, and without this substance and and also silicate of soda, pasteboard, etc., it would have been absolutely impossible to have been successful in the ambulatory treatment.

Dr. Tracy—It has been urged against my method of wood-fiber splinting that it could not be used in the ambulatory treatment of fractures. In answer to this objection, I am happy to state that a case of fracture of both leg bones near the ankle treated successfully with wood-fiber, ambulatory treatment was reported by me before the New York Society of Medical Progress, in March last. The use of passive motion to injured joints is advocated at the earliest moment consistent with safety. The surgeon treating a case must be the judge of that time. In this discussion, not indeed anticipated, statements have been attributed to me which will not be found in my paper and I feel that when it is read at leisure by the members that they will be more likely to agree with me in the conclusions arrived therein. Reference has been made to the use of silicate in the treatment of spinal troubles. The spinal jacket which I now exhibit to you was molded directly upon

d—a patient of the Boston Children's Hospital, a case of Pott's disease—and worn by the child during the past year. This was done through the courtesy of Dr. Bradford of Boston. The jacket is made from wood-fiber material and, as has been said, was molded directly upon the child, without the aid of the plaster cast used in the ordinary method. This direct molding was possible with the aid of my machine for the control of the spine, by which traction in any desired degree, together with lordosis of the spine can be produced simultaneously. [The machine is described and pictured in the Boston *Medical and Surgical Journal*, Oct. 1, 1896.]

In conclusion, I would state that no other gentleman present has used the wood-fiber splinting described in the paper, and for that reason more words in its favor are wanting. The material referred to by Dr. McClelland is not the same as that which I have exhibited to you.

RENAL SUPPURATION, CATARRHAL, SPECIFIC AND TRAUMATIC, AND THE VALUE OF MICRO-URANALYSIS OF THE URINARY SEDIMENT AS AN AID TO DEFINITE DIAGNOSIS OF IT.

Presented to the Section on Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY THOMAS H. MANLEY, M.D.
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(*Concluded from page 990.*)

The morphologic examination of urinary sediment as an aid of dominant importance in the diagnosis of renal suppuration.—Renal abscess or ulceration of the kidney has only comparatively recently been added to the nosology of serious pathologic lesions. Its ready and definite recognition, with an accurate knowledge of its etiology, with our modern precise and effective treatment of it, makes one of the grandest achievements of the art and science of surgery in the nineteenth century.

For a long time past, for say thirty or thirty-five years, since, in fact, the study of the histologic elements of the human body began to assume the aspect of a science, more or less importance has been attached to the significance of the morphologic elements found in the urinary sediment, as an important though indefinite auxiliary in the diagnosis of renal suppuration.

M. Alberan was among the first to utilize this aid in the diagnosis of tuberculous kidney, and his distinguished master, M. Guyon, has long since admitted the great semiologic value of uranalysis in suspected renal abscess. In the colossal work, however, of systematically arranging, grouping and classifying the different varieties of pyuria, the late Dr. Carl Heitzman was the pioneer and founder. As early as 1879 we find his first contribution on this important subject; but for some years before his death—January, 1897—he had placed it on a solid and enduring basis, and for this alone he has left the medical profession under eternal obligations to him.

Anatomic and pathologic data.—In order that one may intelligently interpret the morphologic atoms found in pyuria, it is essential that we have a familiar acquaintance with the finer anatomic atoms and the structural composition of the genito-urinary tract, besides the difference in function and histologic composition in the two sexes.

Pathology and urinary analysis.—It goes without saying, that, besides a knowledge of the normal structures and secretions, we must be acquainted with the anatomy and histology of the urinary organs before we undertake a microscopic examination of the diseased elements found in the sediment of the renal excretion. We must have a special training in urinary analysis; as a general knowledge of the microscope will serve us but an indifferent purpose when we come to purulent urine. It is important, then, that there be a clear understanding on this point at the outset, else chagrin and disappointment are quite certain to follow.

The urine in renal suppuration, or purulent catarrh.—In order that we may eliminate error or confusion as far as possible, in all cases, it is well to exclude suppurative conditions along the lower genito-urinary tract; the vagina, the uterus, the Fallopian tubes or the urethra; and in the male, the urethra, the prostate or the seminal vesicles.

Having excluded these, as free, we next approach the bladder. For various reasons we meet with many difficulties here; not in recognizing the presence of cystitis, but its various types.

The urinary sediment.—It has already been stated that the presence or absence of renal pus in the urine, of itself, under many circumstances, is an indefinite quantity in diagnosis.

Thus, in chronic catarrhal nephritis in strumous individuals, epithelial degeneration and morphologic reversion of histologic elements and suppurative discharge, so-called leucocytosis, may go on over a long period without hyaline degeneration, interstitial or organic changes in the renal substance supervening. Neubauer and Vogel record a case bearing on this point, which very well demonstrates the tolerance of the system to pyuria in certain individuals. Their patient was a man who was under treatment for rheumatism, when it was accidentally discovered that he was periodically discharging great quantities of pus in the urine. And yet there was no evidence of any lesion along the uropoetic tract.

Suppurative or ulcerative inflammation of the peripheral type, involving the surface layers of the epithelia or the mucosum of any area of the mucous membrane of the urinary tract up into the tubular structures of the kidney, always gives issue to a purulent admixture of the sediment in the urine.

But when we have an infection involving the interstitial connective tissue elements in the renal tissues, we may have a large purulent collection, without any of it making its way out through the urinary passages. The same absence of pus in the urinary sediment may obtain in cases of calculous impaction of the ureter, or cicatricial stenosis consecutive to ulceration.

The composition of the urinary sediment in purulent urine.—Aside from mineral and nitrogenized elements in pyuria, in the sexes, we have invariably epithelial elements, pus corpuscles, shreds of disintegrated connective tissue, and commonly more or less blood discs, according to the degree and site of inflammatory action.

Large quantities of pus in the urine, of a vesical or renal origin, *is always more or less ammoniacal.* This decomposing animal matter greatly accelerates fermentation of the healthy secretion, and this in turn imparts an *alkaline reaction* which, acting on the urine, induces again a *saponification*, a transformation of pus into a ropy, tenacious mucus. This chemic change is more common in some specimens of urine than in others; its degree depending on extent of urinary stagnation as well as the condition of the mucous membrane of the bladder; and hence there may be discharged from the weakened, anesthesic bladders of old people urine primarily, freely intermixed with pus, yet on examination but few or no pus corpuscles can be found.

Periodic admixture of pus in the urinary sediment.—In every variety of pathologic lesion along the genito-urinary tract, attended with issue of pus, its presence in the urine is very intermittent, as are also the proportion of epithelial elements, and the seminal and proteid substances discharged.

This is a striking characteristic and an important feature to note in pyuria of every description, but in none is it so constant and striking as that of a renal or vesical origin.

In abscess of the kidney, in pyonephrosis and pyelitis, pus may be discharged with the urine only at considerable intervals of time. But when the patient is suddenly seized with violent colicky pains polyuria, vesical tenesmus and cystic irritation follow, pus flows off with the urine in great quantities. Relief succeeds and pus disappears from the urine, sometimes completely, for several months at a time. The same phenomenon may be observed in pyelonephrosis. In pyelitis of a catarrhal origin, intermittency of pyuria is one of its most salient clinical features, the purulent escape being largely influenced, or at least temporarily suppressed, by the effects of exercise, diet or exposure.

The varieties of pyuria. Anatomic.—Pyuria from the standpoint of anatomy may be divided into: 1. Urethral. 2. Cystic. 3. Renal.

Pathologically, we have, in their order of frequency: 1. Infection: *a*, tubular, by the mucous membrane, ascending, the most common; *b*, by the blood vessels, vascular, or descending. 2. From mechanical and chemic influences; from the extravasation of blood lithiasis, or any description of obstruction, by stricture, neoplasm or other physical impediment.

The most common type of purulent urine is urethral of a specific origin. This is readily differentiated, both by clinical evidence and simple tests. But when we have suppurative catarrh of the deep urethra there is a back-flow into the bladder, which may or may not provoke a septic cystitis.

It therefore follows, when we have infection from extrinsic sources, we may have a coexistent inflammation of the bladder with a urethritis, which will yield mixed morphologic elements, when the definite isolation of one from the other is impossible, except by a careful microscopic examination.

Hyperacidity of the urine is a well-known cause of vesical or urethral irritation; the pungent urine acting with great energy on the surface epithelia. In a similar manner do we have that most distressing type of chronic cystitis, consecutive to intrinsic renal suppuration of the kidney; when, again, we have simultaneously discharged with purulent urine an admixture of the finer anatomic elements of both the kidney and the bladder. It has not been my experience that urethritis is a concomitant lesion with chronic renal suppuration. The urethral mucous membrane seems to resist the invasion of pathogenic microbes which act with great energy in the kidney or bladder. But we have evidence, from ultimate pathologic changes and other reliable data, that in all cases of renal suppuration the loose vascular mucous membrane of the ureter on the side involved is the seat of inflammatory changes.

Descending ureteral infection succeeded by the draining away of pent-up ammoniacal urine, in time leads to destruction of the surface layer of the ureteral mucous membrane, to patches of erosion, submucous induration, or atrophic changes and great dilatation on either the renal or vesical end. And again, we find in the records, some rare cases of pyonephrosis, in which the ureter on the affected side throughout its entire extent is enormously dilated.

This was most conspicuous in one of Dr. Myles' cases. Speaking of the ureter, as found on autopsy in one of his fatal cases, he says: "It was greatly dilated; below it was about the size of the small intestine, rapidly enlarging from below upward; at its pelvis it was fully equal in size to one of the sacculi of the colon. It formed a huge pear-shaped reservoir for the urine, evidently acting as a supplementary bladder."

It is in this class of advanced destruction of the histologic elements of the kidney, the ureter or the bladder, that a morphologic examination of the urinary sediment alone will not always reveal the exact seat of pathologic changes, or rather, where they began.

From the foregoing it is clearly apparent that pure unmixed renal pus is seldom found in the urine; that from the bladder or ureter being generally intermixed with other elements. The special features of the purulent products of balanitis, urethritis or the prostate can not be considered here. Our investigation must be restricted practically to the bladder, the ureter and the kidney; for though we may have uncomplicated suppurative cystitis, clinical and morphologic evidences point to the conclusion, that in all severe or protracted forms of renal suppuration, cystitis is invariably a concomitant condition.

It is highly important to always note the difference of the sexes in the qualitive analysis of pathologic urinary sediments, and in all cases of suspected renal suppuration in women to be certain that we eliminate the accidental admixture of muco-purulent discharge through the vulva from catarrhal or ulcerative conditions of the mucous membrane of the vagina, the the cervix, the endometrium or the Fallopian tubes.

When any of these conditions co-exist with renal disease, the only means by which we can exclude their inflammatory elements from intermingling with the urine is by drawing it directly from the bladder. Catheterization of the female bladder, however, should not be employed as an *en courant* procedure, or in any instance, unless cystitis already exists.

It is true that a microscopic examination in experienced hands will readily exclude uterine or vaginal inflammation, but with discharges from the tubes there remains some doubt. We may generally exclude every description of urethral pus from the urine of the male, by catheterization.

The urethra may be first irrigated, then the catheter is introduced. As the mucous membrane of the bladder in the male is altogether more tolerant than in the female, we may have but little fear of subsequent cystitis, provided clean tubes are employed.

Some authors advise, in doubtful cases, that the patient retain the urine as long as possible, then having passed off the first half the second is collected, which if it exhibit pus it must necessarily be from the bladder or a source above; but this is a fallacy, of practically no value whatever in obscure or doubtful cases. In most laboratories but little if any consideration is given, as to how the urine is collected, as some microscopists claim to be able to decide the source of all urinary sediment by their morphologic character alone. It is my opinion and belief, nevertheless, that this is a mistake, for while conceding the present marvelous perfection of morphologic uranalysis it by no means follows, that we should not obviate as far as possible every source of error or confusion.

The diagnostic significance of anatomic elements in the urinary sediment of renal suppuration.—The presence of the detached epithelial elements in pyuria definitely stamps its origin. In the near past it was regarded a great advance when the microscope with unerring precision revealed the presence of papilloma, of epithelioma and ulcer of the bladder, but now morphologic science has widened the field of diagnosis far beyond the dream of the most sanguine.

The *modus operandi*, the technique and knowledge of the art of microscopic uranalysis is too large to enter into here. It is quite enough to again repeat in this connection, that the knowledge of the average microscopist will be of little value to him, without special training, opportunities and experience.

Ambitious, enthusiastic investigators have not stopped at the study of the histologic elements of the urine, blood, pus, epithelia and the structural elements, but have now utilized their knowledge in ferreting out the specific character of the various lesions along the urinary tract, by isolating their characteristic microbic elements, the pathogenic and non-pathogenic.

For a complete study of the more ordinary infections of the genito-urinary organs the reader is referred to the excellent monograph of Mechoir.

Ammoniacal or putrid urine.—In ammoniacal purulent urine the tableau is completely altered, for not only are new salts generated, but also the purulent constituents of the urine are radically altered, and besides, albumin or some chemic substance analogous to it is invariably present.

Morphologically speaking, we sometimes have in this type of pyuria, a quite complete absence of unbroken pus corpuscles, these having undergone disintegration and saponification by the pungent ammoniacal alkali in the bladder.

As the patient voids this urine we may find it highly charged by a tough ropy mucus, with no pus; but if we wash out the bladder and later catheterize, an abundance of unchanged purulent deposit will be found. This, as will be understood, applies only to those cases in which the pus has not been pent up in the renal pelvis, or an abscess cavity, and there is a free unimpeded drain of it off by the passages.

Albumin in the urine and acid urine.—Before fermentation begins in urine of acid reaction, when properly preserved, we will find no other evidence of molecular disintegration of the cells than that dependent on disease.

In strongly acid urine the pus is commonly found lying in coagulated flocculi, the superabundant fluid above being clear and transparent.

In this description of purulent urine we will sometimes find a complete absence of albumin. Most authors maintain that purulent urine is albuminous, which no doubt is correct of the ammoniated and purulent; but in one case under my care last winter (1896–97) of the most aggravated renal pyuria, in a considerable number of the specimens examined albumin was entirely absent. This was probably the result of fresh pus being discharged immediately on reaching the bladder before putrid changes began.

It is well to remember then that the absence of albumin as determined by the chemic test is no proof that pus is not present.

This may also be verified in the case of a physician recently under my care, who had a purulent kidney on he right side.

As we may well expect, the organic changes in the histologic elements of the urine when putrescent decomposition has begun are very well pronounced. In all these cases septic infection has spread to the bladder, when there is an exfoliation of pavement or cuboidal epithelia, or in places ulceration may penetrate all the strata of the epithelia and involve the vascular layers of the submucosum.

CASES ILLUSTRATIVE OF THE VALUE OF MORPHOLOGICAL URANALYSIS AS A MEANS OF DIFFERENTIAL DIAGNOSIS IN RENO-VESICAL LESIONS.

Case 1.—Appendicitis with ulceration into bladder; history.—J. S., male, 36 years old, liquor dealer, married. Had a soft chancre when 22 years old; later had syphilis. Four years previously, while serving as a sailor, patient was taken, in Bermuda, with inflammation of the bowels. From this he slowly recovered, though for some time after being about had trouble voiding his urine; but after about six months this passed off. One week before I saw him he was seized with severe pain in the right side, with chills and fever. The usual domestic remedies were applied, when on the fourth or fifth day the pain in the abdomen moderated, but his former bladder trouble again commenced. When he came under my notice his general condition was very bad. He had high fever, with exhaustive sweats, little or no sleep and great exhaustion. His vesical trouble was distressing, requiring almost constant straining in urination. He had a tympanitic abdomen with marked tenderness over the hypogastrium, the right iliac fossa, and further up over the ascending colon.

The clinical features of this case, in several striking particulars, pointed to pyelonephrosis. The primary fulness in the flank, which we may look for in displaced, enlarged, purulent kidney; the polyuria, with abundant discharge of muco-purulent material in the urine, all rather inclined to the possibility of renal abscess. On the other hand, the abdominal condition, tympanites, etc., lead one to suspect a recurrent appendicitis with probable discharge of abscess into the bladder. In order to determine the source of the pyuria, uranalysis was made of the urine, showing, specific gravity, 1.030; alkaline reaction; no sugar; slight shade of albumin present.

Microscopic examination: Pus corpuscles were abundant and surface bladder epithelia; a few blood discs, shreds of connective tissue, with crystals of margaric acid, cholesterin, particles of undigested muscle fiber, fat and starch globules. This examination, then, decided beyond question the fecal admixture in the urine. It was then advised that an operation be immediately performed to drain the pus out, by a free incision in the abdominal wall. The family physician, Dr. Thos. Kelly, was not in accord with me on the presence of appendicitis, yet consented to and kindly assisted me in the operation. On free incision the base of the cecum was reached, when a vast abscess cavity was opened, widely distended with pus and feculent matter. No search was made for the appendix. A wide breach was made for free drainage. From this time the vesical symptoms commenced to yield, and within a week the urine cleared up and micturition was again normal.

In the above case the incipient and spasmodic pain in the side, with localized tumefaction and marked tenderness up along the ureter to the kidney, disappearing, in a large measure, with the advent of the large discharge of pus by the urine would lead one to infer renal abscess. The tumefaction of the abdomen might also have proceeded from a propagation of infection through the perinephric tissues.

Case 2.—Cancer of sigmoid flexure, with invasion of bladder; history.—About three years ago I was invited by Dr. S. Waterman, of New York, to see an aged physician suffering from a most distressing cystitis. The patient was 76 years old, and for some years past had suffered from prostatic tumefaction and vesical irritation. When I saw him he had high temperature, was much emaciated and suffering great pain in the hypogastrium, especially on urination, which was frequent, especially at night. It was learned that he had had a most aggravated form of constipation for the preceding years; but now diarrhea was nearly constant and sometimes there was fecal incontinence; but he assured me his bowels were "well enough" if we could only relieve the bladder. On examination a large mass was detected in the left inguinal fossa, extending up along the descending colon. This was quite hard and insensitive to moderate pressure. The hypogastrium was highly sensitive and there was evidence of considerable vesical distension. He was obliged to introduce the catheter to draw off the urine, which was daily becoming more and more highly charged with mucus and more difficult to drain off. By rectal examination it was found that the prostate was but little enlarged, and that in one lateral lobe only. Carrying the finger further up, to the point of the peritoneal reflexion, a hard nodulated mass was found impacting the lumen of the rectum. It was clearly evident, therefore, that we had an impaction of the sigmoid flexure of the colon, with mechanical impediment from a neoplasm, the weighted over-expanded bowel falling over forward and compressing the bladder walls. Microscopic examination of the urine, as in the preceding case, exhibited much pus, the detritus of decomposing ammoniacal changes, with a large number of blood discs and fecal elements. This provided us with conclusive proof that the growth in the intestinal wall was malignant, and that it advanced forward over the recto-vesical septum and opened a communication with the bladder.

In this case, morphologic examination having decided definite diagnosis, we were enabled to advise appropriate measures for relief. The day following I performed Madyl's operation for an artificial anus. The relief of the vesical symptoms following was most gratifying. By keeping the bladder well irrigated and drained by the urethra much relief and comfort was enjoyed, until the diffusion of the cancer elements, three months later, choked up the ureters and induced fatal uremic poisoning.

Case 3.—Fecal impaction of sigmoid flexus; history.—Four years ago last April Dr. Wm. S. Gaudineer of New York requested me to see a young woman who a few days before had an abortion, and was, among other things, suffering from severe cystitis, with a large fulness in the left groin. The Doctor brought a specimen of the urine when he came for me. A chemic and microscopic examination of it precluded any possibility of a suppurative lesion of the bladder or kidney. The urine was highly acid and slightly clouded with mucus, but contained few pus corpuscles and few epithelia. When I arrived at the home of the patient I learned that she was unmarried, and that she had probably provoked the miscarriage herself. She had a temperature of 104 degrees, with a quick pulse, considerable thirst and nausea. It appeared that after the fetus came away catheterization was found necessary, but this was immediately succeeded by a painful cystitis.

The abdomen was tympanitic and everywhere sensitive. On the left side, rather inward toward the median line, there was a distinct fulness. On questioning the patient closely, it was learned that she had had no movement for ten days, although she said that this was of no consequence, as she had often gone two weeks without a motion. As she was everywhere sensitive, in the vagina as well as externally, it was decided to anesthetize, place her on a table, and then examine with the abdominal muscles relaxed. By bimanual examination it was easier to outline the mass in the pelvis, which by exclusion we decided was probably a fecal accumulation.

It was agreed that we should again see the patient the following day if there was no improvement, but that evening, within an hour after we left, the patient had an enormous alvine evacuation, which was followed by relief of all her symptoms.

In this case, although the symptoms pointing to renal or vesical lesion, *ab initio*, were not prominent, yet some features of her history suggested this possibility. She had once had gonorrhea, and later had been told that she had a displaced kidney, circumstances by no means to be overlooked in pelvic inflammation, but uranalysis eliminated both decisively, at least as causative or consecutive to pyonephrosis.

Case 4.—Intermittent pyelonephrosis; right side.—Three years ago a case of renal suppuration came under my care which presented several quite unique features.

History.—Patient a female, single, virtuous, 24 years old; both parents died of pulmonary tuberculosis. She enjoyed good health until one year before, when she became sensible of a fulness in the right lumbar region, advancing forward. Soon after this she was seized with severe sciatica in the affected side. For nearly three weeks this persisted in a severe form, when one night while in bed she was suddenly taken with severe cramps and colicky pains in right side of abdomen. After taking hot drinks and freely using fomentations, the pain gradually subsided, but free urination began, and she alleged that during the next twenty-four hours she passed nearly a gallon of a thick milky colored urine.

At the time she came under my notice she was in fairly good health; she had a fair muscular development, but was rather pale. The temperature was but 100 degrees, and the pulse but slightly accelerated. The bowels were regular, and she was passing a normal quantity of pale, limpid urine. She complained of having suffered from leucorrhea off and on for the past ten years. On examination of the abdomen, a well-defined fulness was apparent on the right side, impinging forward and slightly downward. When she assumed the prone position this tumor could be recognized only by the sense of touch on palpation, which every time, on deep pressure, provoked a desire to urinate. As she lay on her back it was possible to move the mass slightly in an inward and outward direction.

As the symptoms present implied no urgency in treatment, palliative measures only were recommended. Some of the urine passed that day I was enabled to secure for examination. It was of an acid reaction, and contained no albumin or sugar. Under the microscope, besides the ordinary visceral sediment, pus corpuscles and renal epithelia were found; but few surface pavement epithelia were present.

Two days later she commenced to pass pus in large quantities with the urine. On examination of this, the change noted was most extraordinary. The consistence was nearly that of gruel. Reaction was strongly alkaline, and the urine emitted a sharp ammoniacal odor. This discharge continued four days. From this time the purulent and epithelial elements became more scanty, and in ten days had disappeared. It is needless to add that with abundant pyuria the tumor in the loin commenced to recede, and finally vanished.

In this instance, the underlying pathologic process was tubercular. Its clinical features pointed quite conclusively in that direction, though I have been lately informed that she is now well, and never had another attack since; a circumstance, too, peculiar to that mysterious malady, which sometimes for years remains latent, again carries one to death's door, to undergo arrest, with recrudescence perchance, after years, or never in one's lifetime give further trouble in the affected organ.

This is the only instance of recovery from pyelonephrosis which I have observed in women.

Case 5.—Pyelonephrosis; chronic; right side; history.—Patient, 50 years old, married, of a rather slight build, but considerable endurance. Followed the occupation of a seamstress before and after marriage, and had one child, now grown. She first came under my care four years ago, for treatment of irritable ovary on right side. I then lost sight of her, until August, 1896, when I was called to attend her for a very painful form of cystitis. At this time, she had become greatly wasted, anemic, care worn and melancholy. She was practically a confirmed invalid, but by dint of an undaunted spirit managed to keep about a part of the time. She had in vain tried regular, irregular and quack practitioners, but without any permanent relief.

Realizing that the case was a grave one, I made a very complete examination of the general system and the organs.

She had a low grade of fever with thirst, no appetite and no rest. Vesical strangury and vesical tenesmus made her life one of constant torture. The wasted state of the body rendered an examination of the organs an easy matter, as everywhere over the spine and hips the angular curves of the bones stood out prominently under the integument.

Exclusive of the vesical territory, which was a constant source of uneasiness, she complained of occasional darts of a burning pain up along the course of the ureter over the crest of the right ilium. Down in the iliac fossa on the same side, on moderately deep pressure, there was experienced a sense of soreness and pain, and a little further up a movable mass, could be detected. By vaginal examination nothing definitely was reached except extreme sensitiveness of a contracted thickened bladder and an impacted rectum. No evidence of any lesion on the left side of the abdomen or pelvis could be discovered. Thorough clearing of the colon afforded some relief, but the painful polyuria persisted with evidence of marked constitutional disturbance. There was nothing in her history elicited that suggested her ever having had an attack of gonorrhea. Nor was there any evidence of visceral tuberculosis except, possibly, along the urinary tract; nor was there anything pointing to rheumatism or gout. She micturated as often as twenty to thirty times in twenty-four hours; even then, in the warm weather of our New York summer. Every discharge of urine was blended with pus and mucus.

Microscopic examination revealed the presence of abundant leucocytes, renal and bladder, epithelia, with other evidences of abscess and ulceration. She manifested a positive repugnance to any surgical operation at first, and for the following four months continued to suffer from vesical distress and constitutional exhaustion. Finally, when her general condition became desperate, she insisted on relief by any means possible.

On operation it was found that the right kidney had descended to the iliac fossa. It was nearly as large as the fetal head. After removal, on transverse section it was seen that but a thin layer of the cortical substance remained, all the secreting tissue having been replaced by very large loculi of thick purulent material. There were no calculous elements found.

This case was one, in which the morphologic examination of the urine, again, established beyond question, the precise character and location of the pathologic process. Repeated uranalysis in this instance too, exposed many of the fallacies current in many of the text-books, on the chemic and anatomic elements found in pyuria, *e.g.*, that very purulent urine is always alkalin, that renal epithelia are present only in the early stages, or only when the pus corpuscles are relatively scarce. I might add, in this as in others of the same class, that repeated attacks of severe sciatic pain were experienced in the advanced stages of the disease.

Cases 6, 7 and 8.—Unilateral pyelonephrosis; lithiasis -As these three cases belong to the same class the salient features of all may be described together.

History. - One was a physician of robust physique, 35 years old; one was a cabman, 33 years old; one was a grocer, 40 years old. All were married and all were steady but not heavy drinkers of malted light liquors. In all, the right kidney was the one involved. Except the renal trouble all enjoyed good health. In all, their attacks were intermittent; at times there being intervals of several months without any discomfort whatever being experienced.

In all, their attacks were of an extremely acute type, the spasms of pain at the outset being of a most agonizing character. But when polyuria and pyuria set in, relief came and remained. In all these cases at the outset of the attack there was marked fulness, muscular rigidity and tenderness over the renal areas of the side involved. In *none* was there anything more than slight and transient cystitis. All at various times had passed oxalate of lime or uric acid calculi.

Chemic and morphologic analysis of the urine. In these cases, at the outset of the attacks the urine was strongly acid, then feebly acid or neutral, to again, after a few days, become acid. In all, in the early stages, when sanguinous admixture of the urine was marked, sero albumin was present; but as the blood globules disappeared and leucocytosis set in, after the sediments were well settled, the decanted urine contained no albumin. Early microscopic analysis in all cases, exposed two distinct classes of physiologico-pathologic substances, *non-inflammatory* and *inflammatory*. I. An excess of mineral elements, the crystals of oxalates and urates, with a free admixture of coagulated fibrin and blood corpuscles. In some urinary evacuations the quantity of mineral sediments and detritus was very large for the first or second twenty-four hours. 2. After the intensity of the attack passed off the febrile reaction of the system was attended with free leucocytosis and the shedding of renal casts and epithelia, none except the surface layer of pavement epithelia of the bladder, were present in urinary sediment.

The three cases above were typical and illustrative of *periodic* pyelonephrosis dependent on urinary excretions, uric acid or oxalate of lime or the phosphate, primarily in the tubules of the cortex, then entering the pelvis to become later engaged in the ureter.

The volume of some of the calculous masses which make their way down to the bladder demonstrate the remarkable expansive properties of the healthy ureter. It is possible that the passage of these not only provokes the agonizing pain of renal colic, but also mechanically produces an erosion of the innermost strata of epithelia, a contusion of the deeper submucous, vascular layer of connective tissue, or even a laceration in places completely through the mucous investment.

The excess of mucus, the blood pus-corpuscles, shreds of connective tissue and even ammoniacal urine with the triple phosphates, are all the immediate effects of this practically traumatic and now septic process; simply elements in the evolution of repair of a damaged structure.

This type of lithic pyonephrosis though tending toward spontaneous recovery in the young and vigorous, may under conditions of reduced health, or if it be accompanied with a tubercular cachexia, give rise to grave local changes and necessitate the intervention of surgery for its alleviation or cure. .

No doubt, the use of the endoscope or the ureteral catheter might enable us to more definitely fix the organ involved; but as a rule the clinic symptoms with uranalysis are sufficiently emphatic and positive without resorting to their employment.

Cases 9, 10 and 11.—The following three cases came under my observation during the past winter. They were females; in two malignant disease was suspected. They were seen in consultation with Drs. J. A. Hoffheimer, John Martin and Charles F. W. Horn.

In Dr. Hoffheimer's case, pyloric cancer had been suspected. The patient was a married woman 40 years old. Along with evidence of disease along the urinary tract she had pronounced symptoms of pulmonary tuberculosis. On examination, subjective and objective, with uranalysis and morphologic examination of the sediment of urine, of anatomic and bacterial elements, I felt warranted in excluding gastric cancer. The tumefaction in the epigastrium was evidently an enlarged kidney displaced inward. My diagnosis was, tubercular pyelonephrosis consecutive to pulmonary infection. Although she was of a robust physique and a full habit, when seen by me, she died within two months.

An autopsy made by Dr. Hoffheimer verified the diagnosis.

Dr. Martin's patient was an elderly woman of 57 years, rather pale and emaciated. Six months previously she lost a daughter from pulmonary phthisis. In this instance the trouble was in the left side, where a hard tumefied mass gave rise to the suspicion of cancer of the cardiac end of the stomach.

This patient too had quite unequivocal signs of pulmonary tuberculosis. Her vesical symptoms, pyuria and other features led me to locate all her abdominal symptoms as exclusively of renal origin, pyelitis, pyelonephrosis, periodic occlusion of the ureter and intrinsic cystitis. The microscopic examination of three different days' urine decided beyond question the renal origin of suppuration. This patient went steadily down, dying six weeks later. An autopsy was refused.

The third of this group was a case of *traumatic pyelonephrosis.* The patient was 61 years old and mother of a physician. She had been injured over the right kidney some five years before. From some of the symptoms present it was at first supposed that the cause of all her trouble was Bright's disease; but latterly, as her distress became particularly accentuated in the right lumbo iliac region, it was beginning to be feared that she had a new growth.

She was a large, heavy person, and though organically sound except for this lesion, she was now quite disabled from anything like active exercise.

In her case, after a surface inspection, an examination of all the symptoms and organs, with repeated uranalyses on different days and different hours of the same day, indubitable evidence of pyelonephrosis involving the right kidney was present.

The most remarkable features in connection with this case were the intermittency of the pyuria and renal intumescence on the side involved. Sometimes the urine would be highly charged with pus, epithelia and the triple phosphates and clearly ammoniac alkali; while the following day, or even later in the same day, it would clear up, reduce in specific gravity and again become strongly acid.

Then for hours, though vesical tenesmus was most distressing, but little urine came, until another spell of renal colic set in, when another generous discharge of urine followed, with transient relief.

In this case a moderate quantity of albumin was always present.

In the first and second case of the last group the interesting question rises, as to whether the tubercular abscess of the kidney was consecutive to the pulmonary lesion, or the development of the latter was simultaneous with the former.

We can readily understand how tuberculous infection may travel up a mucous membrane, as from the bladder, but we had no evidence here of an ascending infection. Authors in pathology tell us that tubercular infection may spread along the lymph current or through the blood vessels; but the lymph current moves in a centripetal direction, and if the germs are swept along the arterial tide into the renal parenchyma, how is it that the bacillary mites pass by untouched the lymphoid structures for which they have a special affinity, and fall on an epithelial organ like the kidney?

It will require very much future research to clear up this side of the question in renal tuberculosis.

It might be inquired why an operation was not pressed for in these three cases? In the presence of progressive pulmonary tuberculosis it is unwarranted. Advanced age precluded it in the third case.

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DISCUSSION.

Dr. **CHARLES P. NOBLE** of Philadelphia—I would like to add my testimony to the value of direct examination as an aid to diagnosis in suppuration of the kidney. During the last two years I have seen four cases of this kind, two of which I operated on, and two were in the hands of other physicians. In these cases it was quite possible to make an absolute diagnosis by catheterizing the two ureters, finding the urine distinctly normal in one case. In one instance there was no urine secreted from one kidney; all of the urine came from the opposite kidney. The urine in one case from the affected side was full of pus. Both cases were operated on; the cause of suppuration was primary tuberculosis of the kidney. These patients made good recoveries and have done well since.

One of the most interesting cases from the standpoint of diagnosis was one which I saw recently. A diagnosis had been made of suppurating kidney, and an operation had been made to remove the kidney, with the result that the surgeon, a competent man, failed absolutely to find it and came to the conclusion that the diagnosis was erroneous, and that the woman had not a kidney on that side. I saw her later, and examination by the cystoscope and catheterization of the ureters showed that there was no question about the presence of the kidney on that side. Foul smelling urine was discharged from that side. There is no doubt whatever that the patient had a suppurating kidney, although a direct incision failed to find it. I would urge the necessity of not only making a microscopic examination of the urine, but of determining definitely, in women, where the urine comes from.

Dr. A. H. **TUTTLE** of Cambridge, Mass.—My experience with suppurating kidney is limited to one case in the past year. The case was one of long standing and a diagnosis was made simply from the situation of the tumor and by repeated emptying of the contents of the tumor into the bladder and the evacuation *of large quantities of pus. The case was allowed to go without* treatment for a year, when she came to my private hospital. At that time I began to catheterize the ureters, but there was a stricture of the ureter about one inch from the pelvis of the kidney which made it for a long time difficult to enter the kidney. After a while, I succeeded in entering the pelvis of the kidney, removing by aspiration about eight ounces of stinking pus. I left the catheter *in situ*, washing the kidney out daily with normal salt solution, and used about 2 per cent. solution of nitrate of silver. At the end of twenty one days the urine was fairly sweet; there was comparatively little sediment in it, and the catheter was removed with the hope, at that time, that the kidney would drain itself; but at the end of forty eight hours severe symptoms set in, the catheter was again intro*duced, pus withdrawn, and the kidney again cleaned.* It became impossible to keep the catheter *in situ*, and it had to be removed again. A third attempt was made to pass the catheter into the ureter, but it was impossible to do so. At this stage something had to be done on account of the bad condition of the patient. It was impossible to remove the kidney, and so an opening was made in the side, through which the kidney was washed out. The case went on and made a slow and complete recovery. The patient still retains the tube in position and by means of an elongated rubber tube she can collect all the urine during the day without soiling the clothes, and by emptying the tube at intervals of an hour or two she gets along very comfortably. If I had known as much then as I do now I should have performed a surgical operation. Her *urine has been examined from time to time*, and there is a little pyelitis in the other kidney. The amount of urea excreted from the diseased kidney is about two grams.

Dr. **MANLEY**, closing the discussion—My paper includes the subject of catheterization of the ureters, but you must remember that while the catheter has a large range of application in the female, it has but a very limited one in the *male*, particu*larly where the patient happens to have stricture*, prostatic hypertrophy, or where there is a stenotic condition of the urethral canal. You can understand a condition being present, which Dr. Noble mentioned, in which the ureter is closed by stricture, that the catheter is negative in its findings. There is more or less irritation of the bladder. The bladder in these cases is more or less inflamed and requires expert handling. The same objection applies to the cystoscope as to the urethral catheter in the male. If there be a tendency to oozing of blood, as there usually is in the turgescent stage of cystitis, the findings may be indefinite.

The object of my paper was to encourage a more systematic and methodical and practical study of the morphologic findings in the sediment of patients suffering from pyorrhea of the kidney. I *feel confident that if we examine patients carefully* and sytematically, in every instance we can *determine whether* the pus is cystic, ureteral or renal. I *refer now to the male.* You must understand that in t[illegible]male a different course must be pursued [illegible] t[illegible]ition of t[illegible]

THE TREATMENT OF PUERPERAL SEPSIS.

Presented to the Section of Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY E. E. MONTGOMERY, M.D.
PHILADELPHIA, PA.

Before the Obstetric Section at Atlanta, last year, I read a paper on the "Administration of Antistreptococcic Serum," based on my experience in one patient treated the February preceding. But little had been done at that time in the treatment and study of this practice. During the year very much has been added to the literature, although its value still remains *sub judice*. The importance of the subject can not be overestimated when we appreciate not only the serious mortality, but the influence upon the subsequent health of the individual, which must result from an attack of sepsis. I do not feel that the subject of the value of the serum therapy has as yet been sufficiently demonstrated to justify the physician in trusting to it alone; in other words, every means should be exercised which will increase the vitality of the patient, and thus enable us to secure immunity against further ravages of the disease. The value of the agent seems to have been sufficiently demonstrated, however, to justify us. not only in using it, but in asserting that the physician is derelict in a case of undoubted sepsis where he does not practice its use early in the treatment. While a number of cases have been reported during the year, in which the administration of the antitoxin has had marked effect even in the late stages of the disease, and where the condition of the patient seemed absolutely hopeless, yet it certainly is not wise that we should wait until such a time before its administration. In the consideration of its use, it is also equally important that we should be able to determine or have an idea that in the administration of the serum, it is being given in cases which are suffering from a specific condition. In other words, the antistreptococcic serum has not been found so effective or valuable in those cases in which there is mixed infection, particularly the bacilli coli communes, and we can readily appreciate that when a patient is suffering from a state of sapremia or putrid intoxication, and we administer a large dose of antistreptococcic serum, we are introducing an additional poison for which the disordered system must provide. Where it is possible, it would undoubtedly be better, if it can be accomplished quickly, that a bacteriologic investigation of the secretions should be made; but as this requires time, and in some cases valuable time, and under many circumstances, unless the practitioner has proper facilities for bacteriologic investigation it would be impossible, we are obliged to depend somewhat on our judgment and the physical signs, to determine the character of the condition. The occurrence of elevation of temperature following the delivery of the patient, or an abortion, should be considered as an urgent reason for careful examination to determine its cause. This may be produced by a disordered condition of the mammary gland, by the excitement from the development of milk secretion, or may result from retention of masses within the uterus, which become putrescent and cause what is known as putrid intoxication. When the examination of a patient determines the absence of anything within the uterus which should afford a cause of high temperature, associated with profuse discharge, or possibly in the beginning an arrest of lochia, and particularly where there is redness or swelling of the vagina, exfoliation of the mucous membrane, presence of diphtheritic exudation upon, or ulcerations of its surface, the condition should be recognized as sepsis and treated accordingly by the administration of the antistreptococcic serum, together with local cleanliness and constitutionally supporting measures. The dose of the serum will depend somewhat on the virulence of the condition; thus, if the temperature is high, symptoms marked, the dose should be as high as 25 or 30 cubic centimeters of Marmorek's serum. As this serum gives immunity only for a short period, the remedy should be used the following day or earlier, if the symptoms are virulent, and continued until the abnormal symptoms subside. The literature of the last year affords a large number of cases to which refences might be made in support of this plan of treatment, but I will content myself with calling your attention to the history of the patient which I reported in my former paper, and two other cases, one of which I saw in consultation, and the others occurred in the experience of one of the assistants in my clinic.

The case previously referred to developed an attack of sepsis the third day following her labor. When seen by me there was some induration in the broad ligament on the left side. The uterus was carefully curetted, removing nothing more than the debris and some small blood clots. It was irrigated, packed with iodoform gauze, an incision then made into Douglas's pouch, and some slight amount of plastic material removed by irrigation. A gauze drain was then introduced. The whole vagina was red, swollen, and covered with a glairy mucus, which was removed by scrubbing with creolin and soap mixture prior to the operative procedure. There was a slight subsidence in the temperature the following day, but on examination over the vulva, it was found that the redness of the vagina extended upon the vulvar surfaces, producing an erysipelatous blush. This condition extended until the entire portion of the body, with the exception of the forearms and hands, and the face, became covered. At the end of three weeks, the fourth week after confinement, this erysipelatous blush had thus extended, and the patient had had more or less continuous elevation of temperature; it was then 103.3 degrees, with indications of a second extension of the erysipelatous condition. The patient had been given large doses of strychnin, stimulants, nuclein and nutritious food administered. At this time hypodermic injection of 25 cubic centimeters of antistreptococcic serum prepared in Gibier's institution was introduced. This was repeated three times with a subsidence of temperature after each injection, and the subsequent convalescence of the patient was uninterrupted, the health becoming fully restored.

The next patient was seen in consultation with Dr. Donnel Hughes of this city, who gives the following: "I send you a short history of the case of Mrs. M. who had had a temperature ranging from 103 to 105 degrees for twelve days, when at your suggestion antistreptococcic serum was given. The first day she received an injection of 25 cubic centimeters. The temperature decreased from 105 to 102 degrees; next day 12.5 cubic centimeters, temperature fell to 101 degrees; third day 12.5 and it became 99 degrees; fourth day, 12.5 and temperature became normal; subsequent convalescence was uninterrupted. Patient made a complete recovery."

Dr. Irwin writes as follows: "On Dec. 15, 1896, I was called to see a case in practice, with a midwife. The patient was 22 years of age, a primipara, who had been in labor sixteen hours; the membranes had ruptured several hours before my arrival. The head was wedged into the pelvic cavity in a left occipito-anterior position. Her pains were irregular, weak and ineffective. Ether was administered and the fetus delivered with forceps under strict antiseptic precautions. The pelvic floor sustained a deep laceration, but owing to the contused and bruised condition of the injured tissues, immediate repair was not considered advisable. Twenty-four hours later, the patient complained of rigors, followed by rapidly rising temperature, reaching 104 degrees F., with pulse 120. Her general condition daily grew worse, temperature fluctuating between 101 and 104.5 degrees, lochia very profuse, within a few days very offensive, no tympany, and slight pelvic tenderness. On the sixth day following the delivery she was seen with me by Dr. Fisher. Examination disclosed a closely adherent pseudodiphtheritic exudate covering the vaginal mucous membrane, including the cervix. The patient had general pelvic tenderness. The uterus, although large, was freely movable and the vaginal fornices and supravaginal structures pliable. The uterus was easily dilated. Its cavity measured about four and one-half inches in length, was free from clots and débris, and likewise lined with a continuation of the pseudomembrane. Under these circumstances we did not feel that curettement was indicated. The uterus was irrigated with a hot solution of bichlorid, 1 to 5000, followed by a light iodoform gauze pack of both uterus and vagina. The following twenty-four hours presented no favorable change, either locally or constitutionally. The gauze was removed, the parts irrigated with a 2 per cent. solution of creolin. The patient presented every appearance of profound septic absorption, temperature 104 degrees, pulse 140. The conditions were such as to justify us, even in the absence of a bacteriologic examination, in feeling that the infection was from streptococcus. At Dr. Fisher's suggestion, an injection of 5 cubic centimeters of Marmorek's antistreptococcic serum was used at 10 A.M., when at 2 P.M. the temperature had declined to 99 degrees, and nine hours later touched normal. The favorable condition continued until one o'clock the following day. It was six in the evening when the temperature reached 101 degrees, when a second injection of serum, the same quantity, was administered. The discharge from the vagina was still profuse, watery, very offensive, the pseudomembrane was evidently undergoing rapid disintegration and within eighteen hours it had wholly disappeared. Throughout the two succeeding days the temperature remained below 100 degrees; the patient's color, appetite and general condition were very much improved. An injection of the serum had been given each day. The fourth day the serum was omitted. The following morning the temperature of the patient again reached 104 degrees, with pulse 130, but declined to 99.5 degrees within four hours after the serum injection. Five cubic centimeters of the serum were given every alternate day for a week longer. The temperature during this time never exceeded 100 degrees, and finally became normal, which marked the beginning of a rapid convalescence. The patient, both before and during the period of the serum injection, was given stimulants and supporting measures in the form of nutritious and easily digested food, alcohol, strychnin and the antiseptic douches were administered daily. She made a perfect recovery.

While these three patients are not sufficient to enable us to assert that we have an infallible means of treatment of puerperal sepsis, yet the result in each one has been so marked after the use of the serum that they certainly justify its further consideration and employment. It is true these cases might all have recovered by other means, but I know of no plan of treatment which would have afforded the striking change in the progress of the cases as has been evident in all these cases after a practice of the serum therapy.

CLOSURE OF THE ABDOMINAL INCISION.

Presented to the Section on Obstetrics and Diseases of Women at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY PHILANDER A. HARRIS, M.D.

PATERSON, N. J.

A great deal has been said and written of late about the perfection of gynecologic operative technique least calculated to render necessary secondary operation. There is probably no condition following the gynecologic abdominal incision which calls more frequently for a secondary operation than that of hernia appearing at or in the line of the incision. It is extremely embarrassing to have our patients return exhibiting a hernia at one point or other of our incision, and still more humiliating to find that a patient goes elsewhere and receives the announcement. It is the purpose of this paper to deal briefly with what the writer esteems to be the more important points in the closure of the ordinary and median line of abdominal incision, between the umbilicus and the pubes.

Until the past few years, as we all well know, the general custom of through and through interrupted stitching prevailed everywhere. The frequency with which hernia was encountered, led to a great variety of methods of closing the wound. From that experience we have derived a technique which, although not perfect, is more calculated to obviate one of the serious drawbacks to the abdominal incision.

The gross appearance of the layers forming the abdominal wall at the line of this incision, will reveal, first, skin; then a layer of cellular tissue and fat; immediately beneath and closely adherent to this the strong fascia or conjoined tendon and aponeurosis of the oblique and transversalis muscles. This will vary in thickness from ordinary blotting paper to three or four thicknesses of the same. Then we observe the rectus muscle. Pushing this aside, or splitting it with our fingers, or the handle of a scalpel, we reach the peritoneum. It is reasonable to suppose that when we cut these structures we should on closing the wound bring the respective and corresponding parts together. Theoretically we would, therefore, first sew peritoneum to peritoneum, muscle to muscle, aponeurosis to aponeurosis, fat to fat, and skin to skin. Practically, I do not think that it is necessary nor wise to attempt as much as such theoretic considerations would indicate. I believe, however, that we should, as routine practice, sew first the peritoneum with continuous catgut, or other absorbable suture, using a modified Lembert stitch. Next, to sew with chromicized catgut, kangaroo tendon, or other absorbable suture, which *will hold for at least* one month, the opposing edges of the aponeurosis of the abdominal muscles. It has been the custom of some operators to sew this aponeurosis with a running suture. If the stitches thus made should be exceedingly closely taken, and both ends of the thread well anchored the effect secured may be both immediately and remotely satisfactory. Instead of employing a continuous suture I employ the more commonly used interrupted stitch, placing the stitches not further than one-third of an inch apart. As to the approximation of the fatty tissue, I believe there is little excuse for sewing it, excepting where the layer of fat is unusually thick. I believe that this fatty tissue is sufficiently approximated with the addition of the skin suture. Except for esthetic reasons, I do not think that it matters very much what sort of stitch we employ for the skin. The cutaneous sewing which I have used for about three years, to the exclusion of almost all other forms, is the so-called subcutaneous suture, often referred to as the Halsted or Marcy stitch. I do not know which of these gentlemen was the first to use this particular stitch in surgery, but I do know that it effects a beautiful result. I have employed both catgut and silk for this subcutaneous suture, but prefer the latter, for it need not be afterward removed. The employment of silver wire, or silk, for the subcutaneous suture necessitates a good deal of pain oftentimes to effect its removal. To assure a patient who has experienced more or less anxiety and horror in connection with her operation, that there are no stitches to be removed during her convalescence, gains for us both her esteem and gratitude. The incision closed in this manner effects, I believe, the best possible results for both practical and esthetic reasons.

Regarding the employment of non-absorbable buried sutures, a number of good operators, realizing the importance of this system of tier suturing the abdominal incision, and having felt hitherto an unwillingness to trust to the sterilization of catgut, or fearing its absorption before its work is completed, have esorted to silk suturing of the peritoneum. For imilar reasons they have also employed very extensively buried silver wire and silkworm gut suture in the severed aponeurosis. I employed for about two years, and until recently, silkworm gut for the aponeurosis, tying three knots and cutting the ends closely on the last knot with the scissors. A very small percentage of these cases suppurated and required a withdrawal of one or more of the sutures. In two cases I experienced a great deal of embarrassment in finding the offending ones. I believe that by discontinuing the employment of non-absorbable sutures in the aponeurosis and the use of kangaroo tendon or chromicized catgut the few embarrassments I have had in this relation will immediately lessen. My feelings, indeed, regarding the employment of non-absorbable sutures of any sort whatever, is so strong that I can hardly now realize that I shall ever again employ them. Possibly others have been more fortunate in this relation than myself.

Regarding the *strength* of the abdominal wall at point of incision, when united by the non-absorbent tier suture, I am convinced that it is far greater than that attained by the through and through, semi-through and through, or any other modification of sewing which I have practiced or studied. If these results have been attained by the non-absorbent suture in the aponeurosis, I am forced to believe that nearly, if not quite, as satisfactory work, may be accomplished with the slowly absorbable kangaroo tendon and possibly with the thoroughly chromicized catgut.

Regarding the danger of sepsis from the employment of kangaroo tendon or catgut, I may say that with the improved methods of sterilization we have very little to fear.

As to the particular structures which contribute to the tensile strength of the abdominal wall at this point for lateral strain, much might be said, but as to the tissue which furnishes the major tensile strength for such strains, I do not see how any one can attribute very much to any of the tissues excepting the aponeurotic terminations of the oblique and transversalis muscles. To such operators as have had no experience with suturing of this aponeurosis, I would say, that, excepting for theoretic and more or less uncertain clinical reasons, they should have little cause for contradicting these assertions. From an anatomic standpoint, they should concede the claim which is made, that this particular tissue furnishes the major part of all the tensile strength for lateral, and to a very considerable degree, vertical strains. Peritoneum holds little; the rectus muscle should hold only one way, namely, in vertical strain; cellular and fatty tissues hold very little; skin holds nothing; it only covers; so that, of these various structures, we must look chiefly to the aponeurosis of the abdominal muscles for tensile strength. Therefore, whenever we cut this aponeurosis or fascia, we should properly coapt its edges; if we do not bring them well together, we are allowing a less resistant structure to fill the interspace and afford an opening through which hernia may occur.

I am quite aware that I have offered you practically nothing which is new in this paper; these suggestions do not address themselves to many operators who are doing good tier work. They rather seek to crystallize the good work which many are doing. I have been prompted to write on the subject from the fact that many operators remain contented with the old-fashioned through and through suture which, I believe, has been very greatly improved upon.

THE CURE OF VESICO-VAGINAL FISTULA BY THE FREE DISSECTION OF THE BLADDER FROM ITS VAGINAL ATTACHMENTS AND CLOSURE WITH THE BURIED CONTINUOUS TENDON SUTURE.

Presented in the Section on Obstetrics and Diseases of Women, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

BY HENRY O. MARCY, A.M., M.D., LL.D.
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In 1887 my attention was first called to the ease with which the bladder wall will reunite after injury, under the most adverse circumstances, when the portion involved is free within the peritoneal cavity. The case upon which I operated at this time was that of a child eighteen months old, where an abscess in the vicinity of the appendix had resulted in a vesico-intestinal fistulous opening in the appendiceal region.

Laparotomy disclosed two fistulæ of the small intestine, complicated with an opening into the bladder to the right of the fundus. The intestines were freed from adhesions and drawn out of the wound. The refreshed edges of the openings were closed by double lines of fine continuous tendon sutures, which in turn were intrafolded by a second layer of continuous tendon Lembert sutures. After the intestine had been returned, the bladder wall was freed from its adhesions, the opening into it refreshed and sutured in double lines of continuous tendon sutures, in precisely the same manner as I had closed the intestinal wounds.

The child made an easy and perfect recovery, with primary union of the openings, and is today a strong, vigorous girl. The age of the child rendered drainage of the bladder unsuccessful, but from the first the function of the organ seemed little impaired.

The case was instructive in many ways. Perhaps the most important lesson was the primary restoration of the bladder wall without the supposed necessary physiologic rest of the organ. The method of applying the first row of sutures in the approximation of the refreshed edges, held in even support by means of the continuous sutures, inverted the mucous membrane.

The insertion of the suture in both intestinal and bladder walls is in the following manner: The needle is a fine one, curved upon the flat, with eye near the point, and set in a firm handle, made to penetrate the coats of the bladder or the intestine also, but not through the mucous membrane. It emerges about one-quarter of an inch from the line of the opening, and is introduced upon the opposite side at a like distance. The needle is then unthreaded, rethreaded with the opposite end of the suture and withdrawn. This makes the needle a suture carrier like a shuttle, and holds in even coaptation the included structures in a double loop from side to side (shoemaker's stitch). One stitch follows another in an even continuous seam, until the opening is completely closed. By this side to side coaptation, the parts enclosed are held in juxtaposition the *breadth* of the enclosing loop, while the interrupted suture holds only the *width* of the suture material. The submucous penetration of the needle buries the suture in healthy vitalized structures and the line of stitches, taken a quarter of an inch away from the edges of the wound, inverts the mucous membrane into the bladder. The final fixation of the suture is by one knot, a manifest advantage over leaving as many knots as stitches, while the continuous suture permits of an even adjustment of the enclosing force. It must be remembered that no undue force is used in the tightening of the stitches, since readjustment, retention and rest with a minimum of devitalization, are the factors in the relation of the sutured parts as important as in the treatment of a fractured bone.

The exterior line of continuous Lembert sutures intrafolds the peritoneum so as to re-enforce and greatly strengthen the structures over the wound. When taken properly they are themselves buried without puckering of the peritoneum (parallel continuous suture).

From a variety of causes, quite a number of times within the last ten years, I have closed wounds in the bladder from within the peritoneal cavity as above outlined, and in every instance primary restoration has occurred. But in the entire series I have been enabled to drain the bladder for a number of days through the urethra.

During this period, in the larger number of cases of vesico-vaginal fistula, I have closed the wound through the vaginal opening by lines of buried tendon sutures, with varying results. Little by little I have found that both ease of operation and certitude of outcome seemed dependent on the freedom of dissection and the amount of tissue held in fixation. Especially has it appeared dependent, in considerable degree, on the extent of the dissection of the bladder from its vaginal attachments. Then the importance of the lesson taught me by the safe repair of the bladder wounds from within the abdominal cavity became apparent. From this standpoint I reviewed with renewed interest the entire history of surgical operations undertaken for the cure of vesico-vaginal fistula, from the days of Sims and Bozemann in this country and Jobert and Simon of Europe.

The various modifications in technic and detail of these great masters, save the introduction of antiseptic measures, has been that, little by little, without the recognition of the underlying anatomic reason, the successful cure of large vaginal fistulæ has been dependent on the greater freedom of dissection by which, the bladder has been separated from its vaginal attachments.

I can not myself question that the primary cause of failure, the surgical technic having been satisfactory, lies in the anatomic conditions, the importance of which, a study of the physiologic functions of these different organs makes easily apparent. The contraction of the circular fibers of the vaginal muscle tends constantly to pull upon the base of the bladder, and these muscular contractions are necessarily called into special activity following the irritation incident to the repair of a vesico-vaginal fistula. When both the bladder wall and the vaginal muscle are united by sutures, holding them in approximation, the contraction of the vaginal muscle not alone pulls upon the suture, causing it to cut through its own structure, but at the same time acts with equally destructive force upon the enclosed bladder wall. I believe that it is on this account that the great majority of failures to cure vesico-vaginal fistulæ ensue.

Reflection on the diverse physiologic relationship of the parts involved must lead to the conclusion that, at least, this is an hitherto overlooked important factor for surgical consideration, and I now invite the profession to give it due consideration in order to profit, as far as possible, from its better understanding, by the adaptation of improved surgical methods.

Every one who is familiar with anterior colporrhaphy for cystocele knows the comparative ease and safety with which a large portion of the vaginal muscle may be dissected from the dependent posterior bladder wall, and the almost sure complete primary union which ensues upon its fixation and closure.

It is safe, and not very difficult, having split the edges of a refreshed vesico-vaginal fistula, to separate widely the bladder from the vagina. When this has been effected, but not until the dissection is complete, the opening in the bladder wall is refreshed and closed by a double line of continuous sutures, as already described, carefully avoiding penetration of the mucous membrane, using for suture material a fine tendon.

By the use of a needle with the eye near the point, the suture is carried back and forth through the same stitch opening, precisely as the shoemaker sews leather.

The opening in the viscus is then closed by an even, uniform support, coaptating but not unduly compressing the enclosed structures A single knot fixes the suture, a fact of considerable importance when the material used is to be left buried. The free dissection makes the union of the bladder wall a comparatively easy operation, and even when a large portion of the vaginal vault has been lost, there is little difficulty in effecting an easy uniform closure without tension of the bladder wall. As every operator knows, in large fistulæ, when the vaginal structures are enclosed with the bladder wall, this part of the operation is exceedingly difficult, and the tension upon the parts which follows is the usual cause of failure.

Therefore, again I emphasize the necessity of free dissection which, to the timid operator, at the outset seems at least to border on the verge of rashness.

The bladder wall having been closed, we have remaining an operation not unlike that ordinarily undertaken for the cure of cystocele, with the exception that oftentimes the remaining vaginal structures are unduly minimized. How these structures shall be closed, so far as the cure of the fistula is concerned, is comparatively of minor importance. It is wise, however, to restore them as nearly as possible to their primal condition. I think that this is best effected in a general way, a method which for many years I have continuously practiced, by the use of a single tendon suture applied with an Hagedorn needle, using a lacing stitch, the sutures being deeply imbedded from side to side. In this way the vaginal wall is coaptated in two or three layers and the mucous surfaces of the vagina are carefully approximated. This results in an entirely closed wound, the antero-posterior diameter of which has been considerably increased; in the first place, by the inversion of the mucous membrane of the bladder; in the second place, the approximation of the widely denuded structures upon the median line; and in the third place, by the inversion of the approximated vaginal surfaces of the wound.

Fistula in which the cervical portion of the uterus is involved comes easily under the same general plan of operative measures. The organ must be freely separated from its attachments.

Recto-vaginal fistulæ are operated upon by essentially the same method. From below through the perineum the vagina is freely separated from the bowel. The opening in each is closed precisely as the opening in the bladder wall; then the perineum is restored by layers of buried tendon sutures. I have long practiced this method almost without failure, a description of which in careful detail published years ago.

Suprapubic cystotomy in the male furnishes its corroborative testimony of importance in this direction. Here a large wound of the bladder is made with *seeming impunity* for a variety of reasons, the bladder wall independently closed, the superadjacent structures united in layers, the skin rejoined by a buried suture and the wound sealed without drainage. The suprapubic attachment of the bladder is by loose elastic structures which furnish the conditions favorable for easy retention at rest of the rejoined bladder wall. This is the factor usually wanting in vesico-vaginal fistula, and it is on this account that the wide dissection which I have before advocated is advised. I advocated this method of operation in a paper published in 1893.[1]

Dittel,[2] apparently without the recognition of the conditions which I have emphasized, in 1893 attempted a new operation for the closure of vesico-vaginal fistula, based probably on the experiences in suprapubic cystotomy. He opened the abdomen, freed the uterus and the vagina, sutured the fistula and then closed the peritoneal incision through the vesico-uterine space. This operation has its merit, in that it accomplishes the purpose above outlined. If for any other reason a laparotomy is necessary this method of closure of the vesico-vaginal fistula might be adopted, but hardly otherwise.

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Schauta[3] in adherent vesico-vaginal fistula advises a vertical incision, lateral to the left labium majus, dissecting down to the descending ramus of the pubes. Separation of the cicatricial tissue, walls of the vagina and fistula from the bowel by means of a periosteal elevation as far as the obturator foramen.

Ferguson[4] advocates the following method of closure: The fistulous opening being exposed, an incision is made through the mucosa of the vagina at the distance of a full eighth of an inch from the opening of the margin of the fistula. This incision is extended until it completely encircles the opening. The line of the incision is carefully deepened until the lining membrane of the bladder is reached, and great caution is exercised in retaining the integrity of that membrane. In this manner a circumfrontal flap, hinged by the mucosa of the bladder, is obtained. This flap is inverted into the bladder and held in position by a continuous catgut suture. There is no loss of tissue and a very broad raw surface is obtained for apposition.

Walcher advocated cutting away all tissue and, without making it quite apparent as to the purpose, he evidently frees the bladder freely from its vaginal attachments and unites the bladder wound with catgut sutures taken one-fourth of an inch from the edge of the fistula. After these have all been inserted they are tied. The bladder having been thus closed, the vaginal flaps are united by a line of silk sutures.

Howard A. Kelly, M.D. of Baltimore, has made a valuable contribution on this subject,[5] in which he reverses in large measure this very process, by dissecting the bladder, from behind forward, from its uterine attachments quite beneath the reflected peritoneal fold, and in this way is enabled to draw the posterior wall of the bladder downward by a layer of fine interrupted silkworm gut sutures, taken inferiorly through the bladder wall and its vaginal attachment. In the illustrated case, Dr. Kelly thought this measure advisable, because of the relation which the ureteral openings had to the bladder wound. The result seems to have justified the novel measure employed, and yet I am very sure the conditions will be rarely found which render this method of procedure advised. We are deeply indebted to Dr. Kelly for bringing to the attention of American surgeons and emphasizing the importance of the catheterization of the ureters prior to operation upon large vesico-vaginal fistulæ.

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[4] British Medical Journal, Feb. 21, 1896.

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The advantages I claim for my method are apparent. It is based: 1, on the anatomic and physiologic relationship of the approximated organs; 2, on the comparative ease of operation made possible by a free dissection; 3, the far greater probability of cure of large vesico-vaginal fistulæ, where a considerable portion of the vaginal tract has been lost; 4, the great advantage obtained from the lateral approximation of the structures on the median line; 5, by the use of aseptically buried tendon sutures the parts are held at rest in easy apposition and primary union follows, with no subsequent care of the wound and no removal of sutures.

THE NECESSITY OF FIXED CRITERIA IN THE STUDY OF THE THERAPEUTICS OF TUBERCULOSIS.

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There is nothing more trying in the search after truth in therapeutics than the absence of fixed criteria. Much as this is felt in every department of medicine, in the field of tuberculosis it becomes fairly disheartening. The therapeutics of tuberculosis has been so widely extended with really so few points at which it has been advanced, that we need above all things at the present time to study it in general, apart from its application to single cases. In other departments of human knowledge there are works that take up a subject itself apart from its relations. There is a grammar of grammars. There is a chemic philosophy. There are books on pure mathematics. Some one is needed who, abstracting himself from the advocacy of any particular method, will lay down a standard to which all methods can be brought for measurement. It is not intended at the present time to attempt a definite plan, but rather to suggest its necessity so that various men may take it up and finally the desired result may be accomplished. This advance would not be unparalleled even in the history of tuberculosis. In the field of diagnosis we have reached certain ground by our knowledge of the bacillus discovered by Koch.

There is need in the first place of a definite plan of classification of cases. The old division into stages has proved unsatisfactory. The problem is a more complicated one than that. The classification must include more elements, such as heredity, race, temperament, condition of life, mode of infection, exact location and extent of the lesion. Then there might be included various personal equations, such as may be eventually evolved from the physiologic laboratory. By giving its true value to each element an equation might be reached that would express the therapeutic weight of the result should improvement follow in any particular case.

The advance in knowledge due to the discovery of the tubercle bacillus has blinded us to the fact that there are still a great many things that we do not know. It is evident that the process of cure of tuberculosis is different from that of many other infectious diseases, such as diphtheria. In other infectious diseases the bacilli seem to perish, each on account of the product of their own living, while the tubercle bacillus seems to prepare the soil for the future growth of its kind. Again, the large number of people who are much of the time immune to the infection of tuberculosis, and yet who may any moment give a harbor to this germ, makes it evident that there is some peculiar and probably physiologic barrier that has given way at the critical moment. If this condition, which for the want of better knowledge, we call immunity, could be better understood in the case of tuberculosis, as its parallel condition has been worked out in diphtheria and the other diseases for which we can vaccinate, the problem of the prevention and treatment of tuberculosis would be a much simpler one. It would seem that a new principle must be discovered somewhat different from the principle upon which antitoxin is able to work, and it is just possible that some undiscovered chemic germicide will be the agent. Looking over the community at large if we had means of analysis, we would find that there are people suffering from tuberculosis, susceptible people and immune people. When we are called upon to treat a case of beginning consumption we cast about for means of restoring that person to his previous existing state of immunity. This we do by more or less general constitutional measures. It is not altogether a common, and yet a frequent observation, that among the poorly cared for classes there are cases in which there has been a fairly large amount of destruction of lung tissue who recover spontaneously even under the most adverse conditions. If we could investigate these cases with their surroundings it might be possible to discover some uniform condition as a basis for study, just as the immunity from smallpox, of those who cared for cows who had a certain disease, led Jenner to the investigation which enabled him to save as many lives as would be saved by a cure for tuberculosis.

In order to bring in review the different plans of treatment of tuberculosis as carried out in various parts of the world we should have a court before which the claims of each might be reviewed. It can truly be said that there is no great superiority of any particular method. We may look with hope in the direction taken by laboratory and physiologic experiments that have led to results in the case of other diseases. On the other hand, impartial clinical observation of the natural course of untreated cases, or of cases in which it has seemed certain that the drugs used were without effect, often leads to a state of mind which accepts with scepticism the results of any specific plan of treatment.

In New York City the climate is notoriously bad for lung diseases, and yet now and then a case with advanced lesions, while under the writer's observation, has shown great improvement and come to a standstill when practically no medicine was used at all, the improvement being apparently due solely to a more hygienic mode of life, or perhaps the leaving off of the excessive use of alcohol. It is needless to remark suture, a fact of considerable importance when the material used is to be left buried. The free dissection makes the union of the bladder wall a comparatively easy operation, and even when a large portion of the vaginal vault has been lost, there is little difficulty in effecting an easy uniform closure without tension of the bladder wall. As every operator knows, in large fistulæ, when the vaginal structures are enclosed with the bladder wall, this part of the operation is exceedingly difficult, and the tension upon the parts which follows is the usual cause of failure.

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In New York City the climate is notoriously bad for lung diseases, and yet now and then a case with advanced lesions, while under the writer's observation, has shown great improvement and come to a standstill when practically no medicine was used at all, the improvement being apparently due solely to a more hygienic mode of life, or perhaps the leaving off of the excessive use of alcohol. It is needless to remark that other cases have resisted every known mode of treatment, and have gone steadily from bad to worse. The crops of new treatments for consumption are about as regular as the recurrence of the months. Of these treatments one or two attain prominence and notoriety every year. The most salient fact seems to be the absolute unreliability of the testimony of patients themselves, and the impossibility for any observer to judge impartially a plan of treatment that has been the birth of his own brain. In a quiet and unbiased discussion in the Medical Section of the New York Academy of Medicine, the conclusion seemed to be that at the present time we must depend still upon the adaptation of various modes of improving the systemic forces. It would be well if there were some constituted authority in the possession of sufficient clinical material to make impartial comparisons of methods as they are brought to the notice of the profession. It is unscientific, inhuman and altogether disgraceful to the profession of medicine that every year some treatment should be forced upon the world through mere notoriety. We have recently had an instance in New York City of a so-called specific for consumption so successfully thrust upon the public of the United States, that many physicians themselves, throughout the country, have been led to look upon it as something worthy of their adoption. Strangely enough this could take place while the remedy and its author were repudiated by the profession in New York City. It should be, and probably is, a fairly simple matter for those in charge of large consumptive colonies to determine almost immediately the falsity of the claims of any such remedy as a specific. The greater the claims the easier it should be to disprove them. Some one wishing to benefit the race for all time should endow a large colony for consumptives in some salubrious climate where parallel tests could be carried on with a number of patients sufficient to eliminate the large personal element, and to bring into use the mathematic theory of chances. It is a curious fact that where money interests are involved the application of mathematics to determine the death rate under various conditions has been carried to extreme perfection, but when life without money is involved it is still very inexactly applied. The life insurance companies only insure healthy persons, and up to the present time have not attempted to estimate the chances of diseased persons under various conditions. Should it become the custom to insure the lives of consumptives, it would not be long before the same sort of discrimination would be brought to bear to determine the validity of the claims of the many treatments that are in use in various parts of the world.

We wish to make a plea for the establishment or the adaptation of some institution as a court to which each discoverer may present his cure for impartial judgement. Great is the credit of men who devote their fortunes to the cure of the sick of each generation, but much greater honor will be due to those who help, like Jenner and Koch, to discover principles that will influence for good the health of the race throughout all coming generations.

30 West Thirty sixth Street.

Gloves in Surgical Operations.—Wölfler uses the ordinary leather military glove, keeping it in 3 per cent. carbolized glycerin. He advises them for all septic and aseptic operations and the examination of the rectum, vagina and mouth.—*Cbl. f. Chir.*, October 9.

HEATING APPARATUS AND HYGIENE.

BY THOMAS J. JACKSON, A.M., M.D.
CLINICAL INSTRUCTOR IN NERVOUS DISEASES, COLLEGE OF PHYSICIANS AND SURGEONS.
CHICAGO.

In the interest of hygiene and good sanitation it would seem that something ought to be said concerning the increasingly prevalent use of gas and oil heaters. Particularly so, since, as ordinarily used, these heaters are not provided with a flue or any means of escape for the noxious and toxic gases they emit. They are brought into requisition mostly during that cheerless period of spring before winter has fairly left us and before warm weather is a settled certainty. So often in our capricious climate an almost torrid March or April is followed by a frigid May or June. Then it is that most families domiciled in our modern houses with their steam radiators and hot air arrangements, after the "furnace has gone out for the spring," suffer a positive hardship. How comfortable would then be the old wood or coal stove which, although possibly not so elegant, was a more efficient ventilator.

It is during this cold damp weather, in the absence of adequate heating facilities, that we have such a crop of sore throats, coughs, colds and bronchitis. The physician called to the modern house looks in vain for the means to provide his ideal warm moist atmosphere that is such a desideratum in the satisfactory management of the maladies named. He goes into the sick-room where is lying a child sick with acute bronchitis. He advises the anxious mother that some arrangement for heating the apartment must be made. She is likely to say "Oh yes, doctor, we will have our little gas stove set up at once. That is just the thing. That is what we always use to take off the chill on these cold damp days."

These heaters as used are a menace to the health of those who are well, to say nothing of their use to warm the sick-room. Especially will they be harmful in the apartments of those ill of diseases of the respiratory tract. But they are widely employed, not only by the laity but also by physicians. Their necessarily deleterious effects will readily appear to any one who will apply a few of the principles of elementary chemistry.

Let us consider the chemistry involved. Coal gas, after it is rid of its impurities, has for its approximate composition, hydrogen, carbon monoxid, methane and several hydrocarbons having the general formula $C_n H_{2n}$. When these products are burned at the orifices of the stove, it is plain that their oxidation will produce an immense volume of carbon dioxid to be thrown into the air. The quantity of this carbon dioxid will be in direct proportion to the amount of combustion, that is to the size of the fire and the heat desired. On the other hand, this combustion, this oxidation, will require a volume of atmospheric oxygen in direct proportion to the heat produced.

Now, most educated laymen know all these things, and of course all physicians do. It is not that we lack scientific knowledge, but that we do not often enough apply our science to our common every-day needs and to the solution of every-day problems.

The danger accruing from these heaters is not necessarily in their consumption of oxygen and vitiation of the air with carbon dioxid, but in the fact that, as ordinarily used, they are provided with no arrangement for the elimination of noxious gases. With the ordinary stove, there is constantly passing up the chimney a column of heated gas that leaves a partial vacuum behind it. This brings in as constantly from without a volume of atmospheric oxygen to take its place. But in the case of the heater, with no egress of carbon dioxid there is no room provided for ingress of fresh oxygen, hence no ventilation. Applying the two-volume law, it is evident that every double volume of oxygen gas will produce, after combustion of the carbon, two volumes of carbon dioxid. At a considerable rate of combustion, with no provision for exit and supply of oxygen, it will not require a very long time to transform all the oxygen available for breathing into the poisonous carbon dioxid. It may be urged that there is ingress and egress by doors and windows, but it is readily seen that this is only accidental and neither systematic nor adequate ventilation. If doors and windows were the only ventilation for a gas heater they would have to be so wide open that the low temperature of the large quantity of air necessary to provide ventilation proportionate to the carbon dioxid produced, would easily neutralize all the heat produced by the stove.

The gas fireplace usually has an ample flue and is not objectionable; nor is the gas cooking range, when fitted with a capacious hood for the conduction of fumes.

It may be said that if gas stoves are noxious, then gas jets for lighting are noxious also; and this is true. The damage is the same in kind and differs only in degree. But practically ordinary ventilation is sufficient to provide for the comparatively small amount of noxious gas produced.

What has been said of gas heaters applies equally to oil heaters. The only difference is that in this case, instead of the gaseous the liquid hydrocarbons are used, these being volatilized by heat after being carried up the wick by capillarity. Similarly what was said of gas jets as to proportionate damage, applies to oil lamps for lighting. In passing, here is an argument for the electric light.

The principles above stated apply also as against gasolin cooking stoves, but in extenuation it may be said that gasolin stoves are used in summer as a rule, when it is possible and usual, on account of the heat of the season, to have doors and windows wide open, so that ample interchange of air is secured.

The needs of the human body in oxygen are identical with those of the stove, and its product of carbon dioxid is chemically the same. Hence, the latter may rob and poison the former. In a tightly closed apartment with a gas stove without flue burning, the blood might be so surcharged with carbon dioxid and so deprived of oxygen that cyanosis might be produced, and even asphyxiation.

A few simple experiments will demonstrate the vitiation of the atmosphere by these heaters. The flame of a lamp or candle carried into a closed room where such a heater is burning will lose its brilliancy, and the flame will dwindle at a rate in keeping with the loss of oxygen and increase of carbon dioxid. If in such a room lime-water is exposed in shallow dishes, a thick film of calcium carbonate will be rapidly formed on the surface of the liquid.

521 E. Thirty-ninth Street.

WRITE TO US for a copy of Department of Public Health Bill.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
BY CARL H. VON KLEIN, A.M., M.D.

XVI.—DISEASES OF THE BLOOD VESSELS, NERVES AND SKIN. NEOPLASMS.

(*Continued from page 1016.*)

If from the teachings concerning carcinoma we select certain principles which are adopted to show a comparison of that time with today, we must confess that in this matter the surgery of one hundred years ago corresponds to our latest scientific conclusions. Between the two lie the erroneous teachings of the humoral pathologic school and the infinite and tedious labors of the microscopists. *Those fundamental principles, in which we agree with our forefathers are the following: Cancer is in the beginning a purely local affection; it must therefore be entirely and perfectly removed as early as possible. It is curable by surgery, and extirpation constitutes the only prospect of success; medicines are of no avail.*

The bulk of what was at that time written on carcinoma pertained to *breast cancer*, and it was here that those general principles found special application. Heister observed it most frequently in unmarried women between the ages of 40 and 50, as soon as menstruation became irregular. Richter considered it difficult to distinguish between harmless tumors and breast cancer and held this to be the reason that some surgeons had operated on this cancer with frequent success, while others at best rarely succeeded; he himself confessed that he had once mistaken a milk tumor for scirrhus. In respect to operation he distingushed three cases: 1. The painless scirrhus with the most favorable prognosis, absolutely demanded an operation. 2. In case of concealed cancer with unfavorable prognosis the operation is justified as the only help. 3. In case of open carcinoma, which allows almost no hope, no operation should be made. He nevertheless left a means of retreat and stated that case No. 1 was often unsuccessful, while on the other hand, 2 and 3 were occasionally operated on with success, and so the operation was justified in the two latter cases if it was permitted, withal. The result also depended on the more or less aggravated nature of the cancer, according to whether it was inherited or was of quick and spontaneous origin, or whether it had been very painful from the beginning, etc., in which case the prognosis became more unfavorable. In the case of scirrhous axillary glands, Heister attributed but little success to the operation, although he knew of isolated cases of cure by extirpation of the glands. In the operation, as stated, everything depended on completely eradicating the cancer and leaving behind no tainted particle. As contraindications, Richter noted the transition of the carcinoma to the intercostal muscles, ribs and pleura, also pangs in the breast and short breath, which indicated scirrhus in the lungs. Camper asserted that he had found that the change in the axillary glands was not the criterion of a later relapse, but that the safest guide was a piercing pain between the second and third ribs, where the art. mamm. int. passed outward; under these conditions he never operated. C. C. von Siebold would not operate in case [illegible] the tumor grown fast to the pector. maj., and Pouteau would not operate for breast cancer when no external causes existed, because he then considered that an affection of the uterus was the cause. Schmucker considered the reddening of the eyes with inflammation of the Meibomian glands as a safe indication that the cancer was no longer local, an assertion which Michaelis even at that time contested. Richter accomplished the extirpation with two crescent-shaped incisions which ran obliquely from the shoulder toward the under part of the breast-bone (Heister operated with a straight or crucial incision, B. Bell with a simple lateral incision, and Schmucker by the use of an awl-shaped instrument). and in case of a large tumor, even if a part of the gland appeared healthy, Richter always cut away the whole mamma, as did Bell in all cases. The skin was spared as much as possible and the hemorrhage was stopped, not too quickly but thoroughly, by means of ligature. Compression appeared to him not permissible, which by means of a sponge Theden and Schmucker declared to be sufficient. When the patient was not too weak Heister let a few ounces of blood flow in order to prevent inflammation and wound fever, and then for stopping the hemorrhage used a lint bandage with alcohol and puffball. He mentioned the ligature indeed, but did not recommend it, and censured Petit who used nothing to stop hemorrhage, but who immediately sewed up the edges of the incison. The closing of the wound was accomplished either with adhesive plaster (Richter) or by suture (Bell). They laid great stress on a quick healing by prima intentio, as it was considered the safest preventive of relapse. Indeed, Fearon extolled it so very much that he ascribed Monro's unsuccessful operations entirely to the fact that he filled the wounds with dossils and allowed them to suppurate. They extirpated the swollen axillary glands also, as well as the rest of the diseased mamma (J. L. Petit first). If a vessel passed through the axillary gland, a ligature was applied to it before they cut the gland out. J. L. Petit presented the best method for its eradication; he pressed the axillary gland out with two fingers, made an incision and peeled it out with the fingers. Gooch at one time took out nineteen scirrhous axillary glands. Tainted spots which arose in the wound during its healing were either well cauterized with a hot iron (Richter) or extirpated anew (J. Vogel and Sabatier), and to prevent their recurrence milk diet, water cure and artificial sores were recommended. If an operation was not possible, palliative treatment was the only resort, in which Richter had the sore bandaged with tar in order to diminish the pain and smell.

Cancer of the lips was frequently confounded with other sores and was considered less virulent than breast cancer. The external application of arsenic was heralded as the preferred remedy and, in general, corrosives. But the latter promised good results only when the ulcer could be entirely eradicated by one application. Richter and Bell preferred the knife or the scissors. Cancers which involved the whole substance of the lips, the former extirpated with a V-shaped incision, and if they affected only the external surface he severed it close to the skin. The Englishman laid great stress on always arranging the incisions so that it would be possible to close them by suture. Pott discovered a particular kind of a cancer of the scrotum and named it *chimney-sweeps' cancer*, because it was chiefly contracted by chimney-sweeps in consequence of the soot which accumulated in the crevices of the scrotum. It attacked first the under part, soon ate through the skin, rendered the testicles scirrhous and extended itself along the seminal duct into the abdomen. The only remedy consisted in removing the diseased part of the scrotum as quickly as possible, and if the testicles had been attacked even castration was no longer of any avail.

Encysted tumors, which Schmucker believed had become much more frequent since the time when ladies used so many hairpins in their head-dress and plastered the hair with powder and pomade, varied according to their contents; if fluid they were called meliceris, if pulpy atheromas, and if like fat steatomas. They were seldom successfully dispersed; the most frequent remedy was the operation in which the sac was not opened and was removed without leaving behind any of it. Bell attached no value to leaving it unopened and found it easier to open the sac, empty it and then cut it out. If the position of the tumor prevented a perfect extirpation the emptied cyst was left to suppurate. If the contents of the cyst were fluid, injections of irritating liquids or the use of a seton proved successful. They considered *exostes* as small sacs hanging to the sheaths of the tendons and containing matter like the white of an egg. They sought to disperse them into new places by friction or electricity, or to burst them with a blow from a hammer. As previously mentioned, Richter made incision or excision subcutaneously in order to avoid, as far as possible, the admittance of air. On the other hand, Bell did not hesitate in case of large tumors to remove the sac, intact and unopened, from the sheath of the tendon without further precautions. He described also the intumescence of the mucous sac and recommended a dispersion by means of friction, blisters or ruption and the keeping open of the swelling, also the drawing of a string through it. J. L. Petit gave especial attention to *telangectasis*, which had already been suggested to Heister by Dionis, and which J. Bell first accurately described. Both surgeons insisted on complete eradication with the knife. Z. Vogel accomplished many cures by cauterization. In a piece of linen cloth spread with plaster, a hole the size of the mother mark was cut and this was pasted on; then a dough made of equal parts of finely shaved Venetian soap and finely ground unslacked lime was applied to the sore through the hole, and so after twelve hours a scab was formed. The larger spots required repeated cauterizations.

XVII.—DISEASES OF THE HEAD AND FACE.

Skull fractures, trephining; Face wounds, artificial nose; Nasal polypus; Hare-lip; Cleft palate; Diseases of the teeth; Opening of the Antrum of Highmore and frontal cavity; Diseases of the tongue; (Ranula); Tonsils; Parotid gland; Operations on the ear.

To the favorite cases of surgeons belonged the *fractures of the skull*. The chief centers of interest were the indications for trepanning, of which three periods were distinguished in the second half of the eighteenth century. The first period commenced in England with Pott, who always trepanned (1760); the second, in Germany with Schmucker, who restricted trepanning (1774), and the third in France with Desault, who abandoned it altogether (1791).

Pott was impressed by the *times*. Undoubtedly he knew that centuries before, Lanfranchi of Paris († 1300), very seldom alluded to trepanning and considered an application of rose oil, properly bandaged, sufficient; Lanfranchi, however, in spite of his fame, was a very timid operator, so much so that he hesitated to draw molar teeth, and in cases of skull fractures invoked the help of the saints. On all sides Pott heard of the praises of trepanning, especially through the "Memoirs" of the Académie de chirurgie. The great J. L. Petit trephined every fracture, although not on account of the size of the fracture, but in order to relieve the pressure, to extract splinters, to remove the collected fluid, and prevent inflammation and suppuration. Of course, he knew of fractures which had been cured without trephining, but considered them exceptions. Useless, even harmful, he thought it in a case of concussion of the brain; but in extravasations, and the paralysis caused thereby, and in suppuration in the brain, although there might be danger of not locating the pus, he considered trepanning a necessity. He had already noted that in compression, insensibility sets in gradually, a fact to which Verduc and Boerhaave were the first to call attention, but in concussion suddenly. The same opinion was entertained by Quesnay. Although he also saw impressions cured without an operation, the cry still remained: always trephine, even if the bone is not broken, as soon as the injuries sustained by the head are serious. He described the fracture of the inner table, when the outer layer had remained entire, and also trephined in case of caries. Similar principles were taught by the military physician Ravaton. Proceeding from the idea that the symptoms and not the fracture indicated trepanning, the French operated in the event of the least injuries; LaMotte with the smallest fissures; Garengeot in case of counterstroke; Le Dran, mere concussions, when the skull was not injured. Most of the surgeons, especially Louis, were not in favor of trepanning the sutures nor the occipital bone on account of the great sinus. This prejudice Warner tried to dispel. Lassus successfully trephined the sagittal suture, Acrel the lambdoidal suture and the frontal bone, and Gooch the occipital bone. In Germany trephining was also the rage. Heister trephined in case of fractures, fissures, internal blood effusions when the skull remained entire, and in extracting splinters, portions of the skull that had been pressed in he raised by means of elevators. Perhaps warned by an inner voice, he gave the uncertain advice neither to undertake trephining without compulsion, nor to defer it when indicated by the symptoms. Altogether he expressed himself very reluctantly and declared that most of the operations proved fatal. It was very general to resort to repeated cupping in the treatment of the slightest cranial injuries, which method was most extensively employed by J. L. Petit; besides this, purgatives were frequently given, and poultices of warm wine applied so as to prevent the cold air from causing inflammation of the brain.

Then Pott came forward. Above all else, he designated all the dangers to which the dura mater is subjected in cranial lesions. The majority of these originate through the disturbance or the cessation of the communication that takes place between the pericranium and the dura mater by means of the many blood vessels. If a blow ruptured these vessels which connected the dura with the skull an effusion of blood was the consequence; but if they were only crushed, inflammation or suppuration would result, or the membranous covering and the dura mater be loosened from the bony case. Pott considered the loosening of the pericranium as a sign of the simultaneous separation of the dura mater. While signs of a depression were indicated by the escape of the blood soon after an injury, symptoms of inflammation and suppuration of the dura were noticeable a few days later. The differential diagnosis between concussion of the brain and extravasation Pott thought very difficult and the theory of distinction advanced by J. L. Petit and Le Dran regarding the setting in of unconsciousness, sooner or later, too uncertain. At all events a surgeon ought to prevent inflammation and suppuration; or if this was no longer possible, procure a free passage to drain the pus. The former was accomplished by strong bleeding, the latter by trephining. Pott trephined even the simplest fractures of the skull at once; only special circumstances influenced him to defer an operation; not, however, on account of the fracture, which necessitated no operative interference and could not be cured thereby, but on account of the blood effusion and its evil effects. The inflammation of the dura mater appeared to him the most serious one. It covered the ulcer and hindered the spontaneous bursting of the same; so this circumstance alone justifies an early trephining of every simple fracture of the skull. Besides, out of every ten fractures seven are accompanied by urgent symptoms, so that in most cases immediate operative interference is called for. Although Pott had to admit having unnecessarily trephined when unsuccessful, he contended that the few cases did not overthrow the rule: "Better trephine two patients unnecessarily than let eight die for want of it." Nor did he deem it so dangerous, although the uncovering of the dura mater was not an indifferent matter to him; yet the danger arising therefrom did not compare with that caused by neglecting to trephine. If the escaped blood gathered under the dura mater, he opened the same by a cross incision. When no blood was found underneath the fracture, trephining was again resorted to; the sutures and upper portion of temporal bone only when necessary, but then it must be boldly opened. Depressions demanded the same treatment as the fractures. If the injury is accompanied by depressions, an operation is performed to raise or remove the depressed fragments, and on the uncovered dura mater is lightly placed some soft dry charpie held in position by a nightcap or pocket handkerchief instead of the usual uncomfortable head bandages. The audacity with which Pott trephined day after day is astonishing and if he did not detect the pus, the drainage of which he considered the only remedial agent for the sustenance of life, he followed up the first operation with a second and third. That his trephining operations met with more success than attended those in the hospitals now-a-days was probably due to the less frequent occurrence of pyemia at that time, and if the question is put why Pott succeeded so much better than Desault, we must consider that he employed immediate trephining with every fracture before inflammation set in.

Naturally, the example of trephining set by so prominent a surgeon was followed everywhere. How could an unknown English navy surgeon, John Atkins, gain the upper hand with his little article against trephining in 1742? He received no recognition whatsoever. Also in Germany trephining continued to flourish. In 1763, Simon Pallas feared no suture, no sinus, no fontanelle; with depressions he tried his luck by using strong adhesive plasters and cupping glasses, trephined also in case of caries of the inner table and in case of headaches which had not yielded to other remedies. Similar extensive views were entertained by Bilguer (1763–71). Among other things he said: "Mr. Martini tried to restrict trephining, as I tried to do likewise with amputating; and what physician and surgeon as well as every other human being does not exclaim with me: Would to God that we might be spared, if not entirely, at least for the greater part, trephining and amputating and all other surgical operations! However, since greatly improved in knowledge by my varied experiences, I believe that my reasons are well grounded for declaring trephining to be very often necessary and useful, on the other hand, amputating is very often unnecessary and useless. Therefore I have not been able to speak of them in any other way than I have done." Bilguer trephined fractures as well as depressions, the frontal bone as well as the occipital, and cut through the hard membranous covering of the brain, when he suspected extravasations underneath it. Having cured two cases without trephining, he believed that with the same the wounds would not have been more dangerous. He trephined often and betimes, but acknowledged that the operation was not always necessary when the fracture was large and the fragments of bone very loose. It is worthy of note, that not even the simplest injuries were treated lightly by him. He laid great stress upon pure air, therefore ordered all patients suffering from injuries of the head to be protected from the evils of hospital fevers and foul air, by separating them from the other wounded and sick, as was done in most of the military hospitals. Theden considered the trepan an indispensable instrument; without it, death was certain. What was accomplished in trephining by the two military physicians during the Seven Years' War can easily be imagined if we repeat Dr. Baldinger's remark: "Every cranial injury, be it a deep wound, a contusion, cut, blow or a wound caused by a grazing bullet, absolutely necessitates an operative interference." He upholds Bilguer and Theden in their reputation of having generally introduced this less cruel, but ever harmless and so often life-saving, operation. The end of Pott's period of universal trephining came with J. Hill, whose ideas, to a certain extent, clashed with those of his countryman. Slight depressions he did not raise, because he considered forcible elevation very dangerous. Bromfield opposed the prevailing idea that concussion of the brain required great draining and recommended opium in the form of Dover's powders instead of it.

The second period is represented by Schmucker, to whose immortal merit be it said that he introduced cold compresses for injuries of the head and restricted trephining. What an interest our countrymen took in this class of injuries by erecting a special field hospital for those who received injuries to the head during the siege of Schweidnitz in 1762, has been mentioned heretofore. In the beginning of the Seven Years' War, he trephined as often as any one else, and even on one occasion for headache which had set in after a simple cranial wound, the bone having remained unscathed. But he knew that the indications for trephining were still very uncertain, and were mostly made in the study room where one writer copied from the other. His first twelve cranial injuries were comparatively mild cases; either a simple lesion of the soft parts caused by a shot, or a slight exposure of the bones; there were no depressions or fractures. The concussions were not violent, the patients would have been able to go about in a few days and attend to business. Schmucker trephined them and saw all of them die. "This moved my whole soul, and every physician who has humane feelings would have been affected as I was under the circumstances, when in spite of all pains and care he could not save the patient, but must be a mere spectator to the rage of the disease. . . . I discovered a new remedy. . . . This discovery and its successful results following, gave me great joy and pleasure." His physiologic observations which led to his applying cold water and the manner in which he used it have been mentioned in the 14th chapter. When a patient with an injured head came to the field hospital, the wound was enlarged and dressed; then he was bled to the extent of sixteen ounces, which operation was repeated several times if necessary. The head was now enveloped in a thick flannel steeped in his "fomentation" and lightly wrung out; this process was renewed every hour. Internally, saltpeter, neutral salts and purgatives were given, also enemas. With these remedial agents, Schmucker saw exposure of the bone, impressions, depressions, and even fractures heal. Yet in connection with the last kind of injury, he employed trephining whenever necessary, occasionally from two to five times and in a case of caries as often as eleven times in four weeks. But in this instance, the patient was very little discommoded and could seldom be induced to lie down immediately after an operation, but instead went to market an hour afterward to make his purchases; he died a week after the eleventh operation. A patient had suffered with an intense headache in the same spot for about a year; so Schmucker and Meckel suspected a caries of the inner table or an ulcer in the brain. They trephined him, but found the bone entire. "We looked at each other in blank astonishment." Without having a knowledge of Schmucker's cold compresses, a second blow was dealt Potts's teachings by William Dease of London in his "Observations on the Wounds of the Head," 1776. First of all he proved that the inflammation and suppuration of the dura mater was not the most frequent cause of the serious cases. This suppuration was not so much to be feared and could be removed by trephining; he also did not believe that on account of the blood vessels connecting the dura mater and pericranium, the injury caused a suppuration of the former. He laid the cause of death to the inflammation and suppuration of the pia mater and the brain itself. But as the external symptoms are not manifested until pus has formed, bleeding, Dover's powders and trephining are of no consequence. Since by means of the last agent the pus could not be drained off, because it was not in clots, but mostly spread over a large portion of the brain, hence in most cases an operation was of no use. Methods of treating cranial injuries were thus improved by Schmucker and Dease, who had discovered a new method of determining the seat and cause of fatal cases. In 1778 Metzger of Königsberg opposed Pott and did not believe in trephining every fracture of the skull. Very decidedly did Richter confront his teacher, defended the teachings of Dease and adopted Schmucker's methods. From his ever-regulating hand the German surgeons received a new teaching with great restriction of trephining. Not a simple fracture of the skull, not a concussion of the brain, not the inflammation of the two membranes, not the suppuration of the pia mater require trephining; but the suppuration of the dura. Richter advised every surgeon to use cold poultices from the very beginning in minor cases of cranial injuries, in order to avoid inflammation. Extravasations usually had to be trephined; however, if there be no imminent danger, dispersion, which had already been carefully observed, should be tried. At that time this method was a great improvement, for it was this very circumstance of not knowing how to get rid of the wound secretions, there being no drainage, that made trephining indispensable. Richter absolutely rejected Pott's idea to immediately trephine all fractures and compressions and at all events waited until there were signs of suppuration and extravasation. By means of the operation inflammation could not be prevented; on the contrary it was promoted and accelerated by the irritation which it caused. If, however, the seat of the extravasation was suspected, which was often a very difficult matter, trephining should not be deferred long; however, it should not be done at random. Although it was of consequence only in the suppuration of the dura mater, yet operative interference was necessary because it was not known in which one of the membranes the pus existed. Bleeding, cold applications, purgatives and emetics Richter considered the principal remedial agents in cases of fatal inflammation of all cranial injuries with or without fractures. Only in concussions was bleeding a bad thing; emetics, though, were excellent. Not until all remedies failed was trephining resorted to in concussions of the brain (Hill). Depressions of the skull with bad symptoms required trephining, otherwise not. For slight impressions were not fatal; the brain soon became accustomed to these and the patient could live the rest of his life with them; besides, the bones often of themselves rose again. Desault maintained a similar opinion. Further signs for an operation were fractures of bones that stuck fast, but were foreign bodies as soon as there were any symptoms. Whenever possible, Richter avoided the sutures, the temporal, frontal and occipital bones, yet positive contraindications were not given by these bones. He also criticised the exposure of the entire fracture by means of the cut through the integument, which need be no larger than necessary to place the top of the trepan. His fundamental principles coincided with B. Bell's and partially with Louvrier's and Mursinna's, although the latter two restricted trephining still more (1800).

(To be continued.)

SOCIETY PROCEEDINGS.

Southern Surgical and Gynecological Association.

Proceedings of the Tenth Annual Meeting, held in St. Louis, Mo., Nov. 9, 10 and 11, 1897.

FIRST DAY—MORNING SESSION.

The Association met at the Southern Hotel, and was called to order by the President, Dr. GEORGE BEN JOHNSTON of Richmond, Va., at 10 A.M.

Prayer was offered by the Rev. S. J. NICHOLS, D.D. of St. Louis, after which an address of welcome was delivered by Hon. CHARLES NAGEL.

President JOHNSTON responded to the address of welcome on behalf of the Association.

After announcements by the Chairman of the Local Committee of Arrangements, Dr. H. H. MUDD, the reading of papers was begun.

Dr. C. A. L. REED of Cincinnati read a paper entitled

GALLSTONES IN THEIR RELATION TO CANCER OF THE GALL TRACT.

The paper was based on a report of four cases in which distinct gallstone history had preceded the history of malignant disease. The diagnosis had been confirmed in all of them by exploratory incision and in two of them by autopsy.

Case 1.—Woman, aged 52 years; had hepatic colic during five years preceding, associated with all of the usual gallstone symptoms. During the preceding thirteen months pain in the right hypochondriac region had been constant. Within the preceding six weeks persistent jaundice had developed. Globular tumefaction was felt below the costal margin. Exploratory incision revealed primary carcinoma of the gall bladder and of the gall tract with secondary development in the liver. Diagnosis was confirmed by autopsy.

Case 2.—Male, aged 60 years; had gallstones for twenty years; confirmed by their frequent passage *per vias naturales*. Patient had undergone rapid emaciation and during the preceding month pain had become constant. More latterly he became pronouncedly jaundiced. No physical symptoms could be detected. Exploratory incision revealed carcinoma of the gall bladder and gall ducts with secondary nodules in the liver. A calculus was found in the common duct and disintegrated by needle puncture. Primary recovery with amelioration of all symptoms, followed by death four months later. No autopsy.

Case 3.—Woman, aged 45 years; had had hepatic colic for several years. During the preceding six months she had been profoundly jaundiced; lost flesh rapidly. Examination of the blood revealed marked cholemia. There were no physical symptoms in the right hypogastrium. Exploratory incision revealed induration about the head of the gall bladder and common duct, to both of which the duodenum was firmly attached for a distance of several inches. Calculus could be felt within the common duct just within its orifice. This could not be dislodged by prudent pressure or disintegrated by needle. It was delivered by incision through the duodenum. The patient never rallied, but died within thirty-six hours after the operation. No autopsy.

Case 4.—Male, aged 52 years, constant drinker; had had severe hepatic pain during preceding fifteen years; last attack was persistent and continued for over six weeks. In addition to the usual symptoms he had a vacillating temperature and sweats. Operation revealed empyema of the gall bladder with induration at its ductile end. The gall bladder was stitched to the abdominal incision and drained; death one week later. Autopsy revealed carcinoma of the ducts at their juncture. Numerous small calculi were found in the hepatic duct well up in its main trunk and in a number of its twigs. Multiple abscesses were found in the liver substance.

These cases have a suggestive significance and point to an etiologic relationship. This is explained by the result of persistent irritation of the foreign bodies upon the mucous surfaces, inducing hypertrophy, cell proliferation, and in the event of the existence of original tendencies to cancer of antenatal origin, they induce rapid development of the malignant neoplasm.

Dr. EDWIN RICKETTS of Cincinnati said the important question of the relation of gallstones to cancer of the bile ducts was now receiving the attention due it. In many of these cases cancer had been found near the duodenal end, and the malignancy which results from the presence of gallstones is of such a nature that in many instances the surgeon could not get at the bottom of the pathologic condition except by an exploratory incision. He reported two interesting cases. He said Courvoisier had found malignancy in seventy of eighty-four cases of gallstones, while Bradrowski had found forty cases of cancer straight.

Dr. JOSEPH EASTMAN of Indianapolis spoke of a case that had come under his observation within the last two weeks, which confirmed the remarks of the essayist. He operated on a patient who had symptoms of gallstones and the patient's friends insisted that he had passed several of them. The gall bladder was thickened and indurated. So far as he could determine, there were no gallstones, but advancing malignant disease, which will ultimately destroy the life of the patient. The gall ducts were obstructed. He did not remove a section for microscopic examination. He believes that cancer here, as in the uterine cervix, is often the outgrowth of prolonged localized irritation.

Dr. JAMES T. JELKS of Hot Springs, was fully satisfied that cancerous troubles can occur from chronic irritation as has been said. Thus far, no specific organism had been shown that produces cancer. While his experience was not large in this direction, he had seen cancer of the uterus unmistakably produced by gallstone infection; hence the deductions of the paper in urging operative interference in all these cases in order to prevent carcinoma of the liver were prudent. The statistics were a revelation to him, as he did not know that 90 per cent. of the cases of carcinoma of the liver were preceded by a history of gallstones.

Dr. Rufus B. Hall of Cincinnati, expressed himself as being firmly convinced that the deductions from the paper would be sustained by future work along this line. Nine cases tabulated by him confirmed the deductions of the essayist. He cited one case. Eight years ago Drs. Reed and Ricketts saw him do a gall bladder operation on a patient who had given a distinct history of gallstone colic for fourteen years. There was occasional icterus, and then a period of comparative freedom from it for a half a year, and then there would be another attack of gallstone colic. The last attack came on four or five months preceding the operation, when the patient became icteric, and so remained until surgical interference was resorted to. She had a distended gall bladder and enlarged liver. There was some doubt as to whether or not there was a complication other than an impacted gallstone in the common duct. Operation revealed a distended gall bladder with four or five stones in it and cancer of the gall ducts. Undoubtedly the cancer in this case was of recent development, dating perhaps from the patient's last illness. Dr. Hall thought that if she had been operated on preceding the last eight months of her illness cancer might not have developed.

Dr. A. M. Cartledge of Louisville, said that while he did not question the practical nature of the deductions drawn from the paper, yet it was much easier to establish a causative relation between cancer and gallstones than it is between gallstones and cancer. When the frequency of gallstones is considered, and that they occur in perhaps one case in three of every individual, and that carcinomatous processes in the gall ducts are among the most frequent of all causes of gallstones, it was not at all unlikely that in reasoning on this subject the cart was sometimes placed before the horse. When we have a positive well established history of gallstones for several years and an individual develops malignant disease of the gall bladder, the inference was strong that there might have been a relation between the previously existing calculus trouble and the subsequent malignant disease. In many cases presenting a history of the passage of gallstones, the patient may have had beginning carcinoma of the ducts for two or three years previously. He endorses the views of the essayist as regards operative interference in cases of gallstones.

Dr. L. McLane Tiffany of Baltimore, agreed with Dr. Cartledge that the causative relation between gallstones and carcinoma was not well established at the present time; but that carcinoma was accompanied by gallstones and found frequently to exist was well known. These cases should be operated upon sooner than is usually done.

Dr. Thaddeus A. Reamy of Cincinnati, took a more conservative ground than the preceding speakers, and said that the Association ought not to go on record to the effect that because gallstones are associated with cancer the abdomen of every man or woman must be cut open lest he or she, as the case may be, may have cancer. Taking the rural and city population, he ventured the opinion that in not more than 15 or 20 per cent. of cases of gallstone was cancer associated with this condition. The subject would have to be studied more carefully and thoroughly before the proof is convincing to him.

Dr. Reed, in closing, re-emphasized the significance of the persistent coincidence of cancer in long-standing gallstone cases. His own brief experience embraced cases in which there had been long-standing antecedent gallstone history.

DISPOSAL OF THE STUMP IN APPENDICITIS OPERATIONS

was the title of a paper by W. D. Haggard, Jr., M.D., of Nashville, Tenn. The author considered this disease pre-eminently a surgical affection. Early surgical opinion in making a diagnosis was essential. Surgical isolation of the infected appendix was as sound and imperative a practice as the hygienic isolation of any of the infectious diseases. The author advocated early operation, and mentioned Mayo, Robson, Willy Meyer and McBurney, as advocating prompt operative interference. The more imperative and explicit operative indications were specified.

The pioneer method of ligating the appendix like an artery or the stump of an ovarian tumor or appendage pedicle, was shown to develop therefrom by reason of infection of the stump, etc. Subsequent perforation after simple ligation occurred sufficiently often to cause the abandonment of this method. The various methods of disposing of the stump by invagination were discussed, and the modifications and technic employed by Van Hook, Dawbarn, McBurney, Murphy and Morris were described. The ideal of all surgery was completeness applied to the surgery of the appendix, which was that of total extirpation of the organ. The author stated that it had remained for Deaver to practice this method in suitable cases, which is as follows: After freeing the appendix from adhesions and meso-appendix, the cecum is stripped of its contents and grasped between the fingers and thumb of the left hand, the appendix being held by forceps and cut off flush with the colon, and after being amputated at the site of its former junction is united by continuous Lembert sutures, while the cecum is still held securely with the left hand just as in a gunshot or stab wound of the intestine. Sutures may be disposed in two layers, first uniting the edges of the wound, and second approximating the peritoneal covering to the cecum over it. This method was not applicable to cases where the cecum is bound down by adhesions preventing its delivery in the incision. It is necessary to prevent the escape of colon contents by accurate suturing of the cut end.

Total excision of the appendix with closure of the hole in the head of the colon was said to do away with the following dangers: 1, subsequent perforation of the stump under the ligature from infection in its own cavity; 2, abscess of the wall of the cecum from invagination of the infected stump; 3, continuance of infected process from stricture in the stump between distal ligature and the proximal opening of appendix into the cecum; 4, imperfect invagination with incomplete drainage of the stump on account of the cecal wall being thickened and stiffened with inflammatory exudate.

The author reported five cases in which he has recently employed this method with entire satisfaction.

Dr. George H. Noble of Atlanta followed with a paper entitled

REPORT OF FOUR CASES OF ABSCESS OF THE UTERUS.

The first case was of puerperal origin, the operation being done at the end of the second week. There was a pus tube and abscess of the left ovary. The appendages on the right side were normal. After separating extensive adhesions for unilateral disease, an abscess of the fundus uteri about the size of an ordinary lemon was discovered, which was excised, curetted and cauterized with carbolic acid. The cavity extended from the median line to the stump of the appendages on the left, which was turned into it and fastened with sutures to prevent the formation of dead space. A glass drain was dropped into Douglas' pouch, after flushing the abdominal cavity. This woman made an uneventful recovery, and has been well for two years without any pelvic disturbance. Three similar cases were reported in detail by the author.

The four cases show what any surgeon will sometimes do for a septic uterus when given a chance. They also support the view that it is not always necessary to extirpate the womb in suppurative inflammation of its parenchyma, and such operations should be more closely confined to cases in which the uterus is thoroughly septic or riddled with abscesses. The latter are rare, fortunately, for they do not stand operations well. The cases also show that infection of a puerperal uterus does not necessarily mean that the entire organ is hopelessly contaminated, but that intense foci may be circumscribed by nature and removed without sacrificing the organ.

Dr. A. M. Cartledge endorsed the method pursued by the essayist. He thought the recovery of four women with systemic infection by such a procedure showed the wonderful power of the peritoneum, if drained from below, to take care of a violent form of sepsis. The results following this method were better than those of hysterectomy for infected uterus complicating childbirth or abortion.

Dr. J. Wesley Bovee was pleased with the advanced position taken by the author of the paper. Gynecologists had to fear, however, the future usefulness of the uterus. It was not so much the destruction of tissue and the formation of abscesses, but the resulting cicatricial tissue and connective tissue formed might interfere with the function of the uterus in subsequent labor. It might tend to the production of rupture of the uterus. At the same time, these points were not of sufficient importance to justify operators in not following out a conservative procedure such as had been described.

Dr. James T. Crofford of Memphis, said in cases of abscess of the uterine wall originating from the mucous membrane, if the cervix was kept dilated, the uterus freed of everything with a curette, and he does not hesitate to use a sharp curette in these cases, and thoroughly cleansed and packed with gauze, these abscesses would open into the endometrium, followed by relief in the majority of cases.

Dr. Richard Douglas called attention to the kind of germ that produces infection. In well known streptococcus infection it was not the tendency of inflammation following this form of infection to circumscribe itself. It was diffuse infection. In treating cases of infection following abortion or full term labor he had used the Carossa method with decided benefit.

Dr. W. E. B. Davis of Birmingham, said that uterine abscesses following abortion or the puerperal state could be treated successfully by incision and drainage in a good proportion of cases, even though the abscesses may have extended beyond the uterus. Illustrative cases in which this treatment was resorted to were cited.

Dr. J. G. Earnest favored an exploratory incision to ascertain whether or not the patient was a fit subject for the method of treatment pursued by Dr. Noble. In the event the case was not suitable for the application of this method, very little damage was done by such an incision.

Dr. R. M. Cunningham said it was extremely difficult in general surgery to get primary union by curetting and disinfecting an abscess. By curettement and cauterization it was hard to destroy the staphylococcus, and much more so the streptococcus, which perhaps extends beyond the abscess wall and continues its infective influence.

Dr. Noble, in closing, emphasized the point that the uterus was the seat of infection and not the appendages. Only in cases where there are one or two, or possibly three abscesses, is this method of treatment applicable.

A STUDY OF RETROPERITONEAL NEOPLASMS AND SUPPURATIONS WITH SPECIAL REFERENCE TO DIAGNOSIS.

By Dr. Richard Douglas of Nashville, Tenn.

The author accepted the definition of Mr. Lockwood for retroperitoneal neoplasm, namely, a solid or cystic tumor growing behind the peritoneum into the folds and not connected with any of the great retroperitoneal organs.

Pathology.—The type of tumor usually encountered in the retroperitoneal space belongs to the connective tissue group. A careful study of the cases shows that they are of a mixed variety, the predominating type being sarcoma and lipoma, but occasionally fibroma and myxoma are met with. An analysis of the twenty cases of solid retroperitoneal tumors collected by Rogowski showed sarcomatous tissue in every one. The peculiarity of retroperitoneal sarcoma is that it is encapsulated.

These tumors occur after maturity, from twenty-eight to fifty-nine years. Mudd's patient, the oldest on record, was 71 *years of age. In one case reported by Austein, the patient*, a female, was 4 years of age, an age in which sarcoma is very rarely observed.

The duration or life history of retroperitonal tumors is usually about six months, though some cases have lasted for years.

Causation.—There is no recognized cause for these growths, yet in some cases a malignant growth appears as secondary to some local injury or suppuration. The two special symptoms that occur in the history of postperitoneal growths are intestinal obstruction and edema of the extremities.

Retroperitoneal cysts.—A genetic classification of retroperitoneal cysts is more difficult, in view of our very meager knowledge of the subject, than that of solid neoplasm.

The author then considered at length cysts of the pancreas.

A clinical feature of intraperitoneal growths is that the area of resonance varies with the position of the patient; consequently it is not surprising that many a dry tap has been made through a failure of recognized clinical peculiarities.

While not an advocate of the use of the aspirator in intra-abdominal diagnosis, yet under proper conditions the author thinks this instrument will reveal valuable evidence, not only as to whether the growth is solid or cystic, but as to its nature. In retroperitoneal sarcoma aspiration reveals only a little blood or blood serum in the needle. This sign enabled Weir and Bull to correctly diagnosticate a case reported by Devlin.

Dr. J. Wesley Bovee of Washington, D. C., contributed a paper on

TUBAL AND OVARIAN HEMORRHAGE RESEMBLING RUPTURED ECTOPIC PREGNANCY.

The author said that a few years back pelvic hematocele was a condition that every practitioner met occasionally, and many were the supposed causes of it. When the subject of ruptured tubal pregnancy was so universally taken up, some of the most aggressive investigators told us to search in every case of pelvic hematocele and we would find a ruptured ectopic pregnancy. This dictum, though not endorsed by all observers, found a ready following, and to this time the majority of students of diseases of the female pelvic organs have accepted it. Many cases have been reported in which a presumptive diagnosis of ruptured tubal pregnancy has been made, cases in which such symptoms as shock, sharp pain, irregularity of menstruation, even to amenorrhea, the presence of a small tumor in the pelvis, and even death were present, and yet the autopsy has revealed no pregnancy, but instead a hemorrhage from a Fallopian tube or an ovary, or both. The speaker offered conclusive evidence against the positive statements that have gone out that we will always find this condition in these hemorrhages. There were many instances in which women were deeply wronged by these diagnoses. Oftentimes the hemorrhages have occurred in virgins at a very young age and in widows above reproach. These hemorrhages result from ectopic pregnancy, from malignant disease of the uterus, appendages or rectum; from varicosed veins in the broad ligaments; from disease of the appendix; from inflammatory disease of the tubes and ovaries and many other causes.

The author's remarks were restricted to disease of the appendages, and he cited a case in detail to exemplify them.

An examination of the specimen removed by operation showed it to be a hemorrhagic cyst of the ovary that had opened into the peritoneal cavity, and was connected with the cavity of the Fallopian tube by a sort of canal or sinus formed by adhesions over the shallow groove of the ovarian fimbria of the Fallopian tube. The remainder of the fimbriated extremity was closed by adhesions. The tube was distended by a large blood clot, quite dense and dark, and which upon section and careful separation showed nothing but blood. The wall of the cavity left after removal of the clot from the tube was perfectly smooth and even. As a result of careful examination, including the use of the microscope, the case was pronounced one of hemorrhage without the presence of pregnancy.

Dr. Richard Douglas had twice removed hematosalpinx *(unilateral) in which there was no possibility of extra-uterine* pregnancy. He also reported an interesting case of blood cyst of the ovary in which there was no disease of the tube and no special cause giving rise to it. Usually the cause of blood cyst of the ovary was torsion of the pedicle. This was not the cause in the patient he had operated upon.

Dr. James T. Crofford reported a series of anomalous cases of extra-uterine pregnancy before the Tennessee State Medical Society this year. One of the cases was complicated by an ovarian cyst as large as a good-sized fist. He had come to the conclusion that these cases were all due to ectopic gestation. Personally, he was obliged to the essayist for disabusing his mind of this. He had examined the specimen of Dr. Bovee with a great deal of interest and believed there was no pregnancy connected with it.

(To be continued.)

American Public Health Association.

Twenty fifth Annual Session Held in Philadelphia, Oct. 26-29, 1897, at the Hotel Walton.

(Continued from page 1019.)

Tuesday—Evening Session.

A formal opening of the session was held, to which the public were invited. Prayer was offered by Rev. Wm. N. McVickar, D.D., Rector of the Church of the Holy Trinity, Philadelphia. Dr. Benjamin Lee, the Chairman of the Committee of Arrangements, in the absence of the Governor of Pennsylvania, welcomed the Association, and was followed by The Hon. Charles F. Warwick, Mayor of the city.

THE ANNUAL ADDRESS

was then delivered by Dr. H. B. Horlbeck, Health Officer of the city of Charleston, S.C.

He expressed his appreciation of the honor conferred by his election to the position of President. The Association had happily chosen this city as its place of meeting, a city which for a century has held the proud distinction of being the foremost and best in professional attainment; a city which has always been in the front rank of the noblest aspirations in a calling where the first requirement is an abnegation of personal and selfish consideration, which exacts devotion to the wants of mankind when they become sufferers. Along the century's diapason the great names of Rush, Wood, Chapman, Gross, Leidy, Jackson, Mitchell and Mutter come down to us in consonant accord with the best and truest ideals of humanity. From these and other great worthies of this city, the wisdom of the ages has been given to thousands of our colleagues who have glorified our teachers by constant self sacrifice and laborious loyalty to their alma mater. To Philadelphia we are under obligations for the establishment, during the first half of this century, of the best schools of medicine in our country. The lights in the sacred fame of medical lore have been kept constantly bright, and today Philadelphia is second to none in her great schools for the propagation of medical knowledge. From the earliest dawn of history we learn that the nomads, and later the denizens of cities, exercised care in removing from their surroundings the dangerous accumulations resulting from congregated habitations. From the use of the simplest methods which gradually increased in scope as modes of living became more complete in character, the highest scientific knowledge is now demanded to meet the requirements of the great cities and peoples of the earth. The theories based on the humors of the blood have given way to a knowledge of the denizens of the blood, which are being recognized as surely as the flora and fauna of our fields. The microscope gives us the key-notes of our temporal welfare. Pasteur says: "wherever and whenever there is decomposition of organic matter, whether it be in the case of an herb or an oak, or worm or whale, the work is done exclusively by infinitely small organisms. They are the important, almost the only agents of universal hygiene; they clear away more quickly than the dogs of the streets of Constantinople or the wild beasts of the desert, the remains of all that has had life; they protect the living from the dead."

He next gave in some detail a history of the Association since its organization in 1872, and now, after twenty-five years, nearly two thousand names are enrolled in its membership. During its existence some of the most important discoveries in the domain of medicine and surgery have been made, and the science of bacteriology has had its birth and development. Nearly every one of the score or more of bacteria that are pathogenic, and that seriously menace human life, have been found and described during the existence of this Association. Since the last meeting at Buffalo the method of diagnosing typhoid fever, as discovered and described by Widal of Paris, has been elucidated by Dr. Wyatt Johnston of Montreal. He has shown that when a drop of blood from a typhoid fever patient is brought in contact with a typhoid fever bouillon culture of the bacillus typhi abdominalis there is an agglutination of these bacilli and a cessation of their mobile characterization. This method is now being utilized in a number of cities, and arrangements have been made whereby physicians can send a drop of blood, moist or dry, in a suspected case of typhoid fever, to a bacteriologist, who will in a few hours determine the disease. During the life of the Association the processes of taking care of contagious diseases have entirely changed. It is now the essential feature of the practice in all communities to confine all such cases to the individual affected. The water supply of all communities is one of the most important matters, and sanitarians will be surely called on to care for it. Whether the source of supply be shallow or deep wells, cistern, river or lake water, each involves special problems in arranging to free them from polluting causes. Parkes estimates 12 gallons daily as about the quantity required by a man for cooking, potation, ablution and house-washing purposes. London finds 35 gallons per head none too much, and some cities in our own country, notably Philadelphia, are furnished with over 200 gallons per head per day. An abundant, increasing supply of water carries in its train incalculable possibilities, not only for cleanliness, but for the development of the industries which will employ tens of thousands of people who may thus obtain means of occupation for existence, and with good maintenance increase their powers of resistence to disease. It would seem needless to call to the notice of the members the great issues involved in a pure water supply. free from disease-producing germs. Diseases which are appalling in their death rate are transmitted principally by water. The most common mode of conveyance of cholera and typhoid fever is by water, and many other diseases are believed to be so transmitted. Greater purity is demanded every year. When the supply is taken from lakes every source of pollution is removed; when taken from a river the problem is more intricate and vexatious, as it involves the prohibition of cities situated further up from using the river as a dumping place for sewage. Where rivers must be so relied upon, filtration, mechanical or artificial, must be resorted to, and a daily microscopic and chemic examination of the water be made to ensure that the water is free from dangerous bacteria or poisonous compounds.

He next referred to the great change that has been made in the United States during the last twenty five years in quarantine methods, especially in shortening the time of detention, and the methods of disinfection. Detention has been shortened from twenty-five to fifteen and ten days, and in Southern ports for yellow fever to five days. This has been largely due to the energy and sagacity of a member of this Association, Dr. Joseph Holt, the distinguished ex president of the Louisiana State Board of Health, in his efforts to protect the port of New Orleans from yellow fever. Many methods have been in use for disinfecting vessels at the New Orleans Quarantine Station for the last twenty-five years, among which are the filling the holds of the vessels with sulphurous acid gas; raising the temperature to 350 degrees F. and placing textile fabrics in a solution of mercuric chlorid. In 1886 a heating chamber was devised to be used in conjunction with mercuric chlorid and sulphur fumes, the latter being driven into the holds of vessels by a revolving fan. Many improvements have since been made, and a plant is now in use by which the temperature is raised to 230 degrees and the personal effects of the passengers are disinfected with quickness, certainty, and with little injury. It is estimated that over 95 per cent. of all the yellow fever that has reached this country has come from Havana. A committee of this Association has been appointed to bring this vital question before the governments of this country and urge the governments of the countries interested to prompt action in this matter. This would seem to be the occasion when not only the recommendations of our committee on yellow fever should be carried out, but that this body should make a demand on our general government that a commission of expert bacteriologists should be sent to Havana and Rio, and be kept there until the materies morbi have been discovered, until the secrets of this marvelous disease have been unfolded. The examples of other countries in the solution of the problems of cholera, tuberculosis, bubonic plague and leprosy may be noted. Why should we not solve the problem of yellow fever? A systematic effort continuously made will be crowned with success. He recommended that a committee from this body be oppointed to wait upon the President of the United States to carry out the idea.

He then referred to the progress being made in conquering consumption in the discovery of the tubercle bacillus by Koch. There is in every land a profound recognition of the responsibilities of the governing classes, and that a preventable disease should be prevented. The State Board of Health of New York has declared tuberculosis to be a preventable disease, an infectious and communicable one, and provides for a detailed report of all cases attended by practitioners in that city. He commended the action of that board to every sanitarian in the land who is charged with the protection of the public against the spread of preventable diseases.

He then referred to the experiments of the State Board of Health of Massachusetts at Lawrence on the utility of filtration of the water supply for the removal of typhoid fever germs; the average was the removal of over 98 per cent. In looking over the work of this Association during these twenty-five years we have reason for exultation and pride. We bequeathe this noble heritage to our successors in this work. We transmit to them the light that was handed down to us from our predecessors, and we bespeak in return for this great cause the same loyalty and untiring devotion that we have given it.

WEDNESDAY—MORNING SESSION.

The Association reassembled at 10 o'clock. A number of new members were elected and the vacancies in the Advisory Council were filled, all old members who were present being reappointed.

Dr. **HIBBERT HILL**, of the Board of Health of Brooklyn, read a paper on

ANALYTICAL WORK ON PUBLIC WATER SUPPLY,

showing an instrument for the collection of samples of water for chemic, microscopic and bacteriologic analysis. This appatus, designed by Dr. Hill for use in the Rockville Center Laboratory, established for the sanitary supervision of the Brooklyn water supply, has stood the practical test of constant use for a year. Its strength, simplicity and ease of manipulation commend it to those who require samples of water from ponds, rivers or streams where a sample of the water is desired at depths from two or three inches to fifteen or twenty feet. The depth, in fact, is only limited by the convenient length of the pole attached. The apparatus may be further modified so as to allow of collection of samples at any depth by the use of cords and weights.

The apparatus consists of a holder for the bottle and a device for the withdrawal of the stopper, when the bottle is submerged to the desired depth.

The holder is shaped like half a hollow cylinder and is of such dimensions as will fit the bottle usually employed. It has a circular bottom with a raised edge and upon this the bottle rests. The holder is made of galvanized iron. The bottle is secured to the iron case by a strap of brass, hinged on one side of the holder and fastened by a catch on the other. The bottom piece of the holder is perforated to permit the ready passage of the water through it, and in consequence there is greater ease in handling when under the surface. Holes at the side on a level with the mouth of the bottle when it is in position, allow free access of the water from every direction, while the bottle is being filled.

The device for the withdrawal of the stopper from the bottle consists of an upright rod of wood passing through two brass rings, which are rigidly secured at right angles to the inner side of the iron holder. These supporters are so placed as to center the end of the wooden rod over the mouth of the bottle. The wooden rod has a spiral spring of brass wire wound about it and fastened at the lower end to the rod of wood, and at the opposite end to the upper brass ring through which the rod passes.

The rod upon its lower end has the clamp device for holding the stopper. This is composed of three brass strips bent in such a manner as to grip the top of the stopper tightly. The style of stopper used in all the bottles for which this kind of grip was made, is known as the mushroom stopper, and as they differ slightly in shape in different styles and shapes of bottles, require a slightly different bending of the brass grips in order to hold the stopper firmly.

The largest of the three collectors designed has one of its brass grips hinged and snaps down over the stopper, holding it firmly. The other two have rigid grips and depend upon their spring to hold the stopper in place.

The upper end of the wooden rod carrying the clamp for the stopper, has a wire attached to it by means of a ring. The wire passes up the pole, which is clamped to the iron holder. It is by means of this wire that the stopper is raised or lowered in the bottle.

The operation of collecting the sample consists in placing the bottle in the iron holder and securing it by the brass strap around the middle of the bottle. The clamp for the stopper is at the same time properly secured. The apparatus is then lowered into the water to the desired depth by means of the pole, the wire pulled and held, thus raising and holding the stopper until the water has filled the bottle. The wire is then released and the spring upon the wooden rod, before described, forces the stopper back into place quite securely. This does not allow of any more water entering the bottle while being drawn to the surface, even if the bottle is only partially filled with water.

The apparatus is then drawn from the water, the bottle removed and another substituted, and the operation repeated as often as desired.

The strength of the apparatus permits of very rough handling in the exigencies of sample collection, under all sorts and conditions of weather, temperature and travel. Its simple construction makes repair easy, should any accident occur, and insures rapidity in the work of collection, which is an important detail in routine work on an extensive scale. The uniformity of collection secured by this means is extremely desirable where serial and parallel microscopic, bacterial and chemic samples are being taken.

On Wednesday, after the usual announcements and election of new members, a paper on "Pollution of Water Supplies," by Deputy Surgeon General CHARLES SMART of Washington, D. C. This committee had been engaged in perfecting the standard methods for bacteriologic examinations. It was believed that concerted effort would be of more value than individual work. His report being completed he asked that the committee be discharged, which was agreed to.

Dr. ROQUE MOCOUZET, delegate from the Federal District of Mexico, read a paper,

ON THE CITY OF MEXICO AFTER THE DRAINAGE OF THE VALLEY AND THE SANITATION WORK.

The city is 2,265 meters above sea level, and in the 19th degree of latitude. The mean temperature for fifteen years has been: January, 12.9 degrees C.; February, 13.7; March, 15.8; April, 17.7; May, 18.1; June, 17.6; July, 16.9; August, 16.6; September, 16; October, 14.8; November, 13 5; December, 12. The mean atmospheric pressure for fifteen years, 586.37; maximum, 594.19; minimum, 579.80. The primitive city was built on a lake; there was a complete system of canals like Venice. Now it is surrounded by lakes, five in number. The object of the drainage is to give an outlet from the valley to the water which falls within its circumference. The work consists of three parts. A canal which starts from the gate of San Lazars, a length of 47 kilometers and 580 meters; its line follows on the east side of Guadelupe range of hills, then between that range and lake Texcoco, changing a little before it arrives at the 20th kilometer to the north so as to cross lake San Cristobal diagonally, then a part of lake Xaltoc and part of lake Zumpango, of the tunnel close to the town of Zumpango. The tunnel is lined in the upper part with brick. The outer lining is of artificial stone made of Portland cement and sand. The tunnel is calculated for a current of 18 cubic meters per second; twenty-five shafts open with a width of 2 meters and length of 3 meters, at a distance of 400 meters from each other. These ventilate the shaft and aid in the work. The depth of the shaft varies according to the topography of the ground. It will be necessary to construct twenty-three structures to afford passage for the railroad, wagon road and important water courses which require to cross the canal. Five of these by aqueducts to carry rivers; four will be iron bridges for railroads, and the rest are dedicated to the passage of main roads and accommodation roads. The works have two objects, the first to receive the surplus water and sewage of the valley, of the City of Mexico, and carry it away, and the second to control the entire water of the valley, affording an outlet whenever it is found necessary for those waters which might prove prejudicial.

The drainage of the city is the combined water carrying system. He exhibited a sketch to show the plan. The pipes will be laid to carry the water from La Vega canal, that being the source from which the sewers will be flushed, and this will be properly done. There will be no dead ends, as they constitute a focus of infection. The water will be carried to the south end of the 12th Street canal. It will be possible to flush every day all parts of the sewers by sudden rushes of water having with the fall a velocity of one meter per second. In many cases it will be 2 meters per second and even more. Thus will be kept up a constant current of water and with a velocity never below 60 centimeters per second. Up to the present day no city in the world can keep its sewers clean every day. When all is complete, we can receive in the winter, but principally in the summer because then we are more sure of means against the cold, our friends from Canada and the United States if our dear American Public Health Association will consent to come to us, and which contributes to unite the bonds of sympathy with our Republic.

REPORT OF COMMITTEE ON DISINFECTION.

At the last meeting of the American Public Health Association Prof. Franklin C. Robinson of Brunswick, Maine, member of the Maine State Board of Health, was made chairman of a committee on disinfectants and authorized to appoint four associates. He selected Dr. George M. Sternberg, surgeon-general U. S. Army; Dr. Wyatt Johnston, bacteriologist to the Provincial Board of Health, Montreal, Canada; Dr. Alvah H. Doty, health officer, port of New York, and Dr. Eduardo Licéaga, health officer City of Mexico. Owing to the absence in Europe of two members of the committee, Drs. Sternberg and Licéaga, the main consultation has been between the other three members. It was thought best to give special attention this year to gaseous disinfection by formaldehyde, which was brought to the attention of the sanitarians by the chairman and others at the Buffalo meeting. Professor Robinson for the committee reported that the use of formaldehyde had very much increased. Instead of the one apparatus which he presented at Buffalo there are now a half dozen or more. He gave a summary of the matter under the headings: 1. What is formaldehyde? 2. Its proportions. 3. Its preparation. 4. Its manner of use. He said it was a gas, non-poisonous to higher forms of life, but very destructive to bacteria. He said it was made from wood or methyl alcohol by processes of oxidation by which CH_4O becomes CH_2O; that this oxidation was generally brought about by bringing the vapor of wood alcohol mixed with air in contact with hot platinum. He said it was dissolved in water and sold under the name of formalin, formol, etc., and might be obtained from this solution for use as a disinfectant or made directly from wood alcohol. He then went on to describe the various forms of apparatus devised for that purpose and referred to tests with those made by himself and Drs. Doty and Johnston of the committee. He said that the main thing was to have enough of the gas present in a room to ensure thorough disinfection and to let it act for a long time. He gave figures showing that 2.5 grams should be used for one cubic meter of room space. He said he was not prepared yet to pass judgment on all forms of apparatus, but could say that several of them would do this. As to penetration he said that there was not quite as much as the first experiments seemed to show, but still with thorough use he thought it would go where disease germs were likely to. On the whole the report was favorable to its use for the disinfection of rooms.

Prof. SEVERANCE BURRAGE, Department of Sanitary Science, Purdue University, Lafayette, Ind., read a paper on

FUMIGATION EXPERIMENTS WITH FORMALDEHYDE GAS.

It was an account of some experiments at the Newton (Mass.) Hospital with four different generators, the res hich indicate inefficie forms of appara disinfect rooms when operated under conditions to kill all pathogenic bacteria as existing in these rooms. We have several ingenious devices. Without doubt all claims are made with perfect honesty, because so many of the earlier experimenters with this gas gave apparent evidence of its marvelous power to destroy bacteria. Later results indicate too much has been claimed, and these experiments were undertaken on that account. A room, 1,870 cubic feet in dimensions, was subjected to the action of four different generators. All conditions were as much alike in each as possible. Each apparatus was tested twice or even four times. The autoclave with its own operator was tried. The room was closed six hours, and then immediately, as soon as we could enter, the infected cover slips were removed to the laboratory and each placed in agar films in Petri dishes. After five to eight days of incubation at 23 degrees C., growths appeared for all except typhoid fever. All control cultures gave vigorous growths in forty-eight hours. When after seven days' incubation no growth appeared, by taking a platinum needle and scraping over the infected part of the cover slip and inoculating serum tubes with it, growths were obtained except typhoid. The germs were not all killed, but the gas had the effect of greatly inhibiting the growth. He detailed the procedure with each apparatus in turn. From all these results it is impossible to recommend one apparatus over the other. Each did germicidal work better than sulphur as ordinarily used. The principal conclusion is, that the generators did not kill all pathogenic forms as claimed, in a certain space of time. I do believe in formaldehyde, but have no confidence in the class of generators now offered. There are so many conditions as to age and nature of the cultures exposed, the method of exposure, etc., all of which enter into the results, that a large chapter of results must be tabulated to show just what nature will do. We are beginning to understand that the formaldehyde gas will, under proper conditions, kill germs, but in the light of such varying results it is impossible to set a definite formula for room disinfection. However, for all practical work, so far as we know at present, formaldehyde is the best gaseous disinfectant.

Dr. E. A. de Schweinitz, Chief of the Biochemic Division of the United States Department of Agriculture, read a paper on "The Determination of the Amount of Formaldehyde yielded by the Formaldehyde Lamp." There was a great variation as to the amount of gas each lamp gives. Some gave 10 per cent., others 5 to 6 and occasionally 15 per cent. One lamp for one day gave 10 per cent., while the same lamp under exactly the same conditions gave on another day only 1 per cent. When tables were used, 50 per cent. was obtained where 100 had been promised.

Dr. A. W. Reynolds said that in his experiments at Chicago he had tested several lamps; some were not sufficiently rapid, others did better.

Dr. J. McFarland, Philadelphia, said the germs grew as they did when the gas had not been used. He disinfected a room, opened it, and found the germs of diphtheria grew readily. He was disgusted with these lamps.

Dr. Swartz, Secretary of the State Board of Health of Rhode Island, found all that he had tried a failure. We must have a simple, easily operated means. We shall in future find something of use, for he believed we are now on the right track.

Dr. J. F. McShane, Health Officer of Baltimore, detailed some experiments in the laboratory with formaldehyde. He endeavored to determine its action and value on household matters, as blankets, mattresses, etc. He employed the bacilli of typhoid fever and diphtheria. Its penetrating power is poor. He tried the Trillat autoclave; it acted well except as to penetration. Where the bacilli are exposed the gas acted well, but when they were imbedded, as in a mattress, it failed.

Dr. H. D. Pease of the Bacteriological Laboratory of Philadelphia found the spray a failure. The solution must be strong. When the proportion is one of formaldehyde to three of water it will succeed. Having tried both the autoclave and that of the Sanitary Construction Company, he felt that much more experimentation is needed to obtain what we need as a disinfectant. He found that the walls absorb the gas and after three days they would give off the gas freely. Paper is most difficult to penetrate.

Dr. A. W. Suiter of Herkimer, N. Y., read a paper on

THE BARBER SHOP AS A MENACE TO THE PUBLIC HEALTH.

This mode of infection has long escaped the notice of sanitarians. In ancient times cleanliness was provided for because we see the symbol of a brass basin and a striped pole as the sign of the barber. The basin was cut to receive the throat of the customer, so as not to spoil his clothes. At present in France, the police regulations require all instruments to be of metal as far as possible. Thus they can be easily sterilized. All these must be submitted to a heat of 100 C. before and after use; brushes must be placed in boiling water before and after; the hands must be cleansed from one customer to another, the towels must be sterilized, pulverizers are used in place of powder puffs, the hair is disinfected and promptly removed and a chemic solution is prescribed for various purposes. Patients with syphilis have been seen in the shops, with foul ulcers on their faces. One instance occurred to the speaker who encountered a patient just rising from the chair which he was called to fill, so he left and since has permitted his beard to grow, and when compelled to visit a shop he takes along his own apparatus, at the risk of being called a crank. Instances in numbers might be collected where disease has been transmitted in this way. All know it. Every step is dangerous and precautions should be observed. Sponges are not used by a surgeon a second time, yet a barber employs one again and again, a slight squeeze being all it gets from one case to another. Some things the Parisian regulations do not seem to cover, as the alum stick to staunch the blood in case of a cut, and the block of magnesia to dry the skin. Of course some shops are more careful than others. The New York legislature has had before it for years propositions for a law to correct this evil. The organized barbers themselves ask this for their own protection, and to elevate their business. They desire a board of examiners and licensers appointed, so that no one can practice the art unless properly prepared. They would demand a scientific knowledge as to disinfection and general sanitation. This will be pushed at the next session. If enacted, no more can be desired. Why not all occupations licensed? All should be qualified to do the work they set up to do. Horseshoers are now thus qualified in New York. Since the information came from abroad relative to the law in Paris, the medical journals and newspapers comment favorably on it. The people will be quickly educated and the action will be supplemented by favorable sentiment. Let us adopt for our motto, in this respect, the Spanish proverb, "Dicho y hecho," no quicker said than done, and with great promptitude demand an intelligent and unprejudiced inquiry into this fruitful source of disease. If surgeons and dentists are morally and in a negative sense under obligation to disinfect and sterilize their instruments, why not as reasonable to hold the barber responsible; and why not within the province of health boards to protect the public? This Association is striving to regulate the disinfection of cars and demand the stoppage of spitting, and an individual communion cup, and in divers other fields are endeavoring to compel the heedless public to care for themselves; may it not be said that the hygiene of the barber shop far exceeds in importance most of these undertakings?

Mrs. John H. Scribner, Philadelphia, gave in some detail *the work done by the Woman's Health Protective Association* of Philadelphia. Their object was to promote sanitation; to protect their families. They had worked to obtain water filtration and had employed skilled persons to conduct experiments and to visit places where filtration was being done. They had succeeded in getting the Board of Health to place placards in the street cars forbidding spitting in the cars. They had inspected the bake shops and succeeded in obtaining the closing of those which were filthy, and in aiding the bakers themselves to have better and more sanitary working places. They had employed a sanitary expert from abroad to inspect the public schools, and presented a full report to the mayor, so that the proper steps might be taken to have these corrected. In a word, they were determined to keep up the work until they had succeeded in having the entire city in a proper sanitary condition.

Dr. F. W. Wright, Health Officer of New Haven, Conn., read a paper on the

DIAGNOSIS OF SMALLPOX.

This is very important that we may be able early to protect the families from further infection. It must be remembered that the *period of incubation of this disease is fifteen days after* exposure. Occasionally it appears earlier, as in one week after exposure. We have a chill, with subsequent febrile symptoms: intense headache and backache; the temperature is about 103 to 105; this remits on the eruption appearing. The eruption is generally on the third day: may be earlier; or even later to the fifth. Just before we have a redness of the skin, like erythema, when it may be mistaken for measles. At first the eruption is macular, soon it becomes papular; appears first on the face, then on the neck and wrists, next the chests and extend over the whole body. The feet and legs are last. When it becomes papular, we have an induration of the tissues, like shot under the skin, which is characteristic of smallpox. The center of the papule which has been elevated, forms a vesicle; this is never observed under twenty-four hours from the formation of the papule. These vesicles are surrounded by an erythema, and as it progresses, the depression forms making it umbilicated, which gradually becomes more pronounced. The vesicle is filled with a milky serum, it is easily ruptured, and exuding forms a scab. It gains its full size in four or five days. Now the temperature lowers. He then detailed the differential diagnosis between scarlatina, measles, acne, syphiloderma and varicella. In scarlatina, the temperature is high and remains so; there is no remission with the appearance of the eruption; usually there is vomiting; the efflorescence is impalpable to the touch; it appears on the chest and arms first, then on the face; the throat is congested; the headache and backache are not so pronounced; there are no papules nor vesicles. In measles the lungs are irritated from the first, bronchitis; the eruption appears on the face and extends to the rest of the body and more rapidly than in smallpox; the temperature does not fall; the lesions appear in a crescentic form, are pale red, slightly elevated, never papular, or vesicular. If we stretch the skin, it is smooth without the induration beneath as in smallpox. In acne, the eruption is chronic, there is no fever, the eruption is localized, irregular, usually on the face. Syphiloderma may be known by the history, there are small vesicles but rarely, and it is chronic. Varicella is most likely to be confounded with the smallpox, but we are generally sure after forty-eight hours. The eruption is profuse; the invasion starts in a few hours after the fever; the headache and backache are absent or slight and of short duration. We may depend much upon the history as an exposure to either disease; in varicella the pustules are not so full or round, the eruption early empties the elevations, the edges are not thick; also the vesicles soon dry in the center with a small black spot forming.

D. E. Salmon, V. D. M., chief of the Bureau of Animal Industry, Washington, D. C., reported as Chairman of the Committee on Animal Disease and Animal Food. There have been no outbreaks during the past year among the animals of America of unusual extent or manifesting any peculiar characteristics. No exotic diseases have been introduced among our live stock within this period, nor have any new problems arisen, so far as this committee have been able to ascertain, in connection with the protection of the public health from diseases affecting our domestic animals. However, there are numerous questions which have confronted practical sanitarians for years, some of which have been discussed at the previous meetings of this Association and which are still debated, misunderstood and more or less neglected by health authorities. Instead of losing interest as time goes on, some of these questions are becoming more and more urgent. We can only refer to a few subjects which the events of this year have made particularly prominent. Anthrax, tuberculosis, public abattoirs, each in turn was partially discussed; tuberculosis is causing more effort to enable us to effect its stamping out. The problems connected with the control and eradication of this disease among dairy cattle are becoming better understood, and the general plan of procedure which was outlined by your committee at the Chicago meeting is now being largely adopted. The dairymen are being encouraged and influenced in various ways to dispose of their diseased cattle and to replace them with healthy ones. The boards of health of many cities are requiring more rigid inspection of dairies and compliance with prescribed sanitary regulations by those who produce milk for consumption within the territory under their jurisdiction. In a number of the States there are State Boards which are especially charged with the duty of controlling tuberculosis. In some, if not all the New England States, regulations are in force requiring that all dairy cows brought into these States shall have been tested with tuberculin and found free from disease. Similar regulations are soon to be enforced by the authorities of Pennsylvania.

(*To be continued.*)

PRACTICAL NOTES.

Lotion for Anal Pruritus.—Hyposulphite of sodium, 30 grams; phenic acid, 5 grams; glycerin, 20 grams; aq. dest., 450 grams. For external use. Apply compresses moistened with this lotion, frequently, to the anus. — Penzoldt, *Semaine Méd.* October 13.

Formaldehyde in Burns.—A druggist writes to the *Muench. med. Woch.*, that he has discovered formalin to be extremely effective in burns by personal experience. He accidentally poured some boiling culture bouillon over his hands, and applied at once a compress moistened with 10 per cent. formalin. In twenty minutes the pain had quite passed away and when the compress was removed not a trace of the burn was to be seen. The skin was not even red.—*N. Y. med. Woch.*, October.

The Favorable Effect of Injections of Artificial Serum in Cholera Infantum is confirmed by J. Loin of Brussels, who saved three severe cases, six months to three months, with 50 grams of artificial serum injected morning and night, after all other means had failed. Improvement was noticeable after the first or second injection.—*Semaine Méd.*, October 13.

Salicylate of Soda in Serous Pleuritic Effusions.—Poliakov reports five cases in six, cured by 2 to 4 grams a day, after having resisted the effect of repeated punctures. Three were also tuberculous. He finds that it is well tolerated if a little alkaline mineral water is given after each dose or caffein with it in case of weak heart action.—*Sem. Méd.*, October 6.

Tetanus in Children, of Gastro-Intestinal Origin.—1. Salicylate of bismuth, 30 centigrams; benzonaphthol, 15 centigrams; sugar q. s. for one powder. Make twelve similar powders; administer four a day. 2. Bromid of potassium, 3 grams; chloral hydrate, 1 gram; aq. dest., 100 grams; syrup of bitter orange peel, 50 grams; f. s. a. Administer three tablespoonfuls a day. For a child of 2 to 3 years.—E. Tordeus, *Semaine Méd.*, October 13.

Formula for the Administration of Iodoform in Phthisis.—Iodoform is generally well tolerated by phthisics; it relieves the cough, decreases expectoration and has a remarkably soothing effect on the nervous erethism. 1. Iodoform, 2 grams; tannin, 4 grams; for forty powders; two to four powders a day. This formula is for patients with a tendency to diarrhea. If there is constipation, the following is to be preferred: 2. Iodoform, 2 grams; naphthalin, 2 to 4 grams; for forty powders; two to four powders a day.—E. De Renzi, *Sem. Méd.*, September 29.

Electrolysis in Trachoma.—Haun recommends electrolysis after cocainization of the eye, as extremely effective and entirely painless. The patient takes the anode of a galvanic apparatus in his hand and the physician applies the sharp, delicate platinum needle cathode into the granule for five to fifteen seconds. Current 10 to 20 milliamperes. Light cases are cured in from two to three sittings, more severe in five to eight.—*Wien. Med. Presse*, No. 38.

Massage for Postpartum Hemorrhage ex Atonia Uteri—Kumpf reports two cases successfully controlled after all other means had failed, by a sort of massage manipulation which he calls "zitter drückung" or tremolo pressure. He applied his hand to the abdominal wall of the patient at a right angle, between the symphysis and navel, and pressed it back against the spine with a rapid trembling motion of the fingers, afterward applying the same to the rear of the uterus when it became palpable. Contractions of the uterus were soon induced by this mechanical stimulation of the muscles and nerves and the hemorrhage promptly arrested.—*Cbl. f. Gyn.*

Iron Beer.—Jaworski has a beer containing iron, made at the Bukowina brewery, which he has found extremely beneficial in certain cases. The iron is readily absorbed in this form, the taste disguised, while the beverage is nutritious, containing more calories than an equal amount of milk. It is a dark bock beer, composed of 4.07 per cent. alcohol; 8.03 per cent. extracted matters; oxygen 0.21 per cent. and 0.0317 iron in the weaker form; 0.0614 in the stronger beer. The hemoglobin, number of corpuscles, and the weight increased after a few days of its use.—*Therap. Woch.*, September 26.

Diagnostic Significance of Neuralgia in Incipient Aneurysm of the Aorta.—Levachev has observed twenty-nine instances in which cervico occipital neuralgia accompanied aneurysm of the aorta, in 126 cases. In eight this neuralgia was uncomplicated by other nervous troubles. He therefore calls attention to this form of neuralgia as another important indication of beginning aneurysm, in addition to the classic syndrome, and also urges caution in the treatment of neuralgias, as cold douches, mountain climbing, superalimentation, etc., accelerate the evolution of the aneurysm and increase its intensity. He has several times witnessed the fatal termination directly hastened by the treatment instituted for the neuralgia which may be the only symptom at first of the aneurysm.—Moscow Congress.

Iodocresin or "Traumatol."—Dr. W. Schattenmann describes this as a violet-red, amorphous, remarkably fine, bulky, odorless powder, which results from a chemic combination of cresylic acid from coal-tar cresol and iodin, containing about 54 per cent. of the latter. It is insoluble in water, acids, and alcohol, slightly in ether, but readily soluble in chloroform and strong alkalies. Laboratory experiments have demonstrated that it is not poisonous and that it possesses antiseptic properties. It is employed as a powder, crayon, plaster, gauze, vaselin, glycerin and collodion. It may be prepared as a 5 to 10 per cent. traumatol-zinc-paste, 10 per cent. traumatol-lanolin-vaselin, or 10 to 50 per cent. traumatol-chloroform. For venereal ulcers, after preliminary cleansing, it brings about speedy cure. The crayons are useful for the healing of fistulous tracts, dissolving more slowly than those made of iodoform. For genital erosions the collodion is preferred. As a powder, or with chloroform, excellent results have been obtained in syphilitic affections of the mucous membranes. For various operations performed in genito-urinary work, phimosis, buboes, gland extirpations, papillomas, warts, application of the powder, which is covered over with the collodion, is recommended. In addition to its antiseptic properties, its drying and unirritating effects are so marked that its field of usefulness embraces a considerable number of skin diseases. The results obtained on seventy-five patients who were treated by this remedy, used alone, show conclusively that in it we have a valuable addition to our therapeutic resources.—*Therapeutische Monatshefte.*

A New Operation for Malignant Disease of the Testicle.—Stinson (*Medical Record*, Oct. 30, 1897, p. 623) recommends the following mode of procedure in the treatment of malignant disease of the testicle: An incision is made from the external inguinal ring, downward and inward to the beginning of the rhaphe of the scrotum, and following the sulcus between the scrotum and the penis. It is then carried downward and backward, parallel with and external to the rhaphe of the scrotum, and terminates at the scrotoperineal junction. The incision divides the tissues of the scrotum. A second incision, which is slightly curved, is made from the external ring downward, following the sulcus between the scrotum and the thigh and the perineum. It terminates by joining the first incision at the scroto perineal junction. This also divides the layers which form the scrotum. The scrotum, the testicle and its coverings, the median rhaphe, the septum scroti, etc., are as a mass freed from all their attachments, except to the cord, up to the external inguinal ring. Any masses of fat, glands, adhesions, etc., should also be freely removed with these structures. A third incision is made parallel with, and about one-half an inch above, Poupart's ligament, from the external ring to one-half an inch above the internal inguinal ring. It divides the structures superficial to the aponeurosis of the external oblique. The latter is well exposed and divided in the direction of its fibers to about one half an inch above the internal ring. The cut edges are lifted and freed from the structures beneath, so as to expose the cord, etc., up to the internal ring. The cord, etc., are separated from the surroundings, from the external ring to high up within the internal ring, care being taken also to remove freely all mass of fat, glands, adhesions, etc., in the rings and canal. Moderate traction is made on the cord so as to draw it out as far as possible from the internal ring, and it is secured high up within the internal ring with a clamp. Division should be made below it. Any bleeding vessel or vessels are ligated separately with fine catgut. The raw surface of the stump is covered over by bringing together with continuous sutures of catgut the cut edges of the external coat of the cord. When the clamp is removed the sutured edges of the cord at once slip back into the abdomen. The cut edges of the aponeurosis of the external oblique and the pillars of the external inguinal ring are brought together with continuous sutures of chromicized tendon or chromicized catgut. The flap of skin covering the inguinal glands is dissected downward and all of the inguinal glands and fat removed. If the glands are adherent to the skin, the latter is also freely removed. The flap is now replaced and the cut edges of the skin of the groin and the scrotum are united with fine silk sutures, without drainage. A small strip of mercuric chlorid gauze may be inserted for a short distance in the lower angle of the scrotal wound and left in place for a day or so. All hemorrhage should be arrested before the wound is closed.

Analgesic and Antiseptic Uses of Thiol.—This substance, which is a synthetic ichthyol, and has been before the profession about ten years, was first exploited in dermatologic practice, and later had its part in gynecic work, but comparatively little has been heard from it in late years. A German physician, Wirz of Kaisersech, has employed thiol in place of ichthyol, and has had ample opportunity to convince himself of its excellent qualities in a somewhat wide range of cases. As a substitute for ichthyol it seems especially welcome when used on the face, as it is odorless. Patients who could not bear the smell of ichthyol, improved under the use of thiol. In inflamed conditions the analgesic properties of thiol surprised him. It can be used, he says, in inflammations of every description. Infiltrations are resorbed without the formation of pus, making incision unnecessary. In severe carbuncles, after removal of the pus, thiol allayed inflammation when applied around the wound on the infiltrated parts and pain ceased entirely. This was observed in all the inflammatory processes where thiol was used after the removal of the pus. Lymphangitis, even phlegmons caused by panaris, insect bite, and other causes, quickly disappeared under thiol treatment. Inflammation of the face caused by decayed teeth, erysipelatous infiltration of the scalp and face, and severe infiltration of the neck, which took on a serious aspect owing to edema of the glottis, gradually disappeared under constant application of the thiol. In a case of general furunculosis in a child, he directed painting thiol over every furuncle and soon a complete cure resulted. The best results, he says, are obtained with liquid thiol as supplied by the manufacturers, not by that prepared from powdered thiol with the addition of water. In five cases of parametritis he has good results with plugs soaked in thiol and distilled water, equal parts. He also ordered applications of thiol on the abdomen during the night. During the day hot linseed poultices were used. In a severe case of parametritis and perimetritis accompanied by great abdominal pain and high temperature, he had better results with ichthyol, as applications of thiol did not completely allay the pain, while ichthyol induced complete recovery. Cases of otitis externa he has treated with thiol plugs with complete success. No other remedy has rendered him such good service against severe pains in the back after influenza. Patients experienced lasting relief by rubbing thiol over the whole vertebral column. Patients with emphysema, accompanied by marked dyspnea, were relieved as soon as thiol was rubbed on the chest. Pains in the muscles of the thorax ceased, expectoration became easy, and dyspnea and catarrh improved. In pleuritis, as well as croupous pneumonia, thiol was of great service, either alone or together with veratrin and potassium iodid ointment, against pain in the chest. Several patients said that this ointment benefited their condition more than caffein, camphor, hematogen, etc. Wirz has come to the conclusion, therefore, that we possess in thiol an agreeable substitute for ichthyol, odorless, cheap and efficient.—*New York Medical Journal.*

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SATURDAY, NOVEMBER 20, 1897.

A DEPARTMENT OF PUBLIC HEALTH.

All the indications point to the establishment at last, in this country, of a National bureau or department of public health. The yellow fever outbreak of the current year has fortuitously and fortunately directed the attention of the people to the urgent necessity for a better organized system of National supervision over the gateways of the seaboard by which epidemic diseases gain admission. The makeshift methods of recent years, utilizing the expedients of a special bureau created for an entirely different purpose, clinical only and not sanitary in its aims, have proved to be ineffective, and the most dreaded of pestilential diseases has actually gained entrance under the very eyes and nose of the much vaunted guardian. Again, the lesson has been taught that the loss of life, the paralysis of business, commercial disaster and disturbed trade relations have footed up to millions, when as many thousands wisely expended by the responsible officers of a National establishment, charged with the protection of the public health—and with nothing else—would have made the former impossible.

Perhaps it is well that the experiment should have been tried of intrusting this work to the Marine-Hospital Service, and though the incidental loss of life and trade ruin are regrettable, the results are what might have been expected and were logically anticipated. These results were not apparent until the management of the Service became what it is today, but the miserable fiasco at Brunswick and the *laisse faire* policy at Ship Island which permitted this year's epidemic, have emphasized in a very unpleasant way not only the decadence of the Service, but how much depends on one man. When that man is fearless, able and active all goes well; when he is indolent, arrogant, tyrannical and playing for social prominence to the disregard of the best interests of his Service, then time shows the failure in no uncertain way. The function of the Marine-Hospital Service is to care for sick and injured masters, mates and sailors of the merchant and revenue marine, as that of the medical department of the United States Navy is to care for sick and injured officers, seamen and marines of the naval service; and while the naval medical officer through his foreign cruising has necessarily a wider practical acquaintance with diseases of other countries, and especially of exotic pestilences, such as yellow fever, in their native habitats, there are manifest reasons why neither the one nor the other—certainly not the Marine-Hospital Service, as at present managed—should be intrusted with the special and specific duties of a National health bureau. If for no other reason, this is inadvisable through the inevitable result of inducing the neglect or perfunctory performance of the legitimate duties for which it was constituted. This is indicated by the last annual report of the head of this bureau—a volume of over eleven hundred pages, of which less than half are devoted to bona fide marine-hospital matters. The medical officers of that service have been diverted from their professional duties at the bedside in attendance upon sick and injured merchant sailors and have been sent to foreign countries, the sum total of their observations having been anticipated by newspaper cable reports and returns from the United States consulates. Had the former been ten times as voluminous they would not have averted the inexcusable calamity, which, as the President of the American Public Health Association (Dr. HORLBECK) so eloquently pointed out, has fallen like a blight upon the southern seaboard States, and made it almost impossible for him to leave his post of duty as Health Officer of the City of Charleston, S. C., to attend the meeting of the Association which had honored him with its presidency on its silver anniversary.

The American Public Health Association "was organized in 1872 by a few public-spirited men impressed with the need of bringing together in one body the ablest sanitarians in the country for the purpose of inaugurating measures for the restriction and prevention of contagious and infectious diseases, and for the diffusion of sanitary knowledge among the people," and happily its twenty-fifth annual meeting at Philadelphia, in October, was signalized by the final report of one of its most important special committees, that on "Public Health Legislation," which under the chairmanship of Dr. HENRY P. WALCOTT, the President of the State Board of Health of Massachusetts, has for years been thoroughly and impartially considering this question of the form of legislation best adapted for the effective National sanitary safeguarding of the country. Dr.

WALCOTT's associates in this work have been sanitary officials of long experience, men charged with the grave responsibilities of the sanitary welfare of their several States and communities, men of such wide reputation that their opinions are of influence outside those localities. That it may be generally known who and what these men are, and their recommendations be better appreciated and accepted without question, their names and offices are here appended: Dr. JAMES N. MCCORMACK, Secretary of the State Board of Health of Kentucky; Dr. JAMES D. PLUNKET, President of the State Board of Health of Tennessee; Dr. HENRY B. BAKER, Secretary of the State Board of Health of Michigan; Dr. SAMUEL R. OLIPHANT, President of the State Board of Health of Louisiana; Dr. BENJAMIN LEE, Secretary of the State Board of Health of Pennsylvania; Dr. U. O. B. WINGATE, Commissioner of Health of Milwaukee, Wis.; Dr. CHARLES O. PROBST, Secretary of the State Board of Health of Ohio; Dr. EMMANUEL P. LACHAPELLE, President of the Provincial Board of Health of Ontario; Dr. GREGORIO MENDIZABAL, the official representative of the State of Vera Cruz, Mexico; Dr. JAMES PATTERSON, Chairman of the Provincial Board of Health of Manitoba; Dr. HENRY D. HOLTON of Brattleboro, Vt., and Dr. DANIEL LEWIS, President of the State Board of Health of New York. Here are thirteen men of prominence, the majority officers of State Boards of Health, who have held their offices for years through political changes of administration, from every quarter of the United States, from Canada and Mexico, from the actual seat of the prevailing epidemic, uniting in the opinion and the earnest recommendation, "that there shall be established a *Department of Public Health*, the duties of which shall be to collect and diffuse information upon matters affecting the public health, including statistics of sickness and mortality in the several States and Territories; the investigation by experimental and other methods of the causes and means of prevention of disease; the collection of information with regard to the prevalence of infections, contagious and epidemic diseases both in this and other countries; also, the causative and curative influences of climate upon the same; the publication of the information thus obtained in a weekly bulletin; the preparation of rules and regulations for securing the best sanitary condition of vessels from foreign ports and for prevention of the introduction of infectious diseases into the United States and their spread from one State into another; that this Department of Public Health shall be under the control and management of a *Commissioner of Public Health*, who shall be appointed by the President by and with the consent of the Senate, who shall hold his office for six years, shall be a regularly educated physician of at least ten years' experience, learned in the practice of medicine, in sanitary science and member of one or more reputable sanitary or medical associations in the United States; and that the Commissioner of Public Health shall semi-annually and at such other time, as he may designate, call to meet in the City of Washington, D. C., an *advisory council* to be composed of the secretary or executive officer of each State and Territorial Board of Health, and an officer learned in the law, detailed by the Attorney-General of the United States from the Department of Justice. A Department of Public Health, controlled and managed by a Commissioner of Public Health, with an advisory council of executive officers of each State and Territorial Board of Health are the essential features of the scheme of law, which was reported to and accepted by the American Public Health Association and ordered to be transmitted to the Congress of the United States as its voice and opinion. This action now unites it with the AMERICAN MEDICAL ASSOCIATION. The elaboration of the scheme may be safely trusted to the National law-makers. A feeble protest against this reference was made at the meeting by the representative of the Marine-Hospital Service on the ground that it was inappropriate for an Association composed in part of Canadian and Mexican members to unite in a proposition concerning only the United States, but the individual protesting was reminded that he himself had endeavored, only a year ago, at Buffalo, to obtain from this same tripartite body the passage of a resolution recommending that the U. S. Marine-Hospital Service should have its powers so enlarged as to constitute *it* the National Board of Health of the United States, and that he had complained in an official report because, as he alleged, a member of the Executive Committee had taken it upon himself to forestall its adoption. The partisan spirit exhibited in this querulous objection is additional reason why a Department of Public Health should be a Commissioner's Bureau independent of any other existing organization, with intimate relations with the State Boards of Health—harmonizing, supplementing and co-operating with them instead of subverting, antagonizing or ignoring them. A health department of this kind is the great immediate National need and the Congress should no longer delay to enact it, in view of the support it has received from State organizations, north and south, and from the great body of representative sanitarians of the country. The authority invested in the General Superintendent of Quarantine of the Dominion of Canada, Dr. MONTIZAMBERT and in the *Consejo Superior de Salubridad* (Superior Council of Health) of the Republic of Mexico, is a practical exemplification of what can be done and ought to be done in the United States. Our neighbors upon the north and south, have the right to expect from us an effective organization with which they can co-operate, and the modest and unobtrusive indorsement given it by their representatives in the American Public Health Association, which boasts that it is truly American in that it embraces in fraternal membership the three great nationalities of North America is welcome and timely.

A NAVAL FIELD HOSPITAL.

A quarter of a century ago this country had a military strength second to none of the armed nations of Europe. It numbered its veteran soldiers not by regiments, but by corps of twenty and twenty-five thousand men, and it was well in the advance in all matters pertaining to warfare, and particularly in the arrangements for the care of the wounded. The ambulance system organized by LETTERMAN and perfected by subsequent experience in the field became a model for the armies of the world. It gave first aid to the wounded, brought them promptly from the fighting line to the field hospitals where all primary operations were performed, and dispatched them to the base of supplies, whence they were transported for further care to the general hospitals. In a word, the Medical Department of the Army was able to deal satisfactorily with all the probabilities of war as then carried on.

But now many medical officers consider that the developments in ordnance which have armed troops with rapid fire, long range and small caliber firearms will render the removal of the wounded from the field an impossibility until the storm of battle has ceased; that an ambulance organization such as operated so successfully during the last two years of our civil war would be swept from the field if it attempted to reach the line of battle during the progress of active hostilities, and that some change must be made in organization and methods if the wounded are to receive first aid and field hospital treatment shortly after they fall. We, however, do not take this view of the subject. Battles are not fought on the level where the long range bullet has sweep. In the wars of the proximate future the first aid stations of the Army Hospital Corps will be found behind the shelter nearest to the line of fire.

But the changes that have taken place in the conditions of naval warfare during this third of a century are infinitely greater than those affecting the land forces. Naval conditions have been changed, not only by improvements in ordnance, but by the efforts of naval architects to meet these changes. Such protection against the improved ordnance of today has been given to the warship and her crew as the knights of old found in their armor against the arrow and pike of the rank and file, and the lance and sword of their knightly opponents. The result has been to transform the ship of the past into a marine engine of war, and in effecting this all the conditions on board have undergone a radical change. Formerly, when a man was injured at his gun, he was carried below and the whole surgical staff was immediately, if necessary, at his service. In army parlance he was brought to the field hospital. The wounded sailor had the advantage in those days, because he received immediately that care which the soldier obtained only after an exhausting ambulance ride from the front to the field hospital.

The battleship of the present day is the equivalent of an army line of battle; and while she may afford, here and there, sheltered places for first aid to the wounded, there is no provision within her armored sides for a field hospital. This revolution in the construction of the battleship necessitates a revolution in the methods of the Navy Medical Department, and our naval medical officers have already given their minds to the accomplishment of this object. At the International Medical Congress at Moscow, Surgeon-General VAN REYPEN presented plans for an ambulance ship to meet the necessities of naval warfare under present conditions; and his proposition has all the more interest, because should this country become involved in war with a foreign power, outside of our neighbors on the north and south, the Navy, not the Army, would have to uphold the flag. His proposition is that with every squadron of battleships there should be an ambulance or hospital-ship, flying the flag of the Geneva Convention, and exposed, therefore, only to accidental injury. His plans for this floating field hospital are excellent. Everything needful appears to have been considered and provided for, and every cubic foot of space to have been utilized to the best advantage. On the upper deck are rooms for convalescent officers and men and for specially serious or isolation cases, with the galley, laundry, wash-room, drying room, lamp room, closets and bath rooms for officers and men, and the offices of the senior medical officer and his executive officer. Dumb waiters go from the galley to the diet kitchens on the decks below. This deck carries four steam launches and four barges, each of the latter capable of bringing off twelve wounded men. The launches and barges are the ambulances of this marine field hospital. Amidship on the berth deck is the operating room. This is lighted from the sides by air ports and from above by a skylight, for the upper deck does not extend over it. On either side of the operating room is an elevator large enough to hold a cot, and run from the upper to the lower deck by electricity. A patient can easily be hoisted from the barge alongside, lowered to the operating room, and carried thence to a cot on the berth deck or lowered to one on the deck below. The transfer is effected by means of an overhead trolley which runs from the operating room and elevators to the distal end of the wards. Below in the engine room, space is provided for an ice machine and cold storage room, a disinfecting chamber, and ample store-rooms for all departments of the ship. The vessel can accommodate comfortably 330 patients, with berthing space for the crew, including its complement of medical officers and nurses or hospital-corps men. To cite from Surgeon-General VAN REYPEN's paper:

"So soon as the action is over the launch should tow its barge alongside a vessel that has been in action, and the wounded should be hoisted out into the barge by means of the apparatus already described; it should then steam with all despatch to the ambulance ship, unload its human freight and speed away again on its mission of humanity. In no other way could wounded men be cared for, or a fighting vessel be more speedily disencumbered and placed again in readiness for battle."

Surgeon-General VAN REYPEN will urge an appropriation for the construction of this ambulance ship, and we trust that he will be as successful in his effort to materialize her as he has been in his work of evolving her from his inner consciousness and ripe experience. We commend his proposition to the Secretary of the Navy and to Congress.

THE ILLINOIS SUPREME COURT DECISION ON EXPERT TESTIMONY.

Two recent occurrences have brought the perennial subject of medical expert testimony again prominently before the profession. One is the decision of the Supreme Court of Illinois placing experts on the same plane, as regards compensation, as witnesses as to facts; and the other, the recent very striking exhibition of expert testimony in a very noted trial for murder. The first of these suggests, more than ever, the need of legislation in this regard and should excite the interest of all professional men who are liable to have their special knowledge, which is their capital, demanded from them without compensation. It is not the medical profession alone that is injured by this judge-made law, and this fact ought to secure for a reasonable proposed statute more general support than might be the case were such a measure demanded only as a prevention of the scandal of a too notable disagreement among doctors with the inevitable popular misconceptions and charges of venality. The failure of previous attempts ought not to be any discouragement to new ones, with the reasons and necessity for such legislation thus reinforced, and it is to be hoped that something may be accomplished in Illinois like what is already achieved, or in fair prospect of being so, in some other States of our Union.

While this decision is for the present final, as giving the legal status of expert testimony in Illinois, it may be questioned whether the State can in future cases derive any very positive advantage from its power to compel those possessing special knowledge to give it on demand without due compensation. No expert will be likely to give his time for consultation without charge and he can not be legally forced to do so, while a prudent counsel will hardly call in the assistance of an expert in a doubtful case without knowing what sort of an opinion is likely to be given. If the State wishes the services of experts hereafter, under this interpretation of the law, in a criminal case, or a private individual or a corporation requires them, they will be likely to have to pay for them, if not for the testimony in court, at least for the needed preliminary consultation, and the same objectionable possibilities exist now as before the promulgation of the Supreme Court decision. If anything, the State is placed rather at a disadvantage by it, for it will probably not be so easy as heretofore to have authorization for the employment of competent experts in questions requiring special knowledge, while private parties or corporations will be untrammeled in this regard.

If the Supreme Court's decision will in any way prevent the unfortunate exhibitions of experts contradicting each other before courts and juries and thus discrediting themselves, their profession and what ought to be an efficient aid to justice, it would be less regrettable, but this is hardly probable. If prosecuting attorneys would always be satisfied with bringing out the actual facts and would never make the conviction of the accused the primary aim, they could call in acknowledged experts without prior consultation and under this decision almost without expense. The real effect, however, will probably be that the defense, having a free hand, will call in its authorities and the State will either have to let their testimony go uncontradicted or employ its counter experts. In civil cases the conditions will remain much as they are at present, and juries and judges will be confused with opposing testimony. That there will be any improvement over the conditions that have existed is certainly very doubtful, and the need of legislation is not less in the interest of the public and the administration of justice than in that of justice to the members of our own and other professions who are called on to appear as witnesses on matters of special knowledge before the courts.

It is to be hoped that the medical profession generally, and all others who are interested in the matter, will combine to use their influence for such legislation as is required. It is needed not only in justice to the experts themselves, but as much or even more than ever in the interest of the administration of justice and to prevent what have been practically scandals in our own and other skilled professions. If the Illinois decision will have for its effect the hastening of this desirable result, it will have rendered indirectly a valuable service in a good cause, though that was not its obvious intention.

DENVER AS A PLACE OF MEETING.

To some extent the success of any particular meeting of the AMERICAN MEDICAL ASSOCIATION depends upon the place at which it is held; yet not upon any one characteristic of the place. To make a notably successful meeting many influences must contribute. Each can help toward the result; yet the result depends more upon the general average of the work done along several lines than upon that lying in any single direction. Take the simple factor of geographic location, particularly with relation to the bulk of the membership of the ASSOCIATION. It would seem very reasonable to suppose that, other things being equal, the meeting held nearest the center of membership would attract the largest number. This is probably generally thought of as the reason why the last meeting was so largely attended. But prior to that the meeting at which there was the largest attendance was held in St. Paul, the point farthest removed from the center of membership of the ASSOCIATION, with the exception of San Francisco, at which any meeting had been held.

It must be borne in mind that while a meeting in the East may have a larger membership to draw upon, a meeting at some western city is certain to draw a larger proportion of possible members within easy reach of it. If, as is the case for next year, the meeting is to be held in the only city of an extensive region in which there is any chance of a meeting being held for many years, it is certain that the physicians of that region will make a much greater effort to attend the meeting than if they could look for its return to some neighboring State within a comparatively short period.

It is also true that much of the success of a meeting depends on the wisdom and energy of the local profession, and on the promptness with which they undertake the work of preparation; and in this respect probably Denver could not be excelled by any city in the country. Already the plans of the Committee on Arrangements are more completely developed, and carried farther into execution than they ever have been before at such an early period. Something of the same disposition to promptly undertake the work laid upon them has been shown by many of the Section officers, with whom also the success of the meeting largely rests; and the list of these officers shows that the arrangement for the Section work for the coming year are in hands as competent as they ever have been in former years.

But, doubtless the most important factor in determining the attendance and success of the meeting of the ASSOCIATION for 1898, will be the special attractions of the place of meeting. While Denver is no farther from the center of the Mississippi Valley than one of our eastern coast cities, those making the trip from the East will be brought together at a few points of departure, Chicago, St. Louis, Kansas City and Omaha; and thence will make the last day's journey, generally the most tiresome part of a long railroad trip, in special trains with the best possible traveling companions, their fellow members of the ASSOCIATION and their families. A long journey made alone may, as we all know, be very tiresome, but a long journey made in company with brother physicians whom we have not seen for a year, or have previously known only by reputation, may be the most delightful and memorable occasion. The specialist can discuss with his brother specialist the minute subdivision of medicine in which they are interested, without interruption, as he could not do at any other time; the medical politician will have the ideal opportunity to exercise his powers in looking after the future welfare of the ASSOCIATION as he sees it; and the general practitioner can live in an atmosphere of sympathy and appreciation completely denied to him during his days of isolated work. The trip is across no deserts like those encountered on the way to San Francisco, but is, at that time of the year, through the most pleasant surroundings and under the most favorable traveling conditions.

It should be remembered that while Denver is not one of the largest of American cities, it has a population greater than that of Newport, Nashville and Atlanta, where recent meetings have been held, added together; and it is particularly well prepared to accommodate large numbers of visitors. Then the professional conscience which does not allow many physicians to take any vacation, unless it serves some distinct purpose of professional improvement, can be entirely satisfied about the Denver trip. While it may not offer the multitudinous clinics of Philadelphia, it will include a study in climatology worth any amount of reading on the subject, a subject which the mass of American physicians greatly need to better understand and appreciate. Many striking observations will be forced upon the attention of even the most careless by a few days residence one mile above sea-level. The general characters of topography and climate of a great section of our country, destined to include many of its most important sanitariums before another generation passes, can be observed there.

The Western hospitality, which seems to culminate in Colorado, will confer not only great personal pleasure, but also great and general professional benefit by the series of excursions it will offer to various parts of Colorado and adjoining States. On some of these a few hours' travel will double or even treble the elevation above sea-level, and will display changes of corresponding extent in the physical features of the country. Probably every physician in the East has sometimes wished for definite, personal knowledge that would enable him to judge of the enthusiastic claims made for Colorado as a health resort; and such knowledge would necessarily improve his judgment with regard to health resorts in general. He will find that the 1898 meeting of the ASSOCIATION in Denver will offer by far the best opportunity for acquiring that desired practical acquaintance with the facts.

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pends largely upon the local arrangements. This, of course, is not guaranteed by the geographic location of the 1898 meeting; but it is by the energy of the Denver profession and the experience of the city in the entertaining of similar gatherings in the past. Arrangements for very large meetings held in Denver in the last few years indicate that the local arrangements for the AMERICAN MEDICAL ASSOCIATION will be as nearly perfect as it would be possible to make them in any city in the country. Whether the purpose entertained by the Committee of Arrangements, to make the Denver meeting larger than the one recently held in Philadelphia, shall be achieved or not, it is pretty sure to be a very successful meeting, and one that will add largely to the number of members of the ASSOCIATION. Those who, through failure to recognize this, or neglect to make the necessary arrangements to attend it, fail to participate in its advantages, will find their non-attendance a cause for future regret.

CORRESPONDENCE.

Recurrent Diphtheria.

PHILADELPHIA, Nov. 10, 1897.

To the Editor:—I wish to report this case of "Recurrent Diphtheria," as it is one more link that proves that the protective value of antitoxin is only of short duration and further that there is considerable danger in placing patients that are convalescent from diphtheria in close contact with new cases of the same disease. Jennie T., aged 6 years, who gave a history of being sick at home for two days with diphtheritic croup, was admitted to the Municipal Hospital May 21, 1897. Her respirations were so laborious at that time that it was thought advisable to do intubation. After the operation the child became quiet and the respirations were 28 per minute, deep and regular in character. One thousand units of the Philadelphia Board of Health antitoxin was given that evening and the same dose repeated next day. An examination of the throat showed only a mere trace of exudate on the tonsils, although a culture made from her fauces showed the presence of the Klebs-Loeffler bacilli. On the third day after the injection of antitoxin, or the fifth day of the disease, a fine bright scarlatinal rash appeared, extending over the entire body. Her temperature also jumped from 100 to 103 degrees F. The diagnosis of scarlet fever having been made she was removed to the building used for patients suffering with both diseases. The child did nicely and on the eleventh day of the disease, after having worn the tube nine days, she coughed it up at 3 A.M. It was not necessary to reintroduce it, and she was convalescent on June 9, after a period of three weeks' illness. She had been out of bed for nearly two months and had not been sent home as she was still desquamating; when, on July 29, her temperature rose from the normal to 104 degrees F., and both tonsils were found to be thickly covered with a yellowish black exudate. Cultures made from this exudate showed the presence of Klebs Loeffler bacilli. She also started to breathe heavily, which gradually got worse during the next two days. Two or three consultations were held upon the advisability of reintroducing a tube, but upon each occasion it was deemed best to wait. A complication which made this second attack a grave one was severe epistaxis, during the paroxysms of coughing. After the fourth day of her second attack the croupy symptoms began to improve, and intubation was not necessary. The exudate had cleared up rapidly under the local influence of peroxid of hydrogen and internal administration of iron and bichlorid, and she was again convalescent on the seventeenth day of her second attack. She had hardly been out of bed a week and we were about to send her home, when on August 20, she developed her third distinct attack of diphtheria. The exudate extended over and covered the soft and hard palates and was very thick. There was no exudate on the tonsils, uvula or wall of the pharaynx. The culture was positive. She was only confined to bed a week with this last attack, when she made a complete recovery and was discharged. E. L. DRAKE, M.D.

Tea Drinking.

NEW YORK CITY, Nov. 1, 1897.

To the Editor:—Admitting all that is contained in your editorial, as to the evils of tea drinking, let me say that the cup that cheers, contains blessings from a medical standpoint, which one only can see in a country where the tea house has taken the place of the saloon. Japan is a typhoid country and a cholera country; the drinking of hot water is, for the Japanese, a sanitary necessity; but who would ever have consented to indulge in such a beverage even when prescribed by a Budhist priest, if the water had not been pleasantly flavored? Happily for them, tea drinking was introduced in the eighth or ninth century, and they have had time to become perfectly infatuated with it.

Coffee was unknown until introduced by Europeans, in the sixteenth century by the Dutch, from Java. But it never made any headway; nations have their tastes like individuals, about which there can be no dispute. The "Japs" want something every ten minutes, and coffee could not be enjoyed in that way. Mark that in every one of those tiny periods of ten minutes, a fresh cup is brewed. The hot water kettle is forever on the charcoal stove, at the man's or woman's elbow. The individual does not brew an enormous quantum of the delicate beverage, enough to satisfy father, mother, children and the stranger within the gate; he culls from his cannister a simple pinch of tea leaves, drops it into his diminutive cup (holding perhaps an ounce) and pours his boiling water on it. As soon as the water shows color he drinks it. He may drink a quart or two in a day, for wherever he goes, visiting or shopping, the cheering cup is surely offered to him. It has been observed, with shocked amazement by foreigners in Japan, that a native will, without the least embarrassment, excuse himself, even to the ladies, and ask for the water closet. The tea leaves him no rest.

Of course a penalty has to be paid for these excesses, rather two penalties. The high class, who drink the finer sorts, suffer from nervous disorders; the lower class, to whom the coarser brands are left, are subject to those dyspeptic troubles deplored in your article.

Tea drinking has not only kept down typhoid fever and cholera contagion, it has also obviated alcoholic intemperance. There is no saloon in Japan, except the tea saloon. Perhaps the absence of pauperism is to be ascribed to that. It is to me a puzzling question whether tea guzzling would not do some good even in this white country, in spite of thein, caffein and tannin. ALBERT S. ASHMEAD, M.D.

Treatment of Snake Bite.

SIERRA MOJADA, MEXICO, Nov. 8, 1897.

To the Editor:—In the JOURNAL of October 30 J. G. Tuten, M.D., Jesup, Ga., gives a lengthy description of the treatment of a snake bite. The doctor's patient was long suffering and that he was kind is evident from the fact that he didn't change doctors. The grave symptoms, horrible suffering and extensive sloughing were the result of the absurd treatment and not of the poison of the snake bite. The bite of the rattlesnake does sometimes prove fatal, but if treated properly, very rarely. The tourniquet or ligation of an extremity is always bad. A word as to my method of treatment, and I have treated more than two dozen in the last ten years with no deaths. If there is very recent scarification and sucking of the wound, then I make free incisions and immerse the part in warm water to promote bleeding; then apply gauze wrung out of hot antiseptic solutions on absorbent cotton with moist heat to all the swollen portion; whisky frequently repeated in stimulating doses, no more. Digitalis is sometimes necessary and is very good, when indicated. Free catharsis is produced with calomel and milk diet, or other nutritious articles of easy digestion ordered. W. Q. Marsh, M.D.

A Question of Medical Ethics.

Atlantic, Iowa, Nov. 9, 1897.

To the Editor:—The great medical charities of this country are a credit to the profession and others whose gratuitous services make their existence possible; and no medical man will deny that the good done by these institutions is well-nigh incalculable.

That abuses of the system have been and are constantly being practiced no one will deny, and the periodic complaints from those physicians who live near the large dispensaries are familiar to all who read the current medical journals.

That abuses of medical charities had begun to extend into the country was not suspected by me until lately, when there fell under my observation something that I think needs attention from that portion of the profession who believe that quackish methods are not admissible even in the practice of those who are wont to assume that they are exempt from the operation of the time-honored "Code of Ethics." A certain sanitarium whose advertisement can be seen in nearly all the leading medical journals is, as is well known, under the control and guidance of a certain religious organization, and has as its chief medical officer a man who is a prolific writer, and is always prominent on the floor at the meetings of the American Medical Association. I find that it is the universal habit of the ministers who preach the gospel as viewed by this sect, to go among the people in their vicinity and solicit cases for this institution, without regard to the circumstances; this is done on the ostensible ground that trained nursing and superior medical skill can be obtained at a far less rate than can be obtained at home. One case that came under observation was that of a man suffering from a large appendiceal abscess, who performed a journey on the cars of over 650 miles and was operated on, making a slow recovery from an intestinal fistula; that he did not rupture the abscess *en route* and die of peritonitis is due wholly to good luck. Two cases have recently come under my observation in which this same minister induced two women to discharge their local physician and repair to this sanitarium for the purpose of having celiotomy done. The chief of the staff of this institution must know of these facts, for he requires the ministers to have the patients ask their attending physicians for a written "diagnosis" of the case before agreeing to admit them; the other binding clause of the bargain is that they pay if they can, and if unable to do this, promise to do so when they can. Patients who are abundantly able to pay are thus taken and worthy men robbed of cases from which they could collect a legitimate fee, that the sanitarium may get the hospital fee, arrangement for which must always be made. If this is legitimate practice of medicine, the country practitioners want to know it; and if it is not, let us insist that those who are a party to this sort of thing take their place among the itinerants, and not contaminate our medical meetings with their presence. Yours very fraternally,

Frank W. Porterfield, M.D.

National Medical Education.

Boise, Idaho, Nov. 10, 1897.

To the Editor:—In the article on "National Medical Education" by Dr. Greeley in the Journal, October 23, someone is quoted as stating that "the effort of the State Society to establish a State Board of Examiners was defeated by the quacks, but this winter will see such a bill passed"; this in reference to Idaho.

I am proud to say that the above quoted prediction was verified on March 12, 1897, and Idaho now has in operation a mixed board of medical examiners, and the act under which this board is operating provides that the person wishing to take up practice in Idaho must possess diploma from a recognized school, and pass a satisfactory examination before this board. This provision is met by applicants receiving a marking of at least 75 per cent. on all questions asked. The examination is written, and comprises papers on some fourteen subjects. At the first examination held by the board 50 per cent. failed to pass. This Act of March 12, 1897, is now being attacked in the courts by some who have felt the weight of its provisions, as administered by this Board, and time alone will determine whether the Act as passed by the legislature of 1896-97, will pass muster in the supreme court of the State.

Very truly yours, C. L. Sweet, M.D.,
Secretary Idaho State Board Medical Examiners.

Department of Public Health Bill.

Chicago, Nov. 10, 1897.

To the Editor:—Will you kindly oblige the undersigned by mailing to my address not less than twenty copies of the Bill looking to the establishment of a Department of Public Health, as I propose to do some *more* missionary work in that direction among our National legislators ere the convening of Congress next month.

The editorial on this subject in the November 6 issue of our Journal was most timely, and should elicit renewed interest in the profession everywhere.

I trust the enterprising physicians of the United States, to the number of 100,000, will awake to the necessities of this important piece of legislation, and arouse their Representatives and Senators in both Houses of our Government to renew their interest in this matter for the welfare of this Government and for all her peoples. Very sincerely yours,

Liston H. Montgomery, M.D.

A member from Illinois on the Special Committee of the American Medical Association on Department of Public Health.

Edema Universalis?

Chicago, Nov. 13, 1897.

To the Editor:—Med. Dr. Gustavus M. Blech desires to know, in the last number of the Journal, whether a certain case observed by him is justly called by him "edema universalis?" Certainly not. It should be called "edema universa*le*." The meager description offered allows no definite diagnosis, but it seems probable that the edema was due to "sclerema neonatorum." Joseph Zeisler, M.D.

License in Germany?

Rolla, Mo., Nov. 13, 1897.

To the Editor:—Will some reader of the Journal give information concerning the laws of Germany in regard to American physicians who wish to locate and practice there? What is required of a graduate of American medical schools, in order to obtain license to practice? A Reader of the Journal.

Let us have a Department of Public Health!

BOOK NOTICES.

Traumatic Injuries of the Brain and its Membranes; With a special study of pistol shot wounds of the head in their medicolegal and surgical relations. By CHARLES PHELPS, M.D., with forty-nine illustrations; pages 582. D. Appleton & Co., New York: 1897.

This work is a concise and systematic treatise on that division of brain surgery arising from injuries of the brain through external violence, and has been based almost exclusively on the observation of five hundred consecutive cases of recent occurrence. Although the cases were so numerous, it seems they were incomplete only in the illustration of secondary pyogenic infection, which is naturally a tribute to the skill of the surgeons in charge of the cases, inasmuch as they were kept from infection. This clinical deficiency has been supplied by excerpts from Macewen's work on inflammations of the membranes of the brain and spinal cord, with the permission of that gentleman. We have no hesitation in saying that it is the most complete work on this division of brain surgery which has yet appeared in America. We therefore extremely regret to see that the book has been published without an index. Although the table of contents is unusually full, yet it is a great defect, and one which in these days of cataloguing, indexing and tabulation, should not have been permitted. The paper is excellent; the illustrations are fine, and the work will remain for a long time a very valuable book of reference on this subject.

Lectures on the Malarial Fevers. By WILLIAM S. THAYER, M.D. Pages 326. New York: D. Appleton & Co. 1897.

This work consists of nine lectures with three illustrative charts. The lectures cover the ground of the history of the development of our knowledge concerning the pathogenic agent of the malarial fevers; methods of examination of the blood; description of the hemocytozoa of malaria; general conditions under which malarial fevers prevail; clinical description; masked malarial infections; conditions of the urine in malarial fever; sequelæ and complications; morbid anatomy; general pathology, diagnosis, prognosis, treatment and prophylaxis.

The author, speaking from experimental evidence, decides against the possibility of infection by drinking water, and as a means of prophylaxis recommends that one should avoid exposure at night and damp or marshy districts. People should choose sleeping apartments in an upper story of the house and always sleep under a mosquito net, and that small doses of quinin taken daily are very efficacious. These lectures are extremely valuable for reference.

Incompatibilities in Prescription. For Students in Pharmacy and Medicine and Practicing Pharmacists and Physicians. By EDSEL A. RUDDIMAN, PH.M., M.D. First Edition, pp. 264. New York: John Wiley & Sons. London: Shipman & Hall, Limited. 1897. Price $2.

Every druggist knows that he is sadly in need of the knowledge contained in works of this kind, and this volume supplies the information needed concisely and thoroughly. The articles are arranged alphabetically, which renders an index on incompatibles less necessary than in most works. They are here given without comment other than that necessary to properly classify and arrange them. This is one of the most important divisions of chemistry, and no student or young practitioner can very well afford to be without this book.

A Practical Treatise on Sexual Disorders of the Male and Female. By ROBERT W. TAYLOR, A.M., M.D.; with seventy-three illustrations and eight plates in color and monotone. Lea Bros. and Co. New York and Philadelphia. 1897. Pages 451.

The aim of the author of this volume, says Dr. Taylor, "has been to portray the various forms of sexual disorders in the male on the basis of advanced knowledge of the anatomy, physiology and pathology of the various portions of the sexual sphere." The author points out that the failure of antecedent treatises on the subject to furnish practical information, has been due to the fact that the mode of certain neuroses and the symptoms of sexual debility, termed functional disturbances, so over-mastered the minds of writers that some "unimportant points" were unduly magnified or wrongly presented.

The great experience of Dr. Taylor in the treatment of affections of this nature, and his experience as an author, make his opinions of immense value; hence we cannot too highly commend to the general practicing physician and surgeon the perusal of this work and its addition to the library.

A Text-Book of the Practice of Medicine. By J. M. ANDERS, M.D., Ph.D., LL.D. Illustrated. Philadelphia: W. B. Saunders. 1898. Price, $5.50 net; pages 1287.

This work is thoroughly modern in all respects. The author has given preference to modern orthography and terminology, and wherever dosage is stated has used the metric equivalents. It is, however, not a mere translation, but in all instances in which this would involve an important difference in quantity the exact decimal figures are given. Current medical literature has been utilized in this contribution.

The book covers infectious diseases and constitutional diseases; diseases of the blood and ductless glands; diseases of the respiratory system; diseases of the urinary system; diseases of the nervous system; diseases of muscles; the intoxications, and the animal parasitic diseases.

Special attention has been given to diagnosis; and the work is to be commended. An unusually full index completes the volume.

True to Themselves; A Psychological Study. By ALEXANDER J. C. SKENE, M.D., LL.D. F. T. Neeley, Publisher. London and New York: 1897.

This novel by Dr. Skene is so extremely advanced in telepathy and certain phases of sociology, that it is difficult to review it from that standpoint, without criticism which we would very much dislike to make; but from the standpoint of a story it is romantic, entertaining and interesting. Dr. Skene has written a remarkable novel, and has introduced some original characters into the book, as Dr. Douglas, one who followed the usual career of those whom the gods love; that is to say, he died young. He was so wonderfully good as to constitute an ideal character. The female characters in the book are women of exceptional purity, but some of them, especially Mrs. St. Clair, would be an almost impossible reality. However, in the favorite dialect of Francie, it was a braw thocht that mad them.

Therapeutics, its Principles and Practice; a Work on Medical Agencies, Drugs and Poisons, with Especial Reference to the Relations Between Physiology and Clinical Medicine. By H. C. WOOD, M.D., LL.D. Tenth Edition; thoroughly revised. Philadelphia: J. B. Lippincott Company. 1897 Pages 1033.

The fact that Professor Wood's book has reached its tenth edition is sufficient evidence of its popularity and of the high appreciation of the physician and students who have depended upon it for their knowledge of therapeutics. It is to be regretted that this edition still retains the old system of weights and measures. The large number of new remedies that have been introduced since the last revision of the Pharmacopeia and the toxins and antitoxins have made it necessary that every work on therapeutics, aiming to be at all complete, should contain an account of them. These have been added in this edition, so that the work has been brought down to the latest date possible.

Transactions of the Chicago Pathological Society. December, 1896 to April, 1897. Volume II, American Medical Association Press.

This volume of Transactions of this flourishing Society is an improvement on its predecessor, not only in style and arrangement, but in the material. The papers that are contained in the volume have been published in this JOURNAL from time to time, and most of the Journal readers are familiar with them; but they are here together and preserved in permanent form of Transactions and collectively represent a very high plane of medical literature. Pathologic cases are always instructive, and the observer of today may turn to his Monroe, his Andral, his Rokitansky and Gross for descriptions, of the macroscopic lesions as seen by these keen observers and recorded according to the fashion of the time. But the appearances themselves never grow old, and we may indeed hope that these pathologic reports of today may take their place in the library as works of reference scarcely inferior to any of their class.

Text-Book of Medical and Surgical Gynecology. For the Use of Students and Practitioners. By R. W. Garrett, M.A., M.D. Containing over 100 illustrations. Kingston, Ontario, 1897. J. A. Carveth and Company, Medical Publishers, Toronto, Canada. Pages 419.

This is a condensed manual of gynecology, having few sins of commission and few of omission. It contains the essentials of gynecology as now taught and practiced. The size of the work forbids extended quotations or lengthy citations, but the student will find it fairly up to date.

SOCIETY NEWS.

Chicago Pathological Society.—The annual address before the Chicago Pathological Society, December 3, will be delivered by George M. Sternberg, Surgeon-General of the United States Army. The subject of the address will be "Yellow Fever; Its Etiology and Pathology."

Southern Surgical and Gynecological Association.—The following officers have been elected for the ensuing year: President, Dr. Richard Douglas, Nashville, Tenn.; Vice-Presidents, Dr. H. H. Mudd, St. Louis, Mo., and Dr. Jas. A. Goggans, Alexander City, Ala.; Secretary, Dr. W. E. B. Davis, Birmingham, Ala.; Treasurer, Dr. A. M. Cartledge, Louisville, Ky. Place of meeting, Memphis, Tenn.; on the second Tuesday in November, 1898.

The Oldest Medical Society in Illinois.—The Æsculapian Society of the Wabash Valley celebrated its fiftieth anniversary at Paris, Ill., Oct. 28, 1897. There were about seventy-five members of the profession in attendance. In the evening the local physicians gave a banquet, at which there was good music, appropriate speeches, and a good time generally. The Society is in a most flourishing condition. The Æsculapian was organized in 1846, and hence has been in existence fifty-one years, but as it did not receive its charter until 1847, the year 1897 was celebrated as the fiftieth anniversary.

NECROLOGY.

Dr. Thomas W. Evans, the famous American dentist, died suddenly of angina pectoris, November 14. Dr. Evans was born in Philadelphia about seventy-five years ago, and went to Paris in 1846, where he remained the friend of the United States during the Civil War, buying American securities when they dropped to very low points, thus backing up his statement that the Confederacy could not win. Dr. Evans was practically the first person to introduce gold filling for teeth into Europe. Since his advent in the French capital, Dr. Evans had attended to the teeth of most of the crowned heads of Europe, to say nothing of almost innumerable members of the royal families, excepting Queen Victoria and the Sultan of Turkey. At the time of his death he occupied the office of dentist to the royal families of England, Holland, Germany, Austria, Belgium and Russia, besides being the attendant of the majority of the most prominent families of the continent. During the course of his life he received innumerable orders and other decorations from foreign potentates. He was an intimate friend of Napoleon III., and at the time of the Franco-Prussian war organized the National Ambulance Corps. When the French communists were seeking for the Empress Eugenie to destroy her, he disguised her as a maid and aided her in her escape. In Germany he is known and loved for the services he rendered the ill-starred German Emperor Frederick when, as the Crown Prince, he was battling for his life against the inroads of the disease to which he finally succumbed. The Prince was at San Remo dangerously ill with the disease of the throat which baffled the skill of the most learned scientists of all Europe, when Dr. Evans was called into consultation. Sir Morrel Mackenzie, the eminent English surgeon, and Dr. Bergmann of Berlin, were in charge of the distinguished patient. They decided on an operation to remove the growth and he was present. At this time the old Emperor William was also lying sick unto death. It was known that his death was a matter of only a few days' time, and also that unless the cancer could be removed from the throat of the Prince he would precede his father to the grave. A tracheotomy was performed and the bleeding which followed could not be stopped by all the efforts of the physicians in attendance. Dr. Evans hurried to a silversmith's shop, and with his own hands constructed a silver tube, which was fitted into the wound and stopped the bleeding. Twenty-four hours later Emperor William died and Frederick lived for thirty days as Emperor of Germany. Dr. Evans is estimated to be worth $30,000,000. He left no children. He founded the Home for Young American Women in Paris, which has proved a veritable godsend to many an American girl studying art in Paris.

James G. Sloan, M.D., Jefferson 1862 and Georgetown Medical College, D. C., 1869, died at Monongahela City, Pa., November 2, aged 56 years. He served in the ranks throughout the civil war, having enlisted as a private in a Pennsylvania regiment immediately after his first graduation. Afterward he was four years in the land office bureau of the Department of the Interior, Washington, and in 1896 became a member of the Pennsylvania Legislature, in which position he remained until his death.

James Carey Thomas, M.D., University of Maryland, 1854, for many years a trustee of the Johns Hopkins University, author of several medical works and well known as a lecturer, died in Baltimore on the evening of November 9. His wife, who died several years ago, joined him in his philanthropic works; both were earnest workers in the Society of Friends and their daughter, one of the immediate survivors, is president of Bryn Mawr College, Philadelphia, as well as a trustee of Cornell University. Dr. Thomas was 64 years old.

George O. Butler, M.D., Cleveland, Ohio, of heart trouble, November 4, aged 64 years. Dr. Butler was graduated from Western Reserve Medical College in 1854. He practiced with his preceptor for one year, and then in West Virginia for a somewhat longer period, then in Cleveland. In 1862 he was appointed surgeon of the One Hundred and Third Ohio Volunteer Infantry. After the war he resumed his practice in Cleveland, and near Rock's Corners. Since 1872 he has been a member of the Northern Ohio Medical Society, and in 1868 was one of the organizers of the old Cleveland Academy of Medicine. In 1885 he was appointed a member of the United States Pension Examining Board of Surgeons, and was for three years the secretary of the board.

S. F. Forbes, M.D., of Toledo, Ohio, died at Sorocco, N. M. ——Dr. Hughes, late of Carmarthen, father of the Rev. Hugh Price Hughes of London, died at Barry, November 3.

PUBLIC HEALTH.

Bubonic Plague Raging in Many Bombay Districts.—The bubonic plague is raging in the districts of Poona, Sholapur and Surat. It has also appeared at Kotri, near Karachi, in the Sinde district and at Jand-Kawal, in the Julundun district. Near Hardwar a colony of monkeys has been attacked by the disease. The local authorities are trapping and isolating the diseased animals.

Vital Statistics of New Jersey.—The State Bureau of Vital Statistics of New Jersey has given out advance sheets from